



Western Refining Southwest LLC

A subsidiary of Marathon Petroleum Corporation

I-40 Exit 39

Jamestown, NM 87347

October 28, 2022

Mr. Rick Shean, Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87505-6303

**RE: Response to Approval with Modifications
Investigation Phase II Report Sanitary Lagoon
Western Refining Southwest LLC
(D/B/A Marathon Gallup Refinery)
EPA ID# NMD000333211
HWB-WRG-22-003**

Dear Mr. Shean:

Attached please find the response to comments contained in the New Mexico Environment Department (NMED) Approval with Modifications letter dated August 22, 2022. A timeline of the Phase II Sanitary Lagoon Investigation is provided below.

- Sanitary Lagoon Investigation Phase II Work Plan, dated March 31, 2021
- Approval with Modifications, received April 26, 2021
- Modified Sanitary Lagoon Investigation Phase II Work Plan, dated July 2, 2021
- Investigation Phase II Report, dated March 4, 2022
- Approval with Modifications, received August 22, 2022

Replacement pages and an electronic version of the revised Report are included. A redline-strikeout version in electronic format is also included.

If you have any questions or comments regarding the information contained herein, please do not hesitate to contact Mr. John Moore at (505) 879-7643.



Western Refining Southwest LLC

A subsidiary of Marathon Petroleum Corporation

I-40 Exit 39

Jamestown, NM 87347

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction of supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Western Refining Southwest LLC, DBA Marathon Gallup Refinery

A handwritten signature in black ink that reads "Ruth A Cade".

Ruth Cade
Vice-President

Enclosures

cc: D. Cobrain, NMED HWB
M. Suzuki, NMED HWB
L. Andress, NMED HWB
L. Barr, NMOCD
K. Luka, Marathon Petroleum Corporation
M. Bracey, Marathon Petroleum Corporation
J. Moore, Marathon Gallup Refinery
H. Jones, Trihydro Corporation

ATTACHMENT A
RESPONSE TO COMMENTS

New Mexico Environment Department (NMED) to Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Comment Letter “Approval with Modifications Investigation Phase II Report Sanitary Lagoon” (August 22, 2022)

NMED Comments	Refinery Responses
<p>Comment 1:</p> <p>Section 3.3 (Sample Handling), page 12 of 16, describes the procedure for vapor concentration measurement using a photo-ionization detector/flame ionization detector (PID/FID) and the laboratory analytical sample collection method. However, it is not clear from the description whether the soil samples that were used to measure vapor concentrations were also used as laboratory analytical samples or if the soil samples that were used to measure vapor concentrations were discarded and fresh soil samples were separately collected for laboratory analyses. Provide a clarification in the revised Report and provide replacement pages.</p>	<p>Response 1:</p> <p>Soil borings were continuously logged and field screened for evidence of contaminants. Soil samples that were sent for laboratory analysis were the same soil samples used to measure vapor concentrations. Soil was immediately transferred from the recovered core to a sealed bag to prevent off-gassing. The sealed bag was opened only to the extent necessary to insert a PID/FID probe. Time intervals between core retrieval and sample collection were minimized to reduce potential off-gassing. This method was utilized to ensure that the material with the highest vapor concentration was collected for laboratory analysis.</p> <p>Section 3.3, Step 5 has been revised to state: “... Immediately after the samples were screened by PID/FID, they were stored in a cooler with ice...”</p>
<p>Comment 2:</p> <p>In Section 4.2 (Pipeline Corridor Sample Results), page 13 of 16, paragraph 6, the Permittee states, “[t]here were no notable detections of VOCs [volatile organic compounds], SVOCs [semi-volatile organic compounds], or inorganics (see Tables 2a, 2b, and 2c).” According to Table 2a (Sanitary Lagoon Pipeline Corridor Sample Results, VOCs), the 1,2-dibromoethane concentration in the soil sample collected from location SPL-10 is recorded as ND(1.4) mg/kg. The reporting limit for 1,2-dibromoethane exceeds the residential soil screening level of 0.7 mg/kg. Similarly, according to Table 2c (Sanitary Lagoon</p>	<p>Response 2:</p> <p>When possible, the laboratory uses methods with reporting limits that are less than the applicable screening levels. Elevated reporting limits can also be based on the sample being analyzed.</p> <p>Non-detected results with reporting limits greater than the applicable screening levels are identified in the tables as exceedances. A statement regarding the data exceptions has been added to Section 4.3.</p>

New Mexico Environment Department (NMED) to Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Comment Letter “Approval with Modifications Investigation Phase II Report Sanitary Lagoon” (August 22, 2022)

NMED Comments	Refinery Responses
<p>Pipeline Corridor Sample Results, Inorganics), the arsenic concentration in the soil sample collected from location SPL-11 is recorded as ND(13) mg/kg. The reporting limit for arsenic exceeds the residential soil screening level of 7.1 mg/kg. It is not known whether the actual constituent concentrations would exceed the applicable screening levels. The reporting limits must be lower than the applicable screening levels; otherwise, address the concentrations of all analytes where the reporting limits are higher than the corresponding screening levels as data quality exceptions and identify them as such in all related text, tables, and figures. Revise the appropriate sections in the Report and provide replacement pages.</p>	
<p>Comment 3:</p>	<p>Response 3:</p>
<p>In Section 5.0 (Conclusions and Recommendations), page 15 of 16, paragraph 3, the Permittee states, “[i]t is likely that the sand layer used to embed the sanitary lagoon pipeline acted as a conduit for hydrocarbon migration from documented historical releases (e.g., the 2019 gasoline leak to the north of the truck loading rack). However, that migration appears to be cut off at the location of the concrete plug (Figure 3) as the sand layer corridor is broken by the presence of a concrete sewer vault.” According to Figure 3 (Sanitary Lagoon Investigation Phase II Notable Analytical Results), even though sampling locations SPL-05 and SPL-06 are located downstream of the location of the concrete plug/concrete sewer vault, Table 2d (Sanitary Lagoon Pipeline Corridor Sample Results, general) indicates that the total petroleum hydrocarbon gasoline range organics (TPH-G R0) concentrations in the soil samples collected from location SPL-06 (150 J+ mg/kg and 470 J+ mg/kg) exceeded the</p>	<p>Contamination likely occurred prior to placement of the concrete sewer vault. Visual observations indicated hydrocarbon impacts upgradient of the vault/plug. At the time of the investigation, it appeared that the plug is serving as a blockage to current migration. The statement has been removed from Section 5.0.</p>

New Mexico Environment Department (NMED) to Western Refining Southwest LLC (D/B/A Marathon Gallup Refinery [Refinery]) Comment Letter “Approval with Modifications Investigation Phase II Report Sanitary Lagoon” (August 22, 2022)

NMED Comments	Refinery Responses
<p>residential soil screening level of 100 mg/kg. Similarly, the elevated concentrations of total coliform were observed in the soil samples collected from sampling locations SPL-05 and SPL-06. Furthermore, the total petroleum hydrocarbon diesel range organics (TPH-DRO) concentrations in the soil samples collected from multiple soil samples within the Sanitary Lagoon (SL-05, SL-2, SL-3, and SL-8) exceeded the applicable screening level. Based on the data, NMED does not agree with the Permittee’s conclusion. It is not appropriate to conclude that the potential contaminant conduit (i.e., sand layer corridor around the pipeline) was blocked by the presence of a concrete sewer vault. Revise the statement for accuracy or provide evidence to support the assertion in the Report and provide replacement pages.</p>	
<p>Comment 4:</p>	<p>Response 4:</p>
<p>In Section 5.0 (Conclusions and Recommendations), page15 of 16, paragraph 4, the Permittee states, “[t]he modified [AOC 35] investigation workplan is due back to NMED by March 31, 2022. At this time no additional soil investigation work is proposed based on the former sanitary lagoon pipeline and pipeline corridor. Soil in this area will be investigated further through the AOC 35 investigation which seeks to correlate the LIF investigation results with analytical concentrations.” NMED acknowledges that the referenced work plan was received on April 11, 2022 and concurs that the investigation related to the pipeline corridor will be further evaluated through the AOC 35 investigation. No revision is required.</p>	<p>Comment noted.</p>

ATTACHMENT B-1
TEXT CLEAN VERSION

Investigation Phase II Report Sanitary Lagoon



**Western Refining Southwest, LLC
D/B/A Marathon Gallup Refinery
Gallup, New Mexico**

EPA ID# NMD000333211

March 2022



Investigation Phase II Report Sanitary Lagoon

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- A. Field Logs
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List of Acronyms

AOC	Area of Concern
DRO	diesel range organics
EPA	Environmental Protection Agency
FID	flame ionization detector
LIF	laser-induced fluorescence
NMED	New Mexico Environment Department
ORO	oil range organics
PID	photoionization detector
SVOC	semi-volatile organic compound
TPH	total petroleum hydrocarbons
VOC	volatile organic compound



Investigation Phase II Report Sanitary Lagoon

Executive Summary

The Marathon Gallup Refinery (the refinery) is located 17 miles east of Gallup, New Mexico. The refinery operated since the 1950s and was indefinitely idled in 2020. This report details the second phase of investigative work at the former sanitary sewer lagoon as well as the sewer pipeline corridor leading to the lagoon.

Initial investigations at the sanitary lagoon were conducted in November 2019 and reported to New Mexico Environment Department (NMED) in the February 2020 *Investigation Report Sanitary Lagoon* (DiSorbo, 2020). Soil results from the initial investigation indicated exceedances of Total Petroleum Hydrocarbon (TPH) diesel range organics (DRO) within the former sanitary sewer lagoon at 3 locations. Additionally, due to a hydraulically upgradient gasoline leak (2019 gasoline leak at the truck loading rack), the initially proposed pipeline corridor investigation was postponed.

In September 2021 step-out delineation soil sampling related to the 2019 TPH DRO exceedances was conducted within the former sanitary lagoon along with the postponed soil sampling associated with the pipeline corridor. The results of the step-out delineation sampling and pipeline corridor sampling are discussed and presented in this report.



Investigation Phase II Report Sanitary Lagoon

1.0 Introduction

The Marathon Gallup Refinery (the refinery) is located approximately 17 miles east of Gallup, New Mexico along the north side of Interstate Highway I-40 in McKinley County (see Figure 1). The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The refinery is located on 810 acres. The refinery has been indefinitely idled since August 2020.

The former sanitary lagoon is in the northwest portion of the refinery. Historical assessment activities include the collection of 33 soil samples from 8 soil borings/temporary wells and 15 groundwater samples from 8 temporary wells and 7 existing permanent monitoring wells. Initial investigation activities were conducted in November 2019 and reported to New Mexico Environment Department (NMED) in the February 2020 *Investigation Report Sanitary Lagoon* (DiSorbo, 2020).

This investigation report addresses the sanitary lagoon pipeline corridor and provides analytical data for step-out sample locations within the former sanitary lagoon, as detailed in the NMED-approved *Sanitary Lagoon Investigation Phase II Work Plan*, dated March 31, 2021, revised July 2, 2021; NMED approval with modifications dated April 26, 2021 (DiSorbo, 2020). The remainder of this report is broken into the following sections:

- Section 2 – Background
- Section 3 – Investigation Activities and Objectives
- Section 4 – Investigation Results
- Section 5 – Conclusions and Recommendations



Investigation Phase II Report Sanitary Lagoon

2.0 Background

This section presents background information for the sanitary lagoon including a brief history of operations and prior investigations.

2.1 Sanitary Lagoon Operational History

The sanitary lagoon is a two-cell earthen lagoon that was installed when the facility opened in 1957. Historically both cells were used to store wastewater, with raw sewage entering the southeast corner of the eastern cell via a buried pipeline that runs from the southeast. Historical sewer pipeline maps indicate that the sanitary lagoon received discharge from sanitary facilities located at the laboratory, the change house, the warehouse, and the truck loading rack driver's lounge. In October 2018, the sewer pipe was cut and plugged with concrete approximately 375 feet southeast of the lagoon. Wastewater that formerly discharged to the sanitary lagoon was rerouted to the sanitary treatment pond.

Between 2014 and 2016 two separate ditches, approximately 130 feet and 50 feet in length, were excavated to within 3 feet of the top of the sanitary lagoon pipeline; no additional activity immediately followed excavation of the ditches and those features are still present at the refinery. Figure 2 depicts the locations of the sanitary lagoon, the pipeline, the ditches, and the concrete plug location.

2.2 2019 Investigation and Basis for Continued Investigation

In November 2019, 33 soil samples were collected from 8 soil borings/temporary well locations within the sanitary lagoon. Additionally, 15 groundwater samples were collected from 8 temporary well locations and 7 existing permanent monitoring wells. Results from the 2019 sanitary lagoon investigation were presented to NMED in the aforementioned February 2020 *Investigation Report Sanitary Lagoon* (DiSorbo, 2020).

While the groundwater samples indicated impacts exist in the area surrounding/within the sanitary lagoon, those impacts were not attributed to the sanitary lagoon based on constituent type, localized flow directions, magnitudes of analytical concentrations, and results from nearby groundwater monitoring wells. Groundwater results were discussed in the NMED-approved February 2020 initial investigation report Sections 6 and 7; Section 7.2 provided recommendations for groundwater (DiSorbo, 2020).

Soil results from the 2019 investigation included detection exceedances of Total Petroleum Hydrocarbons (TPH) diesel range organics (DRO) above the applicable screening level at three locations (SL-2, SL-3, and SL-8 as shown on inset of Figure 2). Additional soil delineation sampling was recommended near the three locations with TPH DRO exceedances.

The 2019 investigation work plan included the installation and sampling of 13 trench locations southeast of the lagoon along the former sanitary lagoon pipeline. However, due to a gasoline leak discovered in late 2019 at the upgradient truck loading rack, the pipeline component of the investigation was postponed. This was agreed to by NMED via correspondence dated January 6, 2020 (DiSorbo, 2020).



Investigation Phase II Report Sanitary Lagoon

The work conducted in 2021, as presented in this report, provides the required additional TPH DRO delineation data as well as data for the 13 trench locations along the former sanitary lagoon pipeline.



Investigation Phase II Report Sanitary Lagoon

3.0 Investigation Activities/Objectives and Sample Handling

This section details the soil sampling activities and sampling handling procedures. The work was comprised of two distinct phases of investigation, delineation sampling within the former sanitary lagoon and a pipeline corridor assessment. The investigation was conducted in September 2021.

3.1 Delineation Sampling

Delineation step-out sampling was completed within the sanitary lagoon on September 20, 2021. Six delineation sample locations were selected to bound the three historical locations with TPH DRO exceedances. Historical and delineation sample locations are depicted on Figure 2. Note, due to a TPH DRO detection exceedance at SL-05 (one of the delineation step-out locations), an additional delineation location (SL-05a) was added and sampled on December 17, 2021. Delineation sample results are discussed in Section 4 and presented in Table 1.

The historical TPH DRO exceedances were observed in the 0 to 0.5 feet below ground surface (ft-bgs) interval. Samples were collected from the new locations at 0 to 0.5 ft-bgs and from the bottom of the boring at 2 to 2.5 ft-bgs. A decontaminated hand auger was used for sample collection. Samples were screened with a photoionization detector (PID) and lithologic information was logged following protocol described in the NMED-approved work plan. Field forms for the delineation samples are included in Appendix A.

3.2 Pipeline Corridor Assessment

The work plan proposed “up to 13 trenches, at 50 ft intervals” along the pipeline corridor to expose/trace the pipeline and allow for the collection of soil samples beneath the pipeline. Due to an earthen berm just west of the Marketing Tank Farm inhibiting the ability to reach the pipeline (i.e., pipeline was greater than 20 feet below ground surface), 2 of the proposed 13 locations were removed, resulting in 11 sample locations, as shown on Figure 2.

As further discussed in Section 4.3, originally the pipeline was to be exposed using an air knife and a trench was to be dug at each location for logging and sampling. The trench activities were completed as originally planned at the first two locations (SLP-01 and SLP-10), but the remainder of the samples were either collected in the borehole created by the air knife or by hand digging, in order to protect subsurface utilities in the area.

Of the 11 sample locations, 7 of them were air knifed to expose the pipeline. The remaining 4 locations were within the previously excavated ditches and were hand dug during sample collection efforts. Samples were field screened with a PID and/or flame ionization detector (FID) (depending on moisture content) at roughly 2-foot intervals and the lithology of each location was logged by field personnel. Field forms for these locations are provided in Appendix A. Pipeline corridor sample results are discussed in Section 4 and presented in Tables 2a through 2d.



Investigation Phase II Report Sanitary Lagoon

3.3 Sample Handling

The following procedures were used during collection and screening of samples:

1. New disposable nitrile gloves were used to collect each sample.
2. Samples were transferred from the sample retrieval device (hand auger) directly into clean field screening containers (i.e., new Ziplock[®] baggies). Once bagged, samples were set aside to allow proper volatilization (approximately 5 minutes).
3. Vapors present in the sample bag's headspace were measured by inserting the probe of a PID or FID into a small opening in the bag; a PID was used to screen the soil if the sample had little or no moisture, an FID was used if obvious moisture was present.
4. PID/FID result were recorded on field forms along with the basic geology.
5. Sample labels and documentation were completed as each sample was collected. Immediately after the samples were screened by PID/FID, they were stored in a cooler with ice. Due to short hold times for E. Coli/Total Coliform samples (Method 9223B-2004, 24-hour hold/extraction time), the samples were shipped the same day as sample collection.
6. Chain-of-custody forms were completed after sample collection, prior to the transfer of samples off site, and included within each sample cooler.
7. Individual sample containers were packed to prevent breakage and transported in a sealed cooler with ice. Temperature blanks were included with each shipping container.
8. Each cooler was transported directly to the analytical laboratory by means of a courier sent from the laboratory. Custody seals were signed, dated, and used to seal each cooler in conformance with Environmental Protection Agency (EPA) protocol.



4.0 Investigation Results and Work Plan Deviations

This section presents the results of the pipeline corridor and delineation sampling. Analytical results are provided in the attached tables.

4.1 Delineation Sample Results

Delineation sample results are provided in Table 1. Initially, twelve primary samples and one duplicate sample were collected from six sample locations and analyzed for TPH DRO and oil range organics (ORO). Samples were collected from the 0 to 0.5 ft-bgs interval as well as 2 to 2.5 ft-bgs. Twelve of the thirteen samples had results below the applicable screening levels, however, at location SL-05, the surface soil sample (0 to 0.5 ft-bgs) exceeded applicable screening levels (industrial/occupational and construction) for TPH DRO. An additional sample was added and collected (SL-05a) on December 17, 2021, to adequately bound the elevated TPH concentrations. The sample results from SL-05a were below the applicable screening levels as presented in Table 1.

A figure depicting the TPH DRO analytical results (both historical and step-out delineation sample results) is included as Figure 3.

4.2 Pipeline Corridor Sample Results

Fourteen pipeline corridor samples were collected from 11 sample locations (11 primary samples and 3 duplicate samples) at the interval approximately 2 feet below the top of the sanitary lagoon pipe. Samples were analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), TPH, inorganics, geochemical, and fecal bacteria. Analytical results are provided in Tables 2a, 2b, 2c, and 2d.

Six of the 11 sample locations (SLP-06 through SLP-11) were identified as having hydrocarbon-like staining and/or hydrocarbon-like odor within the borehole and a corresponding elevated PID/FID reading (see field forms in Appendix A). Note that SLP-04 was indicated as having a "slight hydrocarbon-like odor" however the corresponding PID reading was insignificant and analytical results were below applicable limits. The pipeline itself was made of a clay-like material, approximately 8 inches in diameter, and embedded in 1 to 2 feet of sand. Most of the hydrocarbon-like staining was concentrated around the pipeline, within the sand layer.

There were no notable detections of VOCs, SVOCs, or inorganics (see Tables 2a, 2b, and 2c). There were detections of TPH DRO and gasoline range organics above applicable standards at four locations (Table 2d), however, this is to be expected in this area as it is directly down gradient of documented historical hydrocarbon releases (Area of Concern [AOC] 35).

Fecal bacteria specific soil tests indicated three locations with detectable total coliforms and one location with E-coli. Figure 3 depicts the pipeline sample locations and notable analytical detection results.



4.3 Work Plan Deviations and Laboratory Errors

4.3.1 Work Plan Deviations

As previously mentioned, the only notable deviation from the work plan pertained to the trench portion of the investigation. Originally the pipeline was to be exposed using an air knife and a trench was to be dug at each location for logging and sampling. The trench activities were completed as originally planned at the first two locations (SLP-01 and SLP-10). However, during trench activities at the third sample location (SLP-05) a firewater line was discovered but not damaged. To protect subsurface utilities in the area, the decision was made to log, screen, and sample each subsequent location in the borehole created by the air knife. A decontaminated hand auger was used to collect soil aliquots for screening from the air knife boring sidewall and the boring was logged based on the screening aliquots and a visual inspection of the boring sidewall.

Some reporting limits were above their applicable screening levels for several non-detect results. These results are noted in Tables 2a through 2d.

4.3.2 Laboratory Errors

Due to the short hold time associated with the fecal bacteria sampling and certain geochemical parameters, arrangements were made with the analytical laboratory for same-day sample collection and shipment. More specifically, all samples were collected and processed before arrival of the laboratory courier (2:00 pm Mountain Standard Time) to ensure arrival at the laboratory within the 24-hour extraction window. Despite the coordination with the laboratory, some of the pipeline corridor samples with short hold times were extracted outside of the extraction window. The samples results were assessed by data validation experts and flagged accordingly; data validation reports can be found in Appendix B. Laboratory reports are provided in Appendix C.

Additionally, 6 of the 14 SVOC (8270) samples were extracted outside of the 14-day extraction window. These six results were rejected by the data validation team and are flagged with "R" in the applicable table (Table 2b). Although these results were rejected, re-sampling is not warranted for the following reasons:

- VOCs and inorganics were extracted within the appropriate timeframe and were not detected at levels of concern from any of the locations with rejected SVOC data
- SVOC constituents detected at low levels (below screening levels but with detection results) for locations not rejected were still detected in the rejected data sets at similarly low levels



Investigation Phase II Report Sanitary Lagoon

5.0 Conclusions and Recommendations

The objectives of this investigation were to further delineate and adequately bound TPH DRO detections within the former sanitary lagoon and to determine if constituents are present along the sanitary lagoon pipeline corridor.

Delineation sample results within the former sanitary lagoon achieved the intended objective to adequately bound the previous TPH DRO detections. Analytical results are provided in Table 1 and depicted on Figure 3. At this time no additional sampling is proposed within the former sanitary lagoon.

Along the pipeline corridor, sample results indicate TPH detection exceedances hydraulically upgradient (to the southeast) of the concrete plug. The shallow subsurface soils within the region are primarily clay-like and of low permeability. It is likely that the sand layer used to embed the sanitary lagoon pipeline acted as a conduit for hydrocarbon migration from documented historical releases (e.g., the 2019 gasoline leak to the north of the truck loading rack).

Soil within this area is known to have hydrocarbon contamination as presented in the report pertaining to the laser induced fluorescence (LIF) results (Trihydro, 2021a). Additional investigation into soil near this area is proposed in the AOC 35 investigation work plan (Trihydro, 2021b). Note that the AOC 35 work plan is currently undergoing revisions based on NMED comments received in October 2021. The modified investigation workplan is due back to NMED by March 31, 2022. At this time no additional soil investigation work is proposed based on the former sanitary lagoon pipeline and pipeline corridor. Soil in this area will be investigated further through the AOC 35 investigation which seeks to correlate the LIF investigation results with analytical concentrations. The approximate boundary of AOC 35 is depicted on Figure 2.



Investigation Phase II Report Sanitary Lagoon

6.0 References

DiSorbo. 2020. Investigation Report Sanitary Lagoon, Marathon Petroleum Company, Gallup Refinery.

Trihydro. 2021a. Marketing Tank Farm Laser-Induced Fluorescence/Hydraulic Profiling Investigation Report, Marathon Petroleum Corporation, Gallup Refining Division.

Trihydro. 2021b. Revised Investigation Work Plan No. 2 Area of Concern 35, Western Refining Southwest Inc., Marathon Gallup Refinery.

ATTACHMENT B-2
TEXT REDLINE VERSION



Investigation Phase II Report Sanitary Lagoon

3.3 Sample Handling

The following procedures were used during collection and screening of samples:

1. New disposable nitrile gloves were used to collect each sample.
2. Samples were transferred from the sample retrieval device (hand auger) directly into clean field screening containers (i.e., new Ziplock[®] baggies). Once bagged, samples were set aside to allow proper volatilization (approximately 5 minutes).
3. Vapors present in the sample bag's headspace were measured by inserting the probe of a PID or FID into a small opening in the bag; a PID was used to screen the soil if the sample had little or no moisture, an FID was used if obvious moisture was present.
4. PID/FID result were recorded on field forms along with the basic geology.
5. Sample labels and documentation were completed as each sample was collected. Immediately after the samples ~~were collected~~ were screened by PID/FID, they were stored in a cooler with ice. Due to short hold times for E. Coli/Total Coliform samples (Method 9223B-2004, 24-hour hold/extraction time), the samples were shipped the same day as sample collection.
6. Chain-of-custody forms were completed after sample collection, prior to the transfer of samples off site, and included within each sample cooler.
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8. Each cooler was transported directly to the analytical laboratory by means of a courier sent from the laboratory. Custody seals were signed, dated, and used to seal each cooler in conformance with Environmental Protection Agency (EPA) protocol.



4.3 Work Plan Deviations and Laboratory Errors

4.3.1 Work Plan Deviations

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Investigation Phase II Report Sanitary Lagoon

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The objectives of this investigation were to further delineate and adequately bound TPH DRO detections within the former sanitary lagoon and to determine if constituents are present along the sanitary lagoon pipeline corridor.

Delineation sample results within the former sanitary lagoon achieved the intended objective to adequately bound the previous TPH DRO detections. Analytical results are provided in Table 1 and depicted on Figure 3. At this time no additional sampling is proposed within the former sanitary lagoon.

Along the pipeline corridor, sample results indicate TPH detection exceedances hydraulically upgradient (to the southeast) of the concrete plug. The shallow subsurface soils within the region are primarily clay-like and of low permeability. It is likely that the sand layer used to embed the sanitary lagoon pipeline acted as a conduit for hydrocarbon migration from documented historical releases (e.g., the 2019 gasoline leak to the north of the truck loading rack). ~~However, that migration appears to be cut off at the location of the concrete plug (Figure 3) as the sand layer corridor is broken by the presence of a concrete sewer vault.~~

Soil within this area is known to have hydrocarbon contamination as presented in the report pertaining to the laser induced fluorescence (LIF) results (Trihydro, 2021a). Additional investigation into soil near this area is proposed in the AOC 35 investigation work plan (Trihydro, 2021b). Note that the AOC 35 work plan is currently undergoing revisions based on NMED comments received in October 2021. The modified investigation workplan is due back to NMED by March 31, 2022. At this time no additional soil investigation work is proposed based on the former sanitary lagoon pipeline and pipeline corridor. Soil in this area will be investigated further through the AOC 35 investigation which seeks to correlate the LIF investigation results with analytical concentrations. The approximate boundary of AOC 35 is depicted on Figure 2.

ATTACHMENT C
REVISED INVESTIGATION PHASE II REPORT
(ELECTRONIC COPY)

Investigation Phase II Report Sanitary Lagoon



**Western Refining Southwest, LLC
D/B/A Marathon Gallup Refinery
Gallup, New Mexico**

EPA ID# NMD000333211

March 2022



Investigation Phase II Report Sanitary Lagoon

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Investigation Phase II Report Sanitary Lagoon

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- A. Field Logs
- B. Data Validation
- C. Laboratory Reports



Investigation Phase II Report Sanitary Lagoon

List of Acronyms

AOC	Area of Concern
DRO	diesel range organics
EPA	Environmental Protection Agency
FID	flame ionization detector
LIF	laser-induced fluorescence
NMED	New Mexico Environment Department
ORO	oil range organics
PID	photoionization detector
SVOC	semi-volatile organic compound
TPH	total petroleum hydrocarbons
VOC	volatile organic compound



Investigation Phase II Report Sanitary Lagoon

Executive Summary

The Marathon Gallup Refinery (the refinery) is located 17 miles east of Gallup, New Mexico. The refinery operated since the 1950s and was indefinitely idled in 2020. This report details the second phase of investigative work at the former sanitary sewer lagoon as well as the sewer pipeline corridor leading to the lagoon.

Initial investigations at the sanitary lagoon were conducted in November 2019 and reported to New Mexico Environment Department (NMED) in the February 2020 *Investigation Report Sanitary Lagoon* (DiSorbo, 2020). Soil results from the initial investigation indicated exceedances of Total Petroleum Hydrocarbon (TPH) diesel range organics (DRO) within the former sanitary sewer lagoon at 3 locations. Additionally, due to a hydraulically upgradient gasoline leak (2019 gasoline leak at the truck loading rack), the initially proposed pipeline corridor investigation was postponed.

In September 2021 step-out delineation soil sampling related to the 2019 TPH DRO exceedances was conducted within the former sanitary lagoon along with the postponed soil sampling associated with the pipeline corridor. The results of the step-out delineation sampling and pipeline corridor sampling are discussed and presented in this report.



Investigation Phase II Report Sanitary Lagoon

1.0 Introduction

The Marathon Gallup Refinery (the refinery) is located approximately 17 miles east of Gallup, New Mexico along the north side of Interstate Highway I-40 in McKinley County (see Figure 1). The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The refinery is located on 810 acres. The refinery has been indefinitely idled since August 2020.

The former sanitary lagoon is in the northwest portion of the refinery. Historical assessment activities include the collection of 33 soil samples from 8 soil borings/temporary wells and 15 groundwater samples from 8 temporary wells and 7 existing permanent monitoring wells. Initial investigation activities were conducted in November 2019 and reported to New Mexico Environment Department (NMED) in the February 2020 *Investigation Report Sanitary Lagoon* (DiSorbo, 2020).

This investigation report addresses the sanitary lagoon pipeline corridor and provides analytical data for step-out sample locations within the former sanitary lagoon, as detailed in the NMED-approved *Sanitary Lagoon Investigation Phase II Work Plan*, dated March 31, 2021, revised July 2, 2021; NMED approval with modifications dated April 26, 2021 (DiSorbo, 2020). The remainder of this report is broken into the following sections:

- Section 2 – Background
- Section 3 – Investigation Activities and Objectives
- Section 4 – Investigation Results
- Section 5 – Conclusions and Recommendations



Investigation Phase II Report Sanitary Lagoon

2.0 Background

This section presents background information for the sanitary lagoon including a brief history of operations and prior investigations.

2.1 Sanitary Lagoon Operational History

The sanitary lagoon is a two-cell earthen lagoon that was installed when the facility opened in 1957. Historically both cells were used to store wastewater, with raw sewage entering the southeast corner of the eastern cell via a buried pipeline that runs from the southeast. Historical sewer pipeline maps indicate that the sanitary lagoon received discharge from sanitary facilities located at the laboratory, the change house, the warehouse, and the truck loading rack driver's lounge. In October 2018, the sewer pipe was cut and plugged with concrete approximately 375 feet southeast of the lagoon. Wastewater that formerly discharged to the sanitary lagoon was rerouted to the sanitary treatment pond.

Between 2014 and 2016 two separate ditches, approximately 130 feet and 50 feet in length, were excavated to within 3 feet of the top of the sanitary lagoon pipeline; no additional activity immediately followed excavation of the ditches and those features are still present at the refinery. Figure 2 depicts the locations of the sanitary lagoon, the pipeline, the ditches, and the concrete plug location.

2.2 2019 Investigation and Basis for Continued Investigation

In November 2019, 33 soil samples were collected from 8 soil borings/temporary well locations within the sanitary lagoon. Additionally, 15 groundwater samples were collected from 8 temporary well locations and 7 existing permanent monitoring wells. Results from the 2019 sanitary lagoon investigation were presented to NMED in the aforementioned February 2020 *Investigation Report Sanitary Lagoon* (DiSorbo, 2020).

While the groundwater samples indicated impacts exist in the area surrounding/within the sanitary lagoon, those impacts were not attributed to the sanitary lagoon based on constituent type, localized flow directions, magnitudes of analytical concentrations, and results from nearby groundwater monitoring wells. Groundwater results were discussed in the NMED-approved February 2020 initial investigation report Sections 6 and 7; Section 7.2 provided recommendations for groundwater (DiSorbo, 2020).

Soil results from the 2019 investigation included detection exceedances of Total Petroleum Hydrocarbons (TPH) diesel range organics (DRO) above the applicable screening level at three locations (SL-2, SL-3, and SL-8 as shown on inset of Figure 2). Additional soil delineation sampling was recommended near the three locations with TPH DRO exceedances.

The 2019 investigation work plan included the installation and sampling of 13 trench locations southeast of the lagoon along the former sanitary lagoon pipeline. However, due to a gasoline leak discovered in late 2019 at the upgradient truck loading rack, the pipeline component of the investigation was postponed. This was agreed to by NMED via correspondence dated January 6, 2020 (DiSorbo, 2020).



Investigation Phase II Report Sanitary Lagoon

The work conducted in 2021, as presented in this report, provides the required additional TPH DRO delineation data as well as data for the 13 trench locations along the former sanitary lagoon pipeline.



Investigation Phase II Report Sanitary Lagoon

3.0 Investigation Activities/Objectives and Sample Handling

This section details the soil sampling activities and sampling handling procedures. The work was comprised of two distinct phases of investigation, delineation sampling within the former sanitary lagoon and a pipeline corridor assessment. The investigation was conducted in September 2021.

3.1 Delineation Sampling

Delineation step-out sampling was completed within the sanitary lagoon on September 20, 2021. Six delineation sample locations were selected to bound the three historical locations with TPH DRO exceedances. Historical and delineation sample locations are depicted on Figure 2. Note, due to a TPH DRO detection exceedance at SL-05 (one of the delineation step-out locations), an additional delineation location (SL-05a) was added and sampled on December 17, 2021. Delineation sample results are discussed in Section 4 and presented in Table 1.

The historical TPH DRO exceedances were observed in the 0 to 0.5 feet below ground surface (ft-bgs) interval. Samples were collected from the new locations at 0 to 0.5 ft-bgs and from the bottom of the boring at 2 to 2.5 ft-bgs. A decontaminated hand auger was used for sample collection. Samples were screened with a photoionization detector (PID) and lithologic information was logged following protocol described in the NMED-approved work plan. Field forms for the delineation samples are included in Appendix A.

3.2 Pipeline Corridor Assessment

The work plan proposed “up to 13 trenches, at 50 ft intervals” along the pipeline corridor to expose/trace the pipeline and allow for the collection of soil samples beneath the pipeline. Due to an earthen berm just west of the Marketing Tank Farm inhibiting the ability to reach the pipeline (i.e., pipeline was greater than 20 feet below ground surface), 2 of the proposed 13 locations were removed, resulting in 11 sample locations, as shown on Figure 2.

As further discussed in Section 4.3, originally the pipeline was to be exposed using an air knife and a trench was to be dug at each location for logging and sampling. The trench activities were completed as originally planned at the first two locations (SLP-01 and SLP-10), but the remainder of the samples were either collected in the borehole created by the air knife or by hand digging, in order to protect subsurface utilities in the area.

Of the 11 sample locations, 7 of them were air knifed to expose the pipeline. The remaining 4 locations were within the previously excavated ditches and were hand dug during sample collection efforts. Samples were field screened with a PID and/or flame ionization detector (FID) (depending on moisture content) at roughly 2-foot intervals and the lithology of each location was logged by field personnel. Field forms for these locations are provided in Appendix A. Pipeline corridor sample results are discussed in Section 4 and presented in Tables 2a through 2d.



3.3 Sample Handling

The following procedures were used during collection and screening of samples:

1. New disposable nitrile gloves were used to collect each sample.
2. Samples were transferred from the sample retrieval device (hand auger) directly into clean field screening containers (i.e., new Ziplock[®] baggies). Once bagged, samples were set aside to allow proper volatilization (approximately 5 minutes).
3. Vapors present in the sample bag's headspace were measured by inserting the probe of a PID or FID into a small opening in the bag; a PID was used to screen the soil if the sample had little or no moisture, an FID was used if obvious moisture was present.
4. PID/FID result were recorded on field forms along with the basic geology.
5. Sample labels and documentation were completed as each sample was collected. Immediately after the samples were screened by PID/FID, they were stored in a cooler with ice. Due to short hold times for E. Coli/Total Coliform samples (Method 9223B-2004, 24-hour hold/extraction time), the samples were shipped the same day as sample collection.
6. Chain-of-custody forms were completed after sample collection, prior to the transfer of samples off site, and included within each sample cooler.
7. Individual sample containers were packed to prevent breakage and transported in a sealed cooler with ice. Temperature blanks were included with each shipping container.
8. Each cooler was transported directly to the analytical laboratory by means of a courier sent from the laboratory. Custody seals were signed, dated, and used to seal each cooler in conformance with Environmental Protection Agency (EPA) protocol.



4.0 Investigation Results and Work Plan Deviations

This section presents the results of the pipeline corridor and delineation sampling. Analytical results are provided in the attached tables.

4.1 Delineation Sample Results

Delineation sample results are provided in Table 1. Initially, twelve primary samples and one duplicate sample were collected from six sample locations and analyzed for TPH DRO and oil range organics (ORO). Samples were collected from the 0 to 0.5 ft-bgs interval as well as 2 to 2.5 ft-bgs. Twelve of the thirteen samples had results below the applicable screening levels, however, at location SL-05, the surface soil sample (0 to 0.5 ft-bgs) exceeded applicable screening levels (industrial/occupational and construction) for TPH DRO. An additional sample was added and collected (SL-05a) on December 17, 2021, to adequately bound the elevated TPH concentrations. The sample results from SL-05a were below the applicable screening levels as presented in Table 1.

A figure depicting the TPH DRO analytical results (both historical and step-out delineation sample results) is included as Figure 3.

4.2 Pipeline Corridor Sample Results

Fourteen pipeline corridor samples were collected from 11 sample locations (11 primary samples and 3 duplicate samples) at the interval approximately 2 feet below the top of the sanitary lagoon pipe. Samples were analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), TPH, inorganics, geochemical, and fecal bacteria. Analytical results are provided in Tables 2a, 2b, 2c, and 2d.

Six of the 11 sample locations (SLP-06 through SLP-11) were identified as having hydrocarbon-like staining and/or hydrocarbon-like odor within the borehole and a corresponding elevated PID/FID reading (see field forms in Appendix A). Note that SLP-04 was indicated as having a "slight hydrocarbon-like odor" however the corresponding PID reading was insignificant and analytical results were below applicable limits. The pipeline itself was made of a clay-like material, approximately 8 inches in diameter, and embedded in 1 to 2 feet of sand. Most of the hydrocarbon-like staining was concentrated around the pipeline, within the sand layer.

There were no notable detections of VOCs, SVOCs, or inorganics (see Tables 2a, 2b, and 2c). There were detections of TPH DRO and gasoline range organics above applicable standards at four locations (Table 2d), however, this is to be expected in this area as it is directly down gradient of documented historical hydrocarbon releases (Area of Concern [AOC] 35).

Fecal bacteria specific soil tests indicated three locations with detectable total coliforms and one location with E-coli. Figure 3 depicts the pipeline sample locations and notable analytical detection results.



4.3 Work Plan Deviations and Laboratory Errors

4.3.1 Work Plan Deviations

As previously mentioned, the only notable deviation from the work plan pertained to the trench portion of the investigation. Originally the pipeline was to be exposed using an air knife and a trench was to be dug at each location for logging and sampling. The trench activities were completed as originally planned at the first two locations (SLP-01 and SLP-10). However, during trench activities at the third sample location (SLP-05) a firewater line was discovered but not damaged. To protect subsurface utilities in the area, the decision was made to log, screen, and sample each subsequent location in the borehole created by the air knife. A decontaminated hand auger was used to collect soil aliquots for screening from the air knife boring sidewall and the boring was logged based on the screening aliquots and a visual inspection of the boring sidewall.

Some reporting limits were above their applicable screening levels for several non-detect results. These results are noted in Tables 2a through 2d.

4.3.2 Laboratory Errors

Due to the short hold time associated with the fecal bacteria sampling and certain geochemical parameters, arrangements were made with the analytical laboratory for same-day sample collection and shipment. More specifically, all samples were collected and processed before arrival of the laboratory courier (2:00 pm Mountain Standard Time) to ensure arrival at the laboratory within the 24-hour extraction window. Despite the coordination with the laboratory, some of the pipeline corridor samples with short hold times were extracted outside of the extraction window. The samples results were assessed by data validation experts and flagged accordingly; data validation reports can be found in Appendix B. Laboratory reports are provided in Appendix C.

Additionally, 6 of the 14 SVOC (8270) samples were extracted outside of the 14-day extraction window. These six results were rejected by the data validation team and are flagged with "R" in the applicable table (Table 2b). Although these results were rejected, re-sampling is not warranted for the following reasons:

- VOCs and inorganics were extracted within the appropriate timeframe and were not detected at levels of concern from any of the locations with rejected SVOC data
- SVOC constituents detected at low levels (below screening levels but with detection results) for locations not rejected were still detected in the rejected data sets at similarly low levels



Investigation Phase II Report Sanitary Lagoon

5.0 Conclusions and Recommendations

The objectives of this investigation were to further delineate and adequately bound TPH DRO detections within the former sanitary lagoon and to determine if constituents are present along the sanitary lagoon pipeline corridor.

Delineation sample results within the former sanitary lagoon achieved the intended objective to adequately bound the previous TPH DRO detections. Analytical results are provided in Table 1 and depicted on Figure 3. At this time no additional sampling is proposed within the former sanitary lagoon.

Along the pipeline corridor, sample results indicate TPH detection exceedances hydraulically upgradient (to the southeast) of the concrete plug. The shallow subsurface soils within the region are primarily clay-like and of low permeability. It is likely that the sand layer used to embed the sanitary lagoon pipeline acted as a conduit for hydrocarbon migration from documented historical releases (e.g., the 2019 gasoline leak to the north of the truck loading rack).

Soil within this area is known to have hydrocarbon contamination as presented in the report pertaining to the laser induced fluorescence (LIF) results (Trihydro, 2021a). Additional investigation into soil near this area is proposed in the AOC 35 investigation work plan (Trihydro, 2021b). Note that the AOC 35 work plan is currently undergoing revisions based on NMED comments received in October 2021. The modified investigation workplan is due back to NMED by March 31, 2022. At this time no additional soil investigation work is proposed based on the former sanitary lagoon pipeline and pipeline corridor. Soil in this area will be investigated further through the AOC 35 investigation which seeks to correlate the LIF investigation results with analytical concentrations. The approximate boundary of AOC 35 is depicted on Figure 2.



Investigation Phase II Report Sanitary Lagoon

6.0 References

DiSorbo. 2020. Investigation Report Sanitary Lagoon, Marathon Petroleum Company, Gallup Refinery.

Trihydro. 2021a. Marketing Tank Farm Laser-Induced Fluorescence/Hydraulic Profiling Investigation Report, Marathon Petroleum Corporation, Gallup Refining Division.

Trihydro. 2021b. Revised Investigation Work Plan No. 2 Area of Concern 35, Western Refining Southwest Inc., Marathon Gallup Refinery.



Investigation Phase II Report Sanitary Lagoon

Figures



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
 Sources: Esri, Garmin, USGS, NPS

M:\TONM\AR\GIS\GALLUP\MAPPING\SANITARY\SEWER\12 DECEMBER 2021\FIG1_GENERALSITELOC.MXD

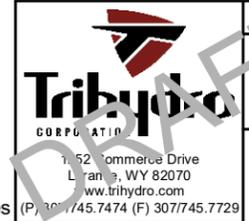
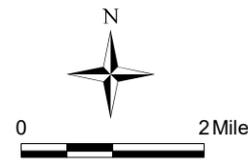
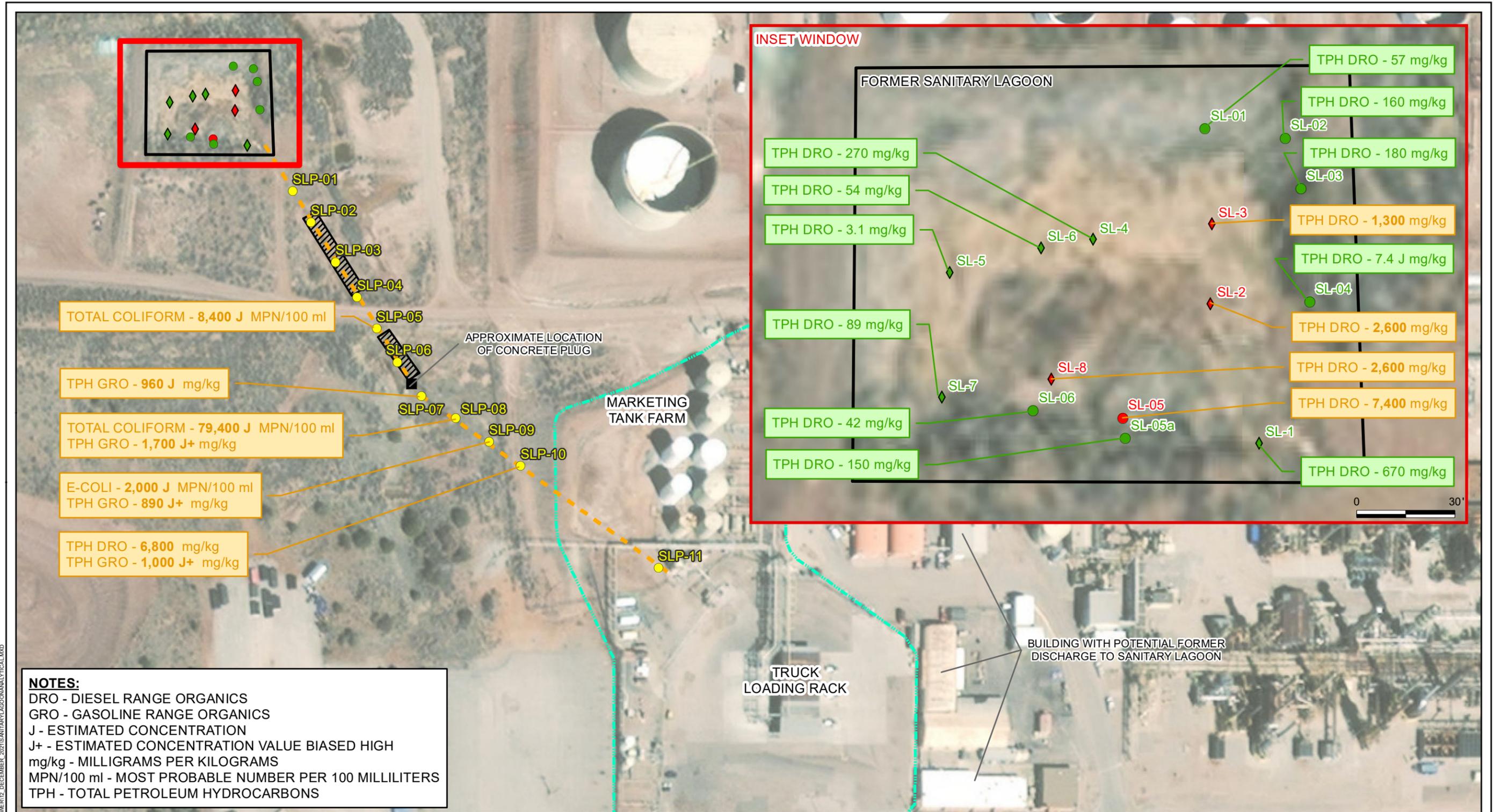


FIGURE 1

SITE LOCATION MAP

**WESTERN REFINING SOUTHWEST, LLC.
 D/B/A MARATHON GALLUP REFINERY
 GALLUP, NEW MEXICO**

Drawn By: JDH | Checked By: BM | Scale: 1" = 2 miles | Date: 1/4/22 | File: FIG1_GeneralSiteLoc.mxd



TOTAL COLIFORM - 8,400 J MPN/100 ml

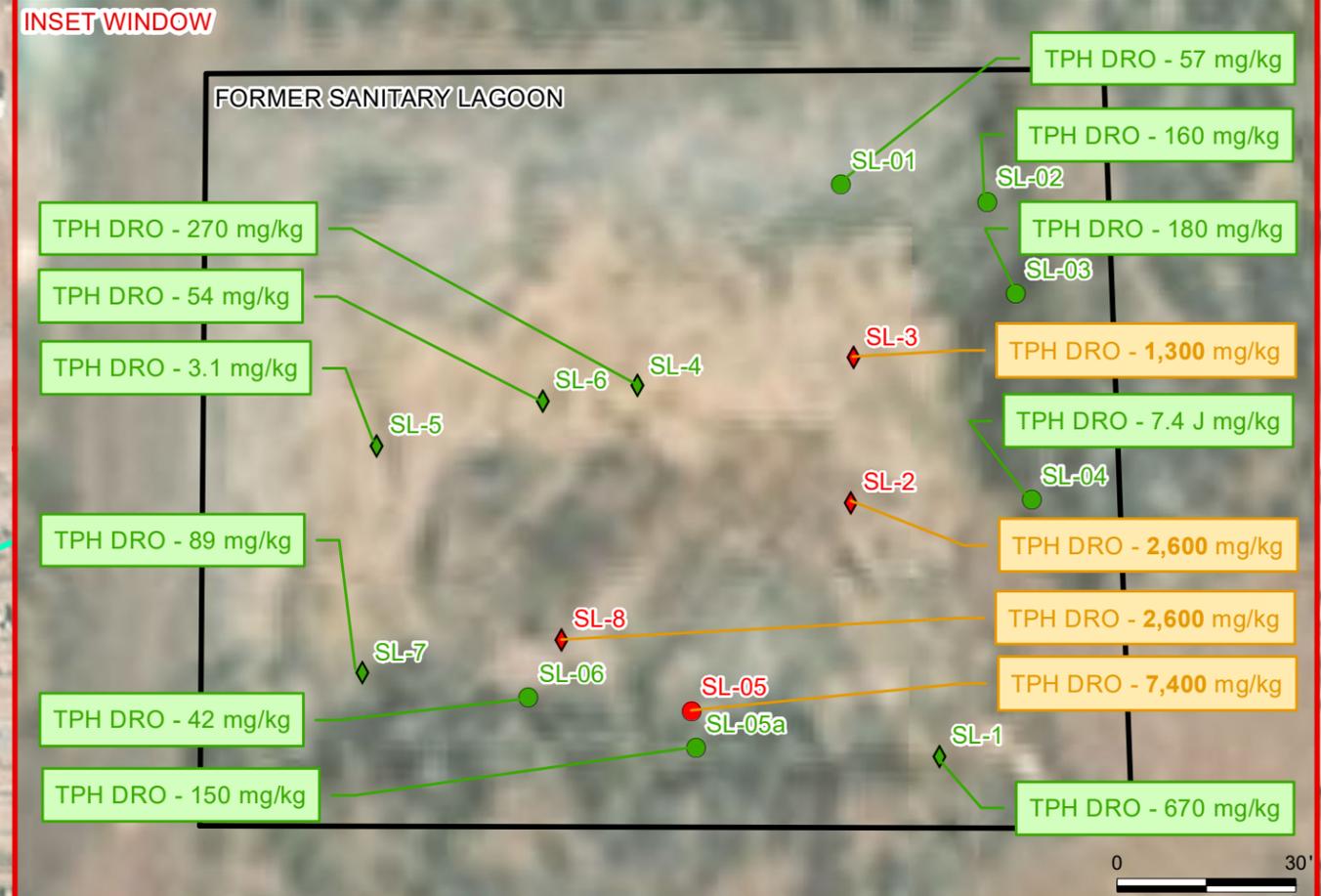
TPH GRO - 960 J mg/kg

TOTAL COLIFORM - 79,400 J MPN/100 ml
TPH GRO - 1,700 J+ mg/kg

E-COLI - 2,000 J MPN/100 ml
TPH GRO - 890 J+ mg/kg

TPH DRO - 6,800 mg/kg
TPH GRO - 1,000 J+ mg/kg

NOTES:
 DRO - DIESEL RANGE ORGANICS
 GRO - GASOLINE RANGE ORGANICS
 J - ESTIMATED CONCENTRATION
 J+ - ESTIMATED CONCENTRATION VALUE BIASED HIGH
 mg/kg - MILLIGRAMS PER KILOGRAMS
 MPN/100 ml - MOST PROBABLE NUMBER PER 100 MILLILITERS
 TPH - TOTAL PETROLEUM HYDROCARBONS



EXPLANATION

- ◆ HISTORICAL SAMPLE LOCATION - NO IMPACTS
- ◆ HISTORICAL SAMPLE LOCATION - TPH DRO IMPACTS
- 2021 STEP OUT DELINEATION SAMPLE LOCATION - NO IMPACTS
- 2021 STEP OUT DELINEATION SAMPLE LOCATION - TPH DRO IMPACTS
- 2021 PIPELINE CORRIDOR SAMPLE LOCATION

- - - APPROXIMATE LOCATION OF SANITARY LAGOON PIPELINE
- ▭ APPROXIMATE BOUNDARY OF AOC 35
- ▨ APPROXIMATE PREVIOUSLY EXCAVATED DITCH
- ▭ APPROXIMATE SANITARY LAGOON BOUNDARY



FIGURE 3
SANITARY LAGOON INVESTIGATION PHASE II
NOTABLE ANALYTICAL RESULTS
WESTERN REFINING SOUTHWEST, LLC.
D/B/A MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: JDH | Checked By: BM | Scale: 1" = 120' | Date: 2/9/22 | File: SanitaryLagoonAnalytical.mxd

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Investigation Phase II Report Sanitary Lagoon

Tables

**TABLE 1. SANITARY LAGOON SOIL DELINEATION STEP-OUT SAMPLE RESULTS, TPH
WESTERN REFINING SOUTHWEST, LLC.
D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO**

Location ID	Date Sampled	Sample Depth (ft-bgs)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
SL-01	9/20/2021	0.5	57	ND(49)
SL-01	9/20/2021	2.5	ND(9)	ND(45)
SL-02	9/20/2021	0.5	160	81
SL-02	9/20/2021	2.5	ND(9.6)	ND(48)
SL-03	9/20/2021	0.5	180	91
SL-03	9/20/2021	2.5	13	ND(47)
SL-04	9/20/2021	0.5	7.4 J	ND(48)
SL-04	9/20/2021	2.5	170	ND(47)
SL-05	9/20/2021	0.5	7400	2500
SL-05	9/20/2021	2.5	8.5 J	ND(49)
SL-05 Dup	9/20/2021	2.5	8.6 J	ND(47)
SL-05a	12/17/2021	0.5	150	120
SL-06	9/20/2021	0.5	42	ND(48)
SL-06	9/20/2021	2.5	290	63
NMED Residential Soil Screening Level (exceedances in bold text)			1000	1000
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			3000	3800
<u>NMED Construction Worker Soil Screening Level (0-10 ft-bgs)</u> (exceedances underlined):			<u>3000</u>	<u>3800</u>

Notes:

DRO - diesel range organics
Dup - blind duplicate sample
ft-bgs - feet below ground surface
J - estimated concentration
ND - not detected (method detection limit in parentheses)
NMED - New Mexico Environment Department
mg/kg - milligrams per kilogram
ORO - oil range organics
TPH - total petroleum hydrocarbons

Screening level source:

NMED Risk Assessment Guidance for Site Investigations and Remediation (February 2019) - Table 6-2

TABLE 2a. SANITARY LAGOON PIPELINE CORRIDOR SAMPLE RESULTS, VOCs
WESTERN REFINING SOUTHWEST, LLC.
D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Sample Depth (ft-bgs)	1,1,1-Trichloroethane (mg/kg)	1,1-Dichloroethane (mg/kg)	1,2-Dibromoethane (mg/kg)	1,2-Dichloroethane (mg/kg)	1,4-Dioxane (mg/kg)	2-Butanone (mg/kg)	Benzene (mg/kg)	Carbon Disulfide (mg/kg)	Chlorobenzene (mg/kg)
SLP-01	09/21/21	7.5	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.034)	ND(0.34)	ND(0.34)	ND(0.017)	ND(0.34)	ND(0.034)
SLP-02	09/23/21	3.5	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.28)	ND(0.28)	ND(0.014)	ND(0.28)	ND(0.028)
SLP-02 Dup	09/23/21	3.5	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.27)	ND(0.27)	ND(0.014)	ND(0.27)	ND(0.027)
SLP-03	09/21/21	3	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.25)	ND(0.25)	ND(0.013)	ND(0.25)	ND(0.025)
SLP-03 Dup	09/21/21	3	ND(0.14)	ND(0.14)	ND(0.14)	ND(0.14)	ND(1.4)	ND(1.4)	ND(0.072)	ND(1.4)	ND(0.14)
SLP-04	09/23/21	4.5	ND(0.028)	0.014 J	ND(0.028)	ND(0.028)	ND(0.28)	0.24 J	0.72	ND(0.28)	ND(0.028)
SLP-05	09/22/21	11.5	ND(0.21)	ND(0.21)	ND(0.21)	ND(0.51)	ND(3.1)	ND(2.6)	0.46	ND(2.6)	ND(0.21)
SLP-06	09/22/21	4	ND(0.44)	ND(0.44)	ND(0.44)	ND(0.44)	ND(4.4)	ND(4.4)	1.2	ND(4.4)	ND(0.44)
SLP-06 Dup	09/22/21	4	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.54)	ND(3.3)	ND(2.7)	1.9	ND(2.7)	ND(0.22)
SLP-07	09/22/21	8	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.55)	ND(3.3)	ND(2.8)	2.6	ND(2.8)	ND(0.22)
SLP-08	09/22/21	5.33	ND(0.19)	ND(0.19)	ND(0.19)	0.25 J	ND(2.9)	ND(2.4)	9.5	ND(2.4)	0.15 J
SLP-09	09/22/21	7	ND(0.23)	ND(0.23)	ND(0.23)	ND(0.57)	ND(3.4)	ND(2.8)	6.9	ND(2.8)	ND(0.23)
SLP-10	09/21/21	9.5	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	ND(14)	ND(14)	9.7	ND(14)	ND(1.4)
SLP-11	09/23/21	8.5	ND(0.24)	ND(0.24)	ND(0.24)	0.12 J	ND(2.4)	ND(2.4)	1.1	ND(2.4)	0.056 J
NMED Residential Soil Screening Level (exceedances in bold text)			14374.9	78.6	0.7	8.3	53.3	37418.2	17.8	1554.2	378.4
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			72532.2	383.3	3.3	40.7	257.0	410979.6	87.2	8541.0	2157.4
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			<u>13601.9</u>	<u>1817.1</u>	<u>16.3</u>	<u>53.8</u>	<u>1880.0</u>	<u>91656.7</u>	<u>141.9</u>	<u>1621.5</u>	<u>411.6</u>

Location ID	Date Sampled	Sample Depth (ft-bgs)	Chloroform (mg/kg)	Ethylbenzene (mg/kg)	MTBE (mg/kg)	Styrene (mg/kg)	Tetrachloroethene (mg/kg)	Toluene (mg/kg)	Trichloroethylene (mg/kg)	Xylenes, Total (mg/kg)
SLP-01	09/21/21	7.5	ND(0.034)	--	ND(0.034)	ND(0.034)	--	ND(0.034)	ND(0.034)	ND(0.067)
SLP-02	09/23/21	3.5	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.028)	ND(0.057)
SLP-02 Dup	09/23/21	3.5	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.027)	ND(0.054)
SLP-03	09/21/21	3	ND(0.025)	--	ND(0.025)	ND(0.025)	--	ND(0.025)	ND(0.025)	0.019 J
SLP-03 Dup	09/21/21	3	ND(0.14)	--	ND(0.14)	ND(0.14)	--	ND(0.14)	ND(0.14)	ND(0.29)
SLP-04	09/23/21	4.5	ND(0.028)	0.061	0.021 J	ND(0.028)	ND(0.028)	0.0095 J	ND(0.028)	ND(0.056)
SLP-05	09/22/21	11.5	ND(0.21)	0.29	ND(0.41)	ND(0.21)	ND(0.21)	ND(0.21)	ND(0.21)	0.67
SLP-06	09/22/21	4	ND(0.44)	0.9 J	ND(0.44)	ND(0.44)	ND(0.44)	0.22 J	ND(0.44)	2.6 J
SLP-06 Dup	09/22/21	4	ND(0.22)	2.3 J	ND(0.43)	ND(0.22)	ND(0.22)	0.51 J	ND(0.22)	6.4 J
SLP-07	09/22/21	8	ND(0.22)	5.9	ND(0.44)	ND(0.22)	ND(0.22)	5.8	ND(0.22)	14
SLP-08	09/22/21	5.33	ND(0.19)	19	ND(0.39)	ND(0.19)	ND(0.19)	33	ND(0.19)	97
SLP-09	09/22/21	7	ND(0.23)	22	ND(0.45)	ND(0.23)	ND(0.23)	17	ND(0.23)	59
SLP-10	09/21/21	9.5	ND(1.4)	--	ND(1.4)	ND(1.4)	--	1.5	ND(1.4)	26
SLP-11	09/23/21	8.5	ND(0.24)	1.9	ND(0.24)	ND(0.24)	ND(0.24)	5.4	ND(0.24)	9
NMED Residential Soil Screening Level (exceedances in bold text)			5.9	75.1	974.8	7264.5	110.8	5228.4	6.8	870.8
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			28.7	367.6	4817.9	51298.2	628.8	61340.2	36.5	4275.3
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			<u>133.9</u>	<u>1771.9</u>	<u>24230.7</u>	<u>10166.3</u>	<u>119.9</u>	<u>14041.3</u>	<u>6.9</u>	<u>798.3</u>

Notes:

- Dup - blind duplicate sample
- ft-bgs - feet below ground surface
- J - estimated concentration
- mg/kg - milligrams per kilogram
- MTBE - Methyl tert-Butyl Ether
- ND - not detected (method detection limit in parentheses)
- NMED - New Mexico Environment Department
- VOCs - volatile organic compounds

Screening level source:
NMED Risk Assessment Guidance for Site Investigations and Remediation (February 2019) - Table A-1

TABLE 2b. SANITARY LAGOON PIPELINE CORRIDOR SAMPLE RESULTS, SVOCs
 WESTERN REFINING SOUTHWEST, LLC.
 D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Sample Depth (ft-bgs)	1,2,4-Trichlorobenzene (mg/kg)	1,2-Dichlorobenzene (mg/kg)	1,3-Dichlorobenzene (mg/kg)	1,4-Dichlorobenzene (mg/kg)	1-Methylnaphthalene (mg/kg)	Bis(2-chloroisopropyl) ether (mg/kg)	b-Chloronaphthalene (mg/kg)	2-Chlorophenol (mg/kg)
SLP-01	09/21/21	7.5	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R
SLP-02	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-02 Dup	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-03	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R
SLP-03 Dup	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R
SLP-04	09/23/21	4.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-05	09/22/21	11.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-06	09/22/21	4	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-06 Dup	09/22/21	4	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-07	09/22/21	8	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	2.15 J	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-08	09/22/21	5.33	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	4.73 J+	ND(0.333) R	ND(0.0333)	ND(0.333) R
SLP-09	09/22/21	7	ND(0.333) R	ND(0.333)	ND(0.333)	ND(0.333)	3.3 J+	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-10	09/21/21	9.5	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	7.37 J-	ND(0.333) R	ND(0.0333) R	ND(0.333) R
SLP-11	09/23/21	8.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	0.832	ND(0.333)	ND(0.0333)	ND(0.333)
NMED Residential Soil Screening Level (exceedances in bold text)			82.9	2149.6	-	1290.0	171.6	99.3	6257.1	391.1
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			422.9	12967.5	-	6730.0	813.0	519.1	103822.2	6488.9
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			<u>79.1</u>	<u>2495.8</u>	-	<u>24800.0</u>	<u>6058.7</u>	<u>3539.4</u>	<u>28315.2</u>	<u>1769.7</u>

Location ID	Date Sampled	Sample Depth (ft-bgs)	2,4,6-Trichlorophenol (mg/kg)	2,4-Dichlorophenol (mg/kg)	2,4-Dimethylphenol (mg/kg)	2,4-Dinitrophenol (mg/kg)	2,4-Dinitrotoluene (mg/kg)	2,6-Dinitrotoluene (mg/kg)	2,4-Dinitrophenol (mg/kg)	4-Bromophenyl phenyl ether (mg/kg)
SLP-01	09/21/21	7.5	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R
SLP-02	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
SLP-02 Dup	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
SLP-03	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R
SLP-03 Dup	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R
SLP-04	09/23/21	4.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
SLP-05	09/22/21	11.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
SLP-06	09/22/21	4	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
SLP-06 Dup	09/22/21	4	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
SLP-07	09/22/21	8	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
SLP-08	09/22/21	5.33	ND(0.333)	ND(0.333) R	ND(0.333) R	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
SLP-09	09/22/21	7	ND(0.333)	ND(0.333) R	ND(0.333) R	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
SLP-10	09/21/21	9.5	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R
SLP-11	09/23/21	8.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)
NMED Residential Soil Screening Level (exceedances in bold text)			61.6	184.9	1232.7	123.3	17.1	3.6	123.3	-
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			916.3	2748.8	18325.0	1832.5	82.3	17.2	1832.5	-
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			<u>269.1</u>	<u>807.2</u>	<u>5381.2</u>	<u>538.1</u>	<u>535.6</u>	<u>80.9</u>	<u>538.1</u>	-

TABLE 2b. SANITARY LAGOON PIPELINE CORRIDOR SAMPLE RESULTS, SVOCs
WESTERN REFINING SOUTHWEST, LLC.
D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Sample Depth (ft-bgs)	2-Methylnaphthalene (mg/kg)	O-Cresol (mg/kg)	2-Nitrophenol (mg/kg)	3,3-Dichlorobenzidine (mg/kg)	3,4-Methyl phenol (mg/kg)	Anthracene (mg/kg)	Benzidine (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(g,h,i)perylene (mg/kg)
SLP-01	09/21/21	7.5	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(1.67) R	ND(0.0333) R	ND(0.0333) R	ND(0.0333) R	ND(0.0333) R
SLP-02	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
SLP-02 Dup	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
SLP-03	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(1.67) R	ND(0.0333) R	ND(0.0333) R	ND(0.0333) R	ND(0.0333) R
SLP-03 Dup	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(1.67) R	ND(0.0333) R	ND(0.0333) R	ND(0.0333) R	ND(0.0333) R
SLP-04	09/23/21	4.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
SLP-05	09/22/21	11.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
SLP-06	09/22/21	4	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
SLP-06 Dup	09/22/21	4	0.333	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
SLP-07	09/22/21	8	3.52 J	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
SLP-08	09/22/21	5.33	8.05 J+	ND(0.333) R	ND(0.333) R	ND(0.333)	ND(0.333) R	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
SLP-09	09/22/21	7	4.96 J+	ND(0.333)	ND(0.333) R	ND(0.333)	ND(0.333)	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
SLP-10	09/21/21	9.5	5.71 J+	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(1.67) R	0.0406 J	ND(0.0333) R	ND(0.0333) R	ND(0.0333) R
SLP-11	09/23/21	8.5	1.17	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(1.67)	ND(0.0333)	ND(0.0333)	ND(0.0333)	ND(0.0333)
NMED Residential Soil Screening Level (exceedances in bold text)			231.8	-	-	11.8	-	17384.8	185.0	1.5	1.1	1.5	-
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			3368.0	-	-	57.0	-	252597.3	2750.0	32.3	23.6	32.3	-
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			<u>1004.0</u>	-	-	<u>409.6</u>	-	<u>75301.4</u>	<u>807.0</u>	<u>240.0</u>	<u>173.0</u>	<u>240.0</u>	-

Location ID	Date Sampled	Sample Depth (ft-bgs)	4-Chloro-3-methylphenol (mg/kg)	4-Chlorophenyl phenyl ether (mg/kg)	4-Nitrophenol (mg/kg)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	ethylhexyl)phthalate (mg/kg)	Butyl Benzyl Phthalate (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h)anthracene (mg/kg)	Diethyl phthalate (mg/kg)	Dimethyl Phthalate (mg/kg)
SLP-01	09/21/21	7.5	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R
SLP-02	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-02 Dup	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-03	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R
SLP-03 Dup	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R
SLP-04	09/23/21	4.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-05	09/22/21	11.5	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-06	09/22/21	4	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-06 Dup	09/22/21	4	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-07	09/22/21	8	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-08	09/22/21	5.33	ND(0.333) R	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-09	09/22/21	7	ND(0.333) R	ND(0.333)	ND(0.333)	0.274	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-10	09/21/21	9.5	ND(0.333) R	ND(0.333) R	ND(0.333) R	0.472 J	ND(0.0333) R	ND(0.333) R	ND(0.333) R	0.0406 J	ND(0.0333) R	ND(0.333) R	ND(0.333) R
SLP-11	09/23/21	8.5	ND(0.333)	ND(0.333)	ND(0.333)	0.095	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.0333)	ND(0.333)	ND(0.333)
NMED Residential Soil Screening Level (exceedances in bold text)			-	-	-	3477.0	-	380.4	-	153.1	0.2	49307.7	61634.6
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			-	-	-	50519.5	-	1832.5	-	3229.4	3.2	733000.7	916250.9
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			-	-	-	<u>15060.3</u>	-	<u>5381.2</u>	-	<u>23126.4</u>	<u>24.0</u>	<u>215249.9</u>	<u>269062.4</u>

TABLE 2b. SANITARY LAGOON PIPELINE CORRIDOR SAMPLE RESULTS, SVOCs
WESTERN REFINING SOUTHWEST, LLC.
D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Sample Depth (ft-bgs)	Benzo(k)fluoranthene (mg/kg)	Bis(2-chloroethoxy)methane (mg/kg)	Bis(2-chloroisopropyl) ether (mg/kg)	Fluorene (mg/kg)	Hexachlorobenzene (mg/kg)	Hexachlorobutadiene (mg/kg)	Hexachlorocyclopentadiene (mg/kg)	Hexachloroethane (mg/kg)	Indeno(1,2,3-c,d)pyrene (mg/kg)	Isophorone (mg/kg)	Naphthalene (mg/kg)	Nitrobenzene (mg/kg)
SLP-01	09/21/21	7.5	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R
SLP-02	09/23/21	3.5	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-02 Dup	09/23/21	3.5	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-03	09/21/21	3	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R
SLP-03 Dup	09/21/21	3	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R
SLP-04	09/23/21	4.5	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-05	09/22/21	11.5	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.0333)	ND(0.333)
SLP-06	09/22/21	4	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	0.0666 J	ND(0.333)
SLP-06 Dup	09/22/21	4	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	0.153 J	ND(0.333)
SLP-07	09/22/21	8	ND(0.0333)	ND(0.333)	ND(0.333)	0.124	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	1.31	ND(0.333)
SLP-08	09/22/21	5.33	ND(0.0333)	ND(0.333) R	ND(0.333) R	0.561	ND(0.333)	ND(0.333) R	ND(0.333)	ND(0.333) R	ND(0.0333)	ND(0.333) R	5.93 J+	ND(0.333) R
SLP-09	09/22/21	7	ND(0.0333)	ND(0.333) R	ND(0.333)	0.469	ND(0.333)	ND(0.333) R	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333) R	2.74 J+	ND(0.333) R
SLP-10	09/21/21	9.5	ND(0.0333) R	ND(0.333) R	ND(0.333) R	0.786 J	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	7.43 J+	ND(0.333) R
SLP-11	09/23/21	8.5	ND(0.0333)	ND(0.333)	ND(0.333)	0.109	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	0.419	ND(0.333)
NMED Residential Soil Screening Level (exceedances in bold text)			15.3	-	99.3	2318.0	3.3	61.6	2.3	133.1	1.5	5605.8	1160.0	60.4
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			322.9	-	519.1	33679.6	733.0	52.1	5491.9	641.4	32.3	27005.3	16800.0	293.3
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			<u>2312.6</u>	-	<u>3539.4</u>	<u>10040.2</u>	<u>116.7</u>	<u>269.1</u>	<u>867.0</u>	<u>188.2</u>	<u>239.7</u>	<u>53658.3</u>	<u>5020.0</u>	<u>352.5</u>

Location ID	Date Sampled	Sample Depth (ft-bgs)	Di-n-butyl phthalate (mg/kg)	Di-n-octyl phthalate (mg/kg)	Fluoranthene (mg/kg)	N-Nitrosodimethylamine (mg/kg)	N-Nitrosodipropylamine (mg/kg)	N-Nitrosodiphenylamine (mg/kg)	Pentachloropheno I (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)	Pyridine (mg/kg)	Quinoline (mg/kg)
SLP-01	09/21/21	7.5	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R
SLP-02	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-02 Dup	09/23/21	3.5	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-03	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R
SLP-03 Dup	09/21/21	3	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R
SLP-04	09/23/21	4.5	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-05	09/22/21	11.5	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-06	09/22/21	4	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-06 Dup	09/22/21	4	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)
SLP-07	09/22/21	8	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	0.0571	ND(0.333)	ND(0.333)
SLP-08	09/22/21	5.33	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333) R	ND(0.333) R	ND(0.333)	ND(0.333)	0.794	ND(0.333) R	0.223	ND(0.333) R	ND(0.333) R
SLP-09	09/22/21	7	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	0.767	ND(0.333)	0.125	ND(0.333)	ND(0.333) R
SLP-10	09/21/21	9.5	ND(0.333) R	ND(0.333) R	ND(0.0333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	ND(0.333) R	1.66 J	ND(0.333) R	0.348 J	ND(0.333) R	ND(0.333) R
SLP-11	09/23/21	8.5	ND(0.333)	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)	ND(0.333)	ND(0.333)	0.22	ND(0.333)	ND(0.0333)	ND(0.333)	ND(0.333)
NMED Residential Soil Screening Level (exceedances in bold text)			6163.5	-	2318.0	0.5	-	1086.8	9.9	1738.5	18490.1	1738.5	-	-
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			91625.1	-	33679.6	7.3	-	5235.6	44.5	25259.7	274861.3	25259.7	-	-
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			<u>26906.2</u>	-	<u>10040.2</u>	<u>2.1</u>	-	<u>37855.1</u>	<u>346.2</u>	<u>7530.1</u>	<u>77383.6</u>	<u>7530.1</u>	-	-

Notes:
Dup - blind duplicate sample
ft-bgs - feet below ground surface
J - estimated concentration
J+ - value biased high
J- - value biased low
mg/kg - milligrams per kilogram
ND - not detected (method detection limit in parentheses)
NMED - New Mexico Environment Department
R - data rejected
SVOC - semivolatile organic compound

Screening level source: NMED Risk Assessment Guidance for Site Investigations and Remediation (February 2019) - Table A-1

TABLE 2c. SANITARY LAGOON PIPELINE CORRIDOR SAMPLE RESULTS, INORGANICS
WESTERN REFINING SOUTHWEST, LLC.
D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Sample Depth (ft-bgs)	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Dissolved (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)	Iron, Total (mg/kg)
SLP-01	09/21/21	7.5	ND(2.5)	ND(2.5)	78	1.1	ND(0.099)	ND(1)	9.2	4.4	16000
SLP-02	09/23/21	3.5	ND(2.6)	ND(2.6)	120	1.2	ND(0.1)	ND(2)	12	5.6	19000
SLP-02 Dup	09/23/21	3.5	ND(2.5)	ND(2.5)	140	1	ND(0.098)	ND(2)	8.2	4.6	14000
SLP-03	09/21/21	3	ND(2.5)	ND(2.5)	150	0.87	ND(0.1)	ND(1)	8.9	3.9	15000
SLP-03 Dup	09/21/21	3	ND(2.4)	ND(2.4)	150	0.83	ND(0.097)	ND(1)	8.2	3.8	14000
SLP-04	09/23/21	4.5	ND(2.4)	ND(2.4)	240	0.76	ND(0.097)	ND(2)	8	3.4	13000
SLP-05	09/22/21	11.5	ND(2.5)	ND(2.5)	220	0.79	ND(0.098)	ND(2) UJ	6.6	3.7	12000
SLP-06	09/22/21	4	ND(2.6)	ND(2.6)	420	0.8	ND(0.1)	ND(2) UJ	7.8	3.8	13000
SLP-06 Dup	09/22/21	4	ND(2.4)	1.4 J	430	0.77	ND(0.096)	ND(2) R	5.8	3.4	10000
SLP-07	09/22/21	8	ND(2.5)	ND(2.5)	410	0.66	ND(0.099)	ND(2) UJ	6.4	3.3	11000
SLP-08	09/22/21	5.33	ND(2.4)	1.4 J	380	0.53	ND(0.097)	ND(2) UJ	4.3	2.5	8500
SLP-09	09/22/21	7	ND(2.5)	ND(2.5)	390	0.81	ND(0.098)	ND(2) UJ	5.9	3.3	12000
SLP-10	09/21/21	9.5	ND(2.4)	ND(2.4)	440	0.56	ND(0.097)	ND(1)	6.6	3.2	11000
SLP-11	09/23/21	8.5	ND(13)	ND(13)	810	0.56 J	ND(0.52)	ND(2)	3.7	2.6	8000
NMED Residential Soil Screening Level (exceedances in bold text)			31.3	7.1	15558.1	156.2	70.5	3.1	96.6	23.4	54750.0
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			519.1	35.9	254671.1	2583.2	1107.9	72.1	504.6	388.4	908444.4
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			<u>141.6</u>	<u>41.2</u>	<u>4391.7</u>	<u>148.1</u>	<u>72.1</u>	<u>66.9</u>	<u>133.7</u>	<u>36.7</u>	<u>247757.6</u>

Location ID	Date Sampled	Sample Depth (ft-bgs)	Lead, Total (mg/kg)	Manganese, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
SLP-01	09/21/21	7.5	2.1 J-	350	0.0029 J	9.4	ND(2.5)	ND(0.25)	16	13
SLP-02	09/23/21	3.5	2.3	400	0.0038 J	11	ND(2.6)	ND(0.26)	20	15
SLP-02 Dup	09/23/21	3.5	3.5	460	0.0089 J	8.4	ND(2.5)	ND(0.25)	14	12
SLP-03	09/21/21	3	1.9 J-	360	0.0031 J	8.4	ND(2.5)	ND(0.25)	16	11
SLP-03 Dup	09/21/21	3	2.4 J-	380	ND(0.033)	8.9	ND(2.4)	ND(0.24)	16	11
SLP-04	09/23/21	4.5	1.4	350	ND(0.031)	6.7	ND(2.4)	ND(0.24)	17	11
SLP-05	09/22/21	11.5	3	300	ND(0.035)	7.2	ND(2.5)	ND(0.25)	14	11
SLP-06	09/22/21	4	2.4	510	0.0028 J	7.3	ND(2.6)	ND(0.26)	16	12
SLP-06 Dup	09/22/21	4	3	460	0.0032 J	6.9	ND(2.4)	ND(0.24)	12	10
SLP-07	09/22/21	8	3.7	490	0.0035 J	6.2	ND(2.5)	ND(0.25)	16	11
SLP-08	09/22/21	5.33	3.6	330	ND(0.034)	4.6	ND(2.4)	ND(0.24)	14	7.9
SLP-09	09/22/21	7	2.4	310	ND(0.031)	6.6	ND(2.5)	ND(0.25)	12	9.7
SLP-10	09/21/21	9.5	2 J-	750	0.0045 J	6	ND(2.4)	ND(0.24)	15	12
SLP-11	09/23/21	8.5	4.4	2400	0.015 J	3.9	ND(13)	1.3	16	8.5 J
NMED Residential Soil Screening Level (exceedances in bold text)			-	10547.7	23.8	1559.6	391.1	391.1	393.9	23464.3
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			-	160183.1	112.1	25681.9	6488.8	6488.9	6525.0	389333.3
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			-	<u>463.8</u>	<u>20.7</u>	<u>753.1</u>	<u>1753.1</u>	<u>1769.7</u>	<u>614.1</u>	<u>106181.8</u>

Notes:

- Dup - blind duplicate sample
- ft-bgs - feet below ground surface
- J - estimated concentration
- J- - value biased low
- mg/kg - milligrams per kilogram
- ND - not detected (method detection limit in parentheses)
- NMED - New Mexico Environment Department
- R - data rejected
- UJ - estimated reporting limit

Screening level source:
NMED Risk Assessment Guidance for Site Investigations and Remediation (February 2019) - Table A-1

TABLE 2d. SANITARY LAGOON PIPELINE CORRIDOR SAMPLE RESULTS, GENERAL
 WESTERN REFINING SOUTHWEST, LLC.
 D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Sample Depth (ft-bgs)	Bacteria, Total Coliform (MPN/100ml)	E-Coli (MPN/100ml)	Chloride (mg/kg)	Cyanide, Total (mg/kg)	Fluoride, Total (mg/kg)	Nitrogen, Nitrate (mg/kg)
SLP-01	09/21/21	7.5	ND(0) UJ	--	86	ND(0.25)	14	ND(1.5) R
SLP-02	09/23/21	3.5	ND(0) UJ	ND(0) UJ	260	ND(0.25)	3.7	ND(1.5) R
SLP-02 Dup	09/23/21	3.5	ND(0) UJ	ND(0) UJ	210	ND(0.25)	3.8	ND(1.5) R
SLP-03	09/21/21	3	ND(0) UJ	--	87	ND(0.25)	6.9	ND(1.5) R
SLP-03 Dup	09/21/21	3	ND(0)	--	91	ND(0.25)	7.7	ND(1.5) R
SLP-04	09/23/21	4.5	ND(0) UJ	ND(0) UJ	120	ND(0.25)	9	ND(1.5) R
SLP-05	09/22/21	11.5	8400 J	ND(0) UJ	94	ND(0.25)	2.9	ND(1.5) R
SLP-06	09/22/21	4	ND(0) UJ	ND(0) UJ	88	ND(0.25)	4.4	ND(1.5) R
SLP-06 Dup	09/22/21	4	1000 J	ND(0) UJ	93	ND(0.25) UJ	4.7	ND(1.5) R
SLP-07	09/22/21	8	ND(0) UJ	ND(0) UJ	37	ND(0.25)	4	ND(1.5) R
SLP-08	09/22/21	5.33	79400 J	ND(0) UJ	49	ND(0.25)	3.4	ND(1.5) R
SLP-09	09/22/21	7	ND(0) UJ	2000 J	32	ND(0.25) R	4	ND(1.5) R
SLP-10	09/21/21	9.5	ND(0)	--	23	ND(0.25)	1.7	ND(1.5) R
SLP-11	09/23/21	8.5	ND(0) UJ	ND(0) UJ	26	ND(0.25)	1.8	ND(1.5) R
NMED Residential Soil Screening Level (exceedances in bold text)			-	-	12000000	11.2	4690	125000
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			-	-	58400000	63.3	77800	2080000
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			-	-	<u>15900000</u>	<u>12.1</u>	<u>18100</u>	<u>566000</u>

Location ID	Date Sampled	Sample Depth (ft-bgs)	Nitrogen, Nitrite (mg/kg)	Sulfate (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Oil Range Organics (mg/kg)
SLP-01	09/21/21	7.5	ND(1.5) R	19	ND(9.4)	ND(3.4)	ND(47)
SLP-02	09/23/21	3.5	ND(1.5) R	480 J-	ND(9.9)	ND(2.8)	ND(50)
SLP-02 Dup	09/23/21	3.5	ND(1.5) R	230 J-	5.6 J	ND(2.7)	ND(50)
SLP-03	09/21/21	3	ND(1.5) R	14	160	ND(2.5)	ND(48)
SLP-03 Dup	09/21/21	3	ND(1.5) R	17	260	ND(14)	ND(47)
SLP-04	09/23/21	4.5	ND(1.5) R	11 J-	ND(9.9)	3.1	ND(50)
SLP-05	09/22/21	11.5	ND(1.5) R	ND(7.5)	14	65 J+	ND(46)
SLP-06	09/22/21	4	ND(1.5) R	8	8.9 J	150 J+	ND(46)
SLP-06 Dup	09/22/21	4	ND(1.5) R	13	ND(9.6)	470 J+	ND(48)
SLP-07	09/22/21	8	ND(1.5) R	9.2	310	960 J	ND(43)
SLP-08	09/22/21	5.33	ND(1.5) R	ND(7.5)	2000	1700 J+	ND(230)
SLP-09	09/22/21	7	ND(1.5) R	12	410	890 J+	ND(47)
SLP-10	09/21/21	9.5	ND(1.5) R	17	6800	1000 J+	ND(460)
SLP-11	09/23/21	8.5	ND(1.5) R	ND(7.5) UJ	250	190	ND(40)
NMED Residential Soil Screening Level (exceedances in bold text)			7820	-	1000	100	1000
NMED Industrial/Occupational Soil Screening Level (0-1 ft-bgs) (exceedances in bold text and highlighted):			130000	-	3000	500	3800
NMED Construction Worker Soil Screening Level (0-10 ft-bgs) (exceedances underlined):			<u>35400</u>	-	<u>3000</u>	<u>500</u>	<u>3800</u>

Notes:
 Dup - blind duplicate sample
 ft-bgs - feet below ground surface
 J - estimated concentration
 J+ - value biased high
 J- - value biased low
 mg/kg - milligrams per kilogram
 MPN/100 ml - most probably number per 100 milliliters
 ND - not detected (method detection limit in parentheses)
 NMED - New Mexico Environment Department
 R - data rejected
 TPH - total petroleum hydrocarbons
 UJ - estimated reporting limit

Screening level source:
 NMED Risk Assessment Guidance for Site Investigations and Remediation (February 2019) - Table 6-2 and A-1



Investigation Phase II Report Sanitary Lagoon

Appendix A – Field Logs



Lithology Log

Sheet 1 of 1

LOCID Lagoon 1 (SL-01)

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID <u>MARATHON COLLIER</u>	
Excavation Company <u>TRIHEDRO</u>		Operator <u>*HAND DIG*</u>		Date <u>9/20/2021</u>	
Type of Sampling Device Hand Auger		Personnel Present <u>Jim Hoadman, Brian McLouise</u>		Total Depth <u>2.5'</u>	
Weather <u>Sunny, Clear, 80's</u>		Site Conditions			

Location Description

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
0-0.5'	Dry Loose Soil - no odor		Sample @ 15:10
	6" - moist clay red		Sample @ 15:12



Lithology Log

Sheet 1 of 1

LOCID
Lagoon #2 (SL-02)

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID MARATHON GROUP	
Excavation Company SARCON TRIHYDRO		Operator K HAND DIG #		Date 9/20/2021	
Type of Sampling Device Hand Auger		Personnel Present Jim Haseman Brian McLoughea		Total Depth 2.5'	
Weather		Site Conditions Sunny, Clear, 80's			
Location Description					

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
0-0.5	Loose soil, brown dirt to 10"		Sample @ 15:00
0.5-1	Dry red clay		Sample @ 15:03
1-1.5	No Odor		



Lithology Log

Sheet 1 of 1

LOCID **Lagoon #3 (SL03)**

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001	Site ID MARATHON CASCAD	
Excavation Company TRIHURO	Operator HAND DIG	Date 9/20/2021	Total Depth 2.5'	
Type of Sampling Device Hand Auger		Personnel Present Jim Haseema Brian McLoubera		
Weather Sunny, clear ~80's		Site Conditions		
Location Description				

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
0.5'	Red + Brown clay + soil (Silty)	0	sample @ 14:30
1.0'	No odor		
2.0'	Dr-1 clay red	0	sample @ 14:35
2.5'	No odor		



Lithology Log

Sheet 1 of 1

LOCID Lagoon 5 (SL-05)

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001	Site ID <u>MARATHON LAGOON</u>	
Excavation Company <u>Starcon Trihydro</u>	Operator <u>HAND DIG</u>	Date <u>9/20/2021</u>	Total Depth <u>2.5'</u>	
Type of Sampling Device Hand Auger		Personnel Present <u>Jim Hoerner Brian McCoskey</u>		
Weather <u>Bunny, clear, 80's</u>				
Site Conditions				
Location Description				

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
0-0.5	Organic material, grasses, Soil (loose) ^{Organic} No Odor	⊙	Sample @ 15:15
0.5 - 1.5	light brown silty clay		
1.5 - 2 EL	Red Mast Clay		
2 - 2.5 f	Red Mast Clay No Clon No DWP Collected	⊙	Sample @ 15:17 DUPLICATE Collected



Lithology Log

Sheet 1 of 1

LOCID Lagoon 6 (SL-06)

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID <u>Marathon Carbur</u>	
Excavation Company Stanton <u>TRIMPRO</u>		Operator <u>* HAW DIG *</u>		Date <u>9/20/2021</u>	
Type of Sampling Device Hand Auger		Personnel Present <u>Jim Haberman Brian McConnon</u>		Total Depth <u>25'</u>	
Weather		Site Conditions <u>Sunny Clear, 80's</u>			
Location Description					

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
0.0-0.5	organic material lt brown soils, no odor	0	sample @ 15:20
1.7-2.5	drybed clay @ 1.7 - 2.5 No Odor	0	sample @ 15:25



Lithology Log

Sheet 1 of 1

LOCID SLP-01

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID	
Excavation Company Starcon		Operator Brien Anderson		Date 9/21/21	
Type of Sampling Device Hand Auger		Personnel Present Jim Hageran, Brian McLoughlin			
Weather Clear, Sunny					
Site Conditions					

Location Description
SLP-1 is closest to the Sanitary lagoon, Dry

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
2	↓ Brown/H Brown silty soil, loose. Dry, no odor	0	
4	↓ 5 ft - Sand layers near pipe	0	
6	Top of pipe @ 5.5 ft	0	
8	Brown/Red Brown clay little moisture, no odor	0	PIPE EMBEDDED IN SAND ~12" (sand) DIAMETER AROUND PIPE
10			
12			
			PIPE ~ 5.5 ft. bgs DUG ~ 7.0 ft. bgs 7.5 ft. bgs SAMPLE FROM ~ 7.5 ft. bgs SAMPLE TIME 10:10



Lithology Log

Sheet 1 of 1

LOCID
SLP-02

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID	
Excavation Company Stinson		Operator *HAND DUG*		Date 9/23/2021	
Type of Sampling Device Hand Auger		Personnel Present JIM HAGEMAN BRION McLOUGHER		Total Depth 3.5 FT BGS	
Weather		Site Conditions Cloudy, no wind, 60's			
Location Description PIPE LOCATED IN PRE-DUG TRENCH					

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
1	FINE SILT/SAND, MEDIUM BROWN	○	DRY, NO ODOR
2	SAND LAYER PIPE EMBEDDED, LIGHT BROWN SAND	○	1.5 FT BGS TO TOP OF PIPE DRY, NO ODOR
3	CLAY BELOW PIPE, RED, NO ROCKS, NO MOISTURE	○	DRY, NO ODOR
4		○	SAMPLE INFO SLP-02 @ 3.5 FT BGS TIME 0930



Lithology Log

Sheet 1 of 1

LOCID **SLP-03**

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID MARATHON COLLEGE	
Excavation Company Starcon		Operator HARD DIG		Date 9/21/2021	
Type of Sampling Device Hand Auger			Personnel Present JIM HAGREAV, BRIAN Mc LOUGHLIN		
Weather SUNNY, CLEAR			Total Depth		
Site Conditions					

Location Description
PREVIOUSLY DIG TRENCH, NORTH OF MAIN ROAD

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
1	LIGHT BROWN DIRT, NO ROCKS DRY	0	PIPE ~1 FT TO TOP OF PIPE NO ODOR
2	LIGHT BROWN DIRT & SAND NO ROCKS, MOSTLY DRY	0	NO ODOR
3	REDDISH CLAY MATERIAL DAMP	26.7	PID @ SAMPLE DEPTH NO ODOR
			SAMPLE @ 3 FT - BGS
			SLP-03 @ 1315



Lithology Log

Sheet 1 of 1

LOCID SLP-04

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001	Site ID
Excavation Company Sargon	Operator HAND DIG ²	Date 9/23/2021	Total Depth 4.5 FT BGS
Type of Sampling Device Hand Auger		Personnel Present JIM HAGEMAN BRIAN McLOUGHLIN	
Weather CLOUDY, GS, NO WIND			
Site Conditions			

Location Description
PIPE FOUND IN EXISTING TRENCH 70' BELOW ADJACENT ROAD

Depth	Description	PID/FID Results	Remarks (Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
1	SILTY DIRT MEDIUM BROWN NO ROCKS, SOME ROOTS	0	NO ODOR, NO STAINING S.A.A. NO ODOR
2	FINES, MEDIUM BROWN, SOME LIGHT BROWN SAND AROUND PIPE	0	NO ODOR, NO STAINING 2.5 FT-BGS → TOP OF PIPE
3	S.A.A.	0	SAMPLE DEPTH ~ 4.5 FT BGS SAMPLE TIME @ 1000 9/23/2021
4	CLAY, RED, MOISTURE SLIGHT HC-LIKE ODOR	3815	SLIGHT HC-LIKE ODOR
5			



Lithology Log

Sheet 1 of 1

LOCID
SLP-05

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID MARATHON GALLUP	
Excavation Company Starcon		Operator BRIAN ANDERSON		Date 9/21/2021 / 9/22/2021	
Type of Sampling Device		Hand Auger		Total Depth 11'6"	
Weather Sunny Clear ~80's		Personnel Present JIM HAGEMAN, BRINN McLOUGHERIN			
Location Description JUST OFF ROAD (TO SOUTH); ROAD SPLITS TWO PREVIOUSLY EXCAVATED TRENCHES					

Depth	Description	PID/FID Results	Remarks
1	REDDISH BROWN DIRT		NO ODOR, NO MOISTURE
2	S.A.A.	0.0	
3	S.A.A.		
4	S.A.A.	0.0	NO ODOR NO MOISTURE
5			PVC PIPE FOUND @ ~4.5 FT BGS
6	REDDISH BROWN SOIL WITH LIGHT BROWN SILT/SAND SOME MOISTURE		ASSUMED TO BE FIRE WATER PIPE. NO SOIL DISCOLORATION, NO STAINING, NO ODOR
7			* COULD NOT CONTINUE DIGGING WITH MINI-EXCAVATOR. USED AIR KNIFE HOLE TO COLLECT SAMPLE BENEATH PIPE.
8			MOISTURE IN HOLE ~ 9'7" BGS
9			PIPE TOP ~ 9'4" BGS
10	WATER @ 10 FT- BGS.		SAMPLE AT 11'6" BGS

11.5' - DARK GRAY SAND MIXED WITH REDDISH CLAY. SATURATED

1029.1
↑
PID RESULTS @ SAMPLE DEPTH

SAMPLE ON 9/22/2021
11.5 FT- BGS @ 0915



Lithology Log

Sheet 1 of 1

LOCID SLP-06

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID MARITIME GROUP	
Excavation Company TRIHURO		Operator HANG DUG		Date 9/22/2021	
Type of Sampling Device Hand Auger		Personnel Present JIM HARRISON BRIAN McLOUGHRAN		Total Depth 4.0'	
Weather SUNNY, CLEAR 70'S		Site Conditions			
Location Description HOLE DUG IN PREVIOUSLY DUG TRENCH					

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
1	LIGHT BROWN DIRT, DRY, MOSTLY FINES NO ROCKS		DRY, NO ODOR
2	MEDIUM BROWN DIRT, SOME MOISTURE, NO ROCKS		SLIGHTLY MOIST, NO ODOR PIPE TOP @ 2' FT-BGS
3	BLACK SAND, HC-LIKE ODOR	1195.2	BLACK SAND @ ~2.5' BGS HC-LIKE ODOR, WATER IN HOLE.
4	CLAY-RED, SATURATED	2313.6	SAMPLE CLAY LAYER @ 4' FT-BGS SAMPLE TIME 1000 BLIND BLIND DUP COLLECTED SLP-BD-09222021

FID SATURATED



Lithology Log

Sheet of

LOCID SLP-07

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID MARATHON GARLUP	
Excavation Company Starcon		Operator BRIAN ANDERSON		Date 9/22/2021	
Type of Sampling Device Hand Auger		Personnel Present SIM HAGEMAN BRIAN McLOUGHLIN		Total Depth 8 FT. BGS	
Weather CLEAR, SUNNY, 70'S		Site Conditions			
Location Description NEAR manhole					

Depth	Description	PID/FID Results	Remarks
-------	-------------	-----------------	---------

Depth	Description	PID/FID Results	Remarks
1	REDDISH BROWN CLAY		NO ODOR, NO MOISTURE;
2	S.A.A.	990	NO SLIGHT ODOR, NO MOISTURE
3	REDDISH BROWN CLAY & MEDIUM BROWN DIRT & SAND.		HC-LIKE NO ODOR, SOME MOISTURE
4	HC-LIKE ODOR & STAINING BLACK DIRT / MOTTLED MEDIUM BROWN DIRT	1020	HC-LIKE ODOR
5	SATURATION @ 5.5 FT. BGS		
6			TOP OF PIPE @ 6 FT. BGS
7	HC-LIKE STAINING BLACK, SOME MIXED FINE SAND		STRONG HC-LIKE ODOR
8			SAMPLE @ 8 FT. BGS
			SAMPLE TIME 1115
			9/22/2021

SATURATED ~~PIR 5~~
FID ← 1959



Trihydro
CORPORATION

Lithology Log

Sheet 1 of 1

LOCID **SLP-08**

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001	Site ID	
Excavation Company Starcon	Operator BRIAN ANDERSON	Date 9/22/2021	Total Depth 7'6"	
Type of Sampling Device Hand Auger		Personnel Present JIM NAGEMAN / BRIAN ANDERSON		
Weather Clear, sunny, 60's		Site Conditions		
Location Description				

Depth	Description	PID/FID Results	Remarks (Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
1	REDDISH BROWN CLAY, NO ROCKS	21	NO ODOR, NO MOISTURE
2	S.A.A.	21	NO ODOR, NO MOISTURE
3	S.A.A.	107	
4	LIGHT BROWN & REDDISH CLAY SOME BLACK/GRAY STAINING	149	NO ODOR, NO MOISTURE @ 4' BGS SOME HC-LIKE SMELL
5	BLACK SAND, HC-LIKE STAINING & SMELL	3621	TOP OF PIPE @ ~5'4" BGS
6		FID RESULTS	BLACK STAINING, STRONG HC-LIKE SMELL
7			SAMPLE TIME 1030 9/22/2021
8			



Lithology Log

Sheet 1 of 1

LOCID SLP-09

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID MARATHON GARAGE	
Excavation Company Starcon		Operator		Date 9/22/2021	Total Depth 7 FT BGS
Type of Sampling Device Hand Auger			Personnel Present Jim Hageman, Brian McLoughlin		
Weather Clear, Sunny, 60's			Site Conditions		
Location Description					

Depth (ft)	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
1	REDDISH BROWN DIRT, DRY		NO STAINING, NO ODOR, DRY
2	S.A.A.	(2') 0	
3	STAINING MEDIUM BROWN SAND LIGHT BROWN DRAP		NO STAINING, NO ODOR, DRY
4	S.A.A.	(4') 297	
5	S.A.A. / ADDITIONAL SAND AROUND PIPE		TOP OF PIPE @ 5' BGS
6	BLACK/GRAY STAIN BELOW PIPE.		HC-LIKE ODOR, VERY MOIST
7	CLAY LAYER BELOW PIPE REDDISH WITH BLACK/GRAY MOTTLED SOIL, VERY MOIST	(7') 2433	SAMPLE TAKEN @ 7' BGS HC-LIKE ODOR
8			FID
9			



Lithology Log

Sheet 1 of 1

LOCID
SLP-10

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001	Site ID MARATHON 6 INCH
Excavation Company Starcon	Operator BRIAN ANDERSON	Date 9/21/2021	Total Depth
Type of Sampling Device Hand Auger	Personnel Present JIM HASEMAN, BRIAN McLOWERY } TRIHYDRO BRIAN / RYAN } STARCON		
Weather Clear Sunny ~	Site Conditions		

Location Description
Base of berm ~ 300 FT WEST OF MARKETING TRAIL FARM

Depth	Description	PID/FID Results	Remarks
			(Include all sample types, times, and depth, odor, organic vapor measurements, etc.)
	Rocks / ROAD BASE, reddish silt, gravel 3"		
2	Asphalt ~ 2' bgs no odor (4" asphalt layer)	0	Asphalt ~ 4" layer no odor
4	Asphalt subbase well graded gravel no-odor	0	no odor
6	possible HC-LIKE ODOR @ 5'-6' gray/black mottled moist	74.8*	possible HC-Like ODOR ~ 5' to 6' bgs
6	DARK BROWN, HC-LIKE ODOR	[228 @ 6']	PID READINGS AT 6' bgs
8	SAND LAYER FOR PIPE	44	→ PID READINGS AT 7' bgs
	BLACK SOIL, BROWN SAND	17	→ @ 7' 4"
	BLACK SOIL, BROWN SAND	782	- PID @ ~8' sand/PIPE EMBED
		682	- PID @ 8.5' Damp
			NC-LIKE ODOR
			* PID READINGS 74.8 @ ~ 5.5' FT BGS GRAY/BLACK MOTTLED, DAMP
			SAMPLE DEPTH ↓ sample depth 9.5 FT @ 12:45 see PID 836



Lithology Log

Sheet 1 of 1

LOCID SLP-11

Project Name Sanitary Lagoon Investigation Phase II		Project Number 697-094-001		Site ID	
Excavation Company Starcon		Operator BRIAN ANDERSON		Date 9/23/2021	
Type of Sampling Device Hand Auger		Personnel Present JIM HAGENON BRIAN McLOUGHLIN		Total Depth 8'6"	
Weather CLOUDY, LIGHT BREEZE 50's		Site Conditions			
Location Description					

Depth	Description	PID/FID Results	Remarks
1	CLAY & SAND & GRAVEL REDDISH COLOR 1.25" ROAD BASE	75.5	ROAD MATERIAL NO ODOR
2	S.P.A. ROAD MATERIAL		
3	CLAY/GRAVEL		
4	S.P.A.	103	SOME HC-Like ODOR
5	S.A.A.		
6	SATURATED, HC-LIKE ODOR RED/MEDIUM BROWN SAND/GRAVEL	711 3650	MOISTURE @ 6 FT BGS S HC-Like ODOR NO STAINING PIPE TOP @ 6 FT 6 INCHES BGS (6'6")
7			
8			
9			SAMPLE @ 8 FT 6 IN BGS (8'6") SAMPLE TIME 0900

FID
READING
@ SAMPLE
DEPTH



Investigation Phase II Report Sanitary Lagoon

Appendix B – Data Validation



Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: Sanitary Sewer Lagoon	Sample Matrix: Soil, QA Water
Project Number: 697-094-001 Task: 0002	Sample Start Date: 09/20/2021
Date Validated: 11/29/2021	Sample End Date: 09/21/2021
Parameters Included:	
<ul style="list-style-type: none"> ▪ Volatile Organic Compounds (VOC) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270D ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D MOD ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015M/D ▪ Anions by EPA Method 300.0 ▪ Hexavalent Chromium by SW-846 Method 7199 ▪ Total Metals by SW-846 Method 6010B ▪ Total Mercury by SW-846 Method 7471 ▪ Cyanide by SW-846 Method 9012 ▪ Fecal Coliform by EPA Method 1681 	
Laboratory Project ID: 2109B64	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Charles Ballek, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace National of Mount Juliet, Tennessee evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- Laboratory control samples (LCS)
- Organic system monitoring compounds (surrogates)





Tier II Data Validation Report Summary

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Trip blanks
- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
SL-03 (0.5)	2109B64-001
SL-03(2.5)	2109B64-002
SL-04 (0.5)	2109B64-003
SL-04(2.5)	2109B64-004
SL-02(0.5)	2109B64-005
SL-02(2.5)	2109B64-006
SL-01(0.5)	2109B64-007
SL-01(2.5)	2109B64-008
SL-05(0.5)	2109B64-009
SL-05(2.5)	2109B64-010
SL-06(0.5)	2109B64-011
SL-06(2.5)	2109B64-012
SL-BD-09202021	2109B64-013
SL-EB-09202021	2109B64-014
SLP-01	2109B64-015
SLP-10	2109B64-016
SLP-03	2109B64-017
SLP-BD-09212021	2109B64-018
SLP-EB-09212021	2109B64-019
MeOH Blank	2109b64-020



Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ⊗ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ✓ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ✓ LCS (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ✓ Equipment and Trip Blanks (Items 18 and 19)
- ✓ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)
- ✓ Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-542-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, February 2021.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

<u>Qualifier</u>	<u>Definition</u>
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
J-	The result is an estimated concentration, but may be biased low
UJ	Estimated reporting limit
R	Rejected, data not usable

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete combined data package consisted of 442 data points. The data completeness calculation does not include any submitted blank sample results. A total of 247 data points were rejected. The data completeness measure for this data package is calculated to be 44.12% and is acceptable.

VALIDATION CRITERIA CHECKLIST																																																					
<p>1. Was the report free of non-conformances identified by the laboratory?</p> <p>Comments: The laboratory noted the following analytical non-conformances related to this data set. <u>Method 1681</u>: For sample SLP-10, analysis was performed from an improper container.</p>	No																																																				
<p>2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define.</p> <p>Comments: The laboratory used the following data qualification flags with this data set. D – Sample diluted due to matrix. H – Holding times for preparation or analysis exceeded. J – Analyte detected below quantitation limits. J1 – Surrogate recovery limits have been exceeded; values are outside upper control limits. J2 – Surrogate recovery limits have been exceeded; values are outside lower control limits. J3 – The associated batch QC was outside the established quality control range for precision. J6 – The sample matrix interfered with the ability to make any accurate determination; spike value is low. P1 – RPD value not applicable for sample concentrations less than 5 times the reporting limit. R – RPD value outside of range. S – % Recovery outside of range due to dilution or matrix. T8 – Sample(s) received past/too close to holding time expiration.</p>	No																																																				
<p>3. Were sample CoC forms and custody procedures complete?</p> <p>Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were not present or required since the samples were delivered to the laboratory by a laboratory courier, and custody was maintained at all times.</p>	Yes																																																				
<p>4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable?</p> <p>Comments: The reporting limits for the data set were reviewed and appeared to be acceptable. The following dilutions were applied to the project samples.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><u>Method</u></th> <th style="text-align: center;"><u>Sample(s)</u></th> <th style="text-align: center;"><u>Analyte(s)</u></th> <th style="text-align: center;"><u>Dilution Factor</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">300.0</td> <td style="text-align: center;">Submitted Samples</td> <td style="text-align: center;">Anions</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">8015</td> <td style="text-align: center;">SLP-BD-09212021</td> <td style="text-align: center;">GRO</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">8260B</td> <td style="text-align: center;">SLP-BD-09212021</td> <td style="text-align: center;">VOC</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">8270D</td> <td style="text-align: center;">SLP-10</td> <td style="text-align: center;">Select SVOC</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">6010B</td> <td style="text-align: center;">Multiple Samples</td> <td style="text-align: center;">Select Metals</td> <td style="text-align: center;">10</td> </tr> <tr> <td style="text-align: center;">8015</td> <td style="text-align: center;">SLP-10</td> <td style="text-align: center;">DRO and MRO</td> <td style="text-align: center;">10</td> </tr> <tr> <td style="text-align: center;">8270D</td> <td style="text-align: center;">SLP-10</td> <td style="text-align: center;">1-Methylnaphthalene</td> <td style="text-align: center;">10</td> </tr> <tr> <td style="text-align: center;">8015</td> <td style="text-align: center;">SL-05(0.5)</td> <td style="text-align: center;">DRO and MRO</td> <td style="text-align: center;">20</td> </tr> <tr> <td style="text-align: center;">8260B</td> <td style="text-align: center;">SLP-10</td> <td style="text-align: center;">VOC</td> <td style="text-align: center;">50</td> </tr> <tr> <td style="text-align: center;">8015</td> <td style="text-align: center;">SLP-10</td> <td style="text-align: center;">GRO</td> <td style="text-align: center;">100</td> </tr> <tr> <td style="text-align: center;">6010B</td> <td style="text-align: center;">Submitted Samples</td> <td style="text-align: center;">Iron</td> <td style="text-align: center;">100</td> </tr> <tr> <td style="text-align: center;">1681</td> <td style="text-align: center;">Submitted Samples</td> <td style="text-align: center;">Fecal Coliform</td> <td style="text-align: center;">1,000</td> </tr> </tbody> </table>	<u>Method</u>	<u>Sample(s)</u>	<u>Analyte(s)</u>	<u>Dilution Factor</u>	300.0	Submitted Samples	Anions	5	8015	SLP-BD-09212021	GRO	5	8260B	SLP-BD-09212021	VOC	5	8270D	SLP-10	Select SVOC	5	6010B	Multiple Samples	Select Metals	10	8015	SLP-10	DRO and MRO	10	8270D	SLP-10	1-Methylnaphthalene	10	8015	SL-05(0.5)	DRO and MRO	20	8260B	SLP-10	VOC	50	8015	SLP-10	GRO	100	6010B	Submitted Samples	Iron	100	1681	Submitted Samples	Fecal Coliform	1,000	Yes
<u>Method</u>	<u>Sample(s)</u>	<u>Analyte(s)</u>	<u>Dilution Factor</u>																																																		
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VALIDATION CRITERIA CHECKLIST	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	No
<p>Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC, with the following exceptions.</p> <p>The CoC requested nitrite and sulfate using Method 300.3; however, the laboratory analyzed the samples using Method 300.0. This substituted analytical method met similar sensitivity, accuracy, and precision goals and therefore, was an acceptable replacement. Also, the CoC requested total coliform and E.coli by Methods 922SB and 92238, but the laboratory analyzed and reported fecal coliforms by Method 1681.</p>	
6. Were samples received in good condition within method-specified requirements?	Yes
<p>Comments: Samples were received on ice, in good condition, and with the cooler temperature within the recommended temperature range of 4°C ± 2°C at 2.2°C as noted on the Sample Log-in Check List. Samples transferred to Pace National were received in good condition with the cooler temperature within the recommended range at 5.6°C and as noted on the CoC.</p>	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	No
<p>Comments: The samples were digested/extracted and analyzed within method-specific holding times, with the following exceptions.</p> <p>Method 1681 / D922: Samples SLP-01 and SLP-10 were analyzed for fecal coliform outside the defined holding time of 24 hours by approximately 0.25 to 2.75 hours. Fecal coliforms were not detected in samples SLP-01 and SLP-10. These non-detect results were assigned UJ qualifiers based on the holding time exceedances.</p> <p>Method 300.0: The submitted samples were analyzed for nitrate and nitrite outside the defined holding time of 7 days by approximately 2 days. Nitrate and nitrite were not detected in the submitted samples. These results were assigned R qualifiers to indicate that the data were rejected due to the holding time being exceeded.</p> <p>Method 8270D: The submitted samples were extracted for SVOC outside the defined holding time of 14 days by approximately 4 days. Detected results for the submitted samples by Method 8270D were assigned J qualifiers based on the holding time exceedances. Non-detect results were assigned R qualifiers indicating that the data were rejected and not usable due to exceedance of the holding time.</p>	
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.	Yes
<p>Comments: The results were reported in concentration units of micrograms per liter (µg/L), milligrams per kilogram (mg/kg), and most probable number per gram (MPN/g), which were acceptable for the sample matrix and the analyses requested. The analytical results for the soil samples were reported on a wet weight, as received basis for this sample set.</p>	
9. Did the laboratory provide any specific initial and/or continuing calibration results?	No
<p>Comments: Initial and continuing calibration data were not included as part of this data set.</p>	
10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?	N/A
<p>Comments: Initial and continuing calibration data were not included as part of this data set.</p>	
11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?	Yes
<p>Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.</p>	
12. Were target analytes reported as not detected in the laboratory blanks?	Yes
<p>Comments: Target analytes were reported as not detected in the laboratory blanks.</p>	



VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
D9222	Fecal Coliforms	R82014 / WG1745590	Not Prepared
300.0	Anions	62945	SLP-01, SLP-10
6010B	Metals	63108	SLP-01
7196A	Hexavalent Chromium	R82014 / WG1747651	Not Associated
7471	Mercury	63122	Not Prepared
8015D MOD	GRO	B81560	Not Prepared
8015D MOD	GRO	G81561	Not Prepared
8015M/D	DRO / MRO	62780	Not Prepared
8015M/D	DRO / MRO	62781	SLP-BD-09212021
8260B	VOCs	B81470	Not Prepared
8260B	VOCs	R81513	Not Prepared
8260B	VOCs	S81575	SLP-BD-09212021
8270D	SVOCs	R82028 / WG1753989	Not Associated
9012B	Cyanide	R82014 / WG1749144	Not Associated

Not Associated – The MS sample source was not associated with this project.

Not Prepared – Matrix spikes were not prepared for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? No

Comments: The percent recoveries and RPDs for MS/MSDs prepared from project samples were within data validation and laboratory QC limits or were not applicable because the unspiked amount was more than four times the spike added, with the following exceptions.

The MS and MSD recoveries for lead in Method 8260B batch 63108 were outside the QC limits of 75-125% at 65.1% and 67.1%, respectively. Lead was detected in the associated samples, and these results were qualified as J- due to evidence of potential low bias.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? Yes

Comments: The LCS percent recoveries were within laboratory QC limits. LCSDs were not analyzed as part of this sample set.



VALIDATION CRITERIA CHECKLIST

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries in the analyses of the submitted samples were within laboratory QC limits, with the following exceptions.

<u>Method</u>	<u>Surrogate</u>	<u>Sample</u>	<u>Surrogate Recovery</u>	<u>QC Limits</u>
8015D (GRO)	Bromofluorobenzene (BFB)	SLP-10	133%	70-130%
8270C	Nitrobenzene-d ₅ (no dilution)	SLP-10	352%	10.0-122%
8270C	Nitrobenzene-d₅ (10x dilution)	SLP-10	0.0%	10.0-122%
8270C	Nitrobenzene-d₅ (5x dilution)	SLP-10	407%	10.0-122%

GRO, naphthalene, and 2-methylnaphthalene were detected in sample SLP-10 and these results were qualified as J+ due to evidence of potential high bias.

The analyte 1-methylnaphthalene was detected in sample SLP-10 and the result was qualified as J- due to evidence of potential low bias.

The DRO and MRO results for samples SL-05(0.5) and SLP-10 were not qualified based on the surrogate non-conformances in the Method 8015M/D analyses since the applied dilutions of 20 and 10 times resulted in surrogate concentrations below routinely calibrated levels, and those results were deemed unreliable and possibly inaccurate.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the total number of samples. One trip blank sample, MeOH Blank, and two equipment blank samples, SL-EB-09202021 and SLP-EB-09212021, were collected as part of this sample set.

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were reported as not detected in the trip blank and equipment blank samples, with the following exceptions.

<u>Blank Sample ID</u>	<u>Method</u>	<u>Analyte</u>	<u>Concentration</u>
SL-EB-09202021	8260B	1,2,4-Trimethylbenzene	0.17 µg/L
SLP-EB-09212021	8260B	1,2,4-Trimethylbenzene	0.17 µg/L
SL-EB-09202021	8260B	2-Butanone	2.70 µg/L
SLP-EB-09212021	8260B	2-Butanone	2.80 µg/L
SL-EB-09202021	8260B	Acetone	4.00 µg/L
SLP-EB-09212021	8260B	Acetone	4.40 µg/L
SL-EB-09202021	8260B	Carbon Disulfide	2.70 µg/L
SLP-EB-09212021	8260B	Carbon Disulfide	1.80 µg/L
SL-EB-09202021	8260B	Styrene	0.20 µg/L
SLP-EB-09212021	8260B	Styrene	0.21 µg/L

The identified analytes were not detected in the associated samples and the results did not require qualification.



VALIDATION CRITERIA CHECKLIST													
<p>20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?</p> <p>Comments: The number of field duplicates collected was equal to at least 10% of the number of samples.</p> <ul style="list-style-type: none"> • Sample SL-BD-09202021 was collected as a field duplicate of sample SLP-03. • Sample SL-BD-09212021 was collected as a field duplicate of sample SL-05(2.5). 	<p>Yes</p>												
<p>21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)?</p> <p>Comment: As indicated in the Field Duplicate Summary Tables at the end of this report, field duplicate RPD values were within data validation QC limits of 0-50% for soil samples.</p>	<p>Yes</p>												
<p>22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits?</p> <p>Comments: Laboratory duplicates were prepared for these analyses and the laboratory duplicate sample sources are summarized in the following table.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Method</th> <th style="text-align: center;">Analytes</th> <th style="text-align: center;">Batch</th> <th style="text-align: center;">Laboratory Duplicate Sample Source</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">7196A</td> <td style="text-align: center;">Hexavalent Chromium</td> <td style="text-align: center;">R82014 / WG1747651</td> <td style="text-align: center;">SLP-BD-09212021, Not Associated</td> </tr> <tr> <td style="text-align: center;">9012B</td> <td style="text-align: center;">Cyanide</td> <td style="text-align: center;">R82014 / WG1749144</td> <td style="text-align: center;">Not Associated</td> </tr> </tbody> </table> <p>Not Associated – The laboratory duplicate sample source was not associated with this project.</p> <p>The RPDs for laboratory duplicates prepared from project samples were not applicable since the result for one or both measurements were within 5 times the reporting limit.</p>	Method	Analytes	Batch	Laboratory Duplicate Sample Source	7196A	Hexavalent Chromium	R82014 / WG1747651	SLP-BD-09212021, Not Associated	9012B	Cyanide	R82014 / WG1749144	Not Associated	<p>N/A</p>
Method	Analytes	Batch	Laboratory Duplicate Sample Source										
7196A	Hexavalent Chromium	R82014 / WG1747651	SLP-BD-09212021, Not Associated										
9012B	Cyanide	R82014 / WG1749144	Not Associated										
<p>23. Were the following data relationships realistic and acceptable?</p> <ul style="list-style-type: none"> • Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement? <p>Comments: Target analytes were not reported by more than one method.</p> <ul style="list-style-type: none"> • Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? <p>Comments: Only total metals were analyzed as part of this data set.</p>	<p>N/A</p> <p>N/A</p>												



FIELD DUPLICATE SUMMARY

Client Sample ID: SL-05(2.5) Field Duplicate Sample ID: SL-BD-09202021				
Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
TPH DRO	SW8015	8.5 mg/kg	8.6 mg/kg	1.2% +/-RL
Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.				
+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.				

Client Sample ID: SLP-03 Field Duplicate Sample ID: SL-BD-09212021				
Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
Chloride	300.0	87 mg/kg	91 mg/kg	4.5%
Fluoride, Total	300.0	6.9 mg/kg	7.7 mg/kg	11.0%
Sulfate	300.0	14 mg/kg	17 mg/kg	19.4% +/-RL
Barium, Total	SW6010B	150 mg/kg	150 mg/kg	0.0%
Beryllium, Total	SW6010B	0.87 mg/kg	0.83 mg/kg	4.7%
Chromium, Total	SW6010B	8.9 mg/kg	8.2 mg/kg	8.2%
Cobalt, Total	SW6010B	3.9 mg/kg	3.8 mg/kg	2.6%
Iron, Total	SW6010B	15,000 mg/kg	14,000 mg/kg	6.9%
Lead, Total	SW6010B	1.9 mg/kg	2.4 mg/kg	23.3%
Manganese, Total	SW6010B	360 mg/kg	380 mg/kg	5.4%
Nickel, Total	SW6010B	8.4 mg/kg	8.9 mg/kg	5.8%
Vanadium, Total	SW6010B	16 mg/kg	16 mg/kg	0.0%
Zinc, Total	SW6010B	11 mg/kg	11 mg/kg	0.0%
Mercury, Total	SW7471	0.0031 mg/kg	ND (0.033 mg/kg)	DL
TPH DRO	SW8015	160 mg/kg	260 mg/kg	47.6%
Xylenes, Total	SW8260B	0.019 mg/kg	ND (0.29 mg/kg)	DL
Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.				
DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL).				
+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.				



DATA QUALIFICATION SUMMARY

Abbreviation	Reason
HT-EX	Sample was extracted outside of the method holding time.
HT-AN	Sample was analyzed outside of the method holding time.
LR-MS	The MS and/or MSD percent recovery was less than the lower acceptable limit indicating possible matrix interference.
HR-SUR	The surrogate percent recovery was greater than the upper acceptable limit indicating a possible high bias.
LR-SUR	The surrogate percent recovery was less than the lower acceptable limit indicating a possible low bias.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,2,4-Trichlorobenzene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
1,2,4-Trichlorobenzene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
1,2,4-Trichlorobenzene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
1,2,4-Trichlorobenzene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
1,2,4-Trimethylbenzene	SW8260B	SL-EB-09202021	2109B64-014a	0.17	1.0	µg/L	J	MDLRL
1,2,4-Trimethylbenzene	SW8260B	SLP-EB-09212021	2109B64-019a	0.17	1.0	µg/L	J	MDLRL
1,2-Dichlorobenzene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
1,2-Dichlorobenzene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
1,2-Dichlorobenzene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
1,2-Dichlorobenzene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
1,3-Dichlorobenzene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
1,3-Dichlorobenzene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
1,3-Dichlorobenzene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
1,3-Dichlorobenzene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
1,4-Dichlorobenzene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
1,4-Dichlorobenzene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
1,4-Dichlorobenzene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,4-Dichlorobenzene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
1-Methylnaphthalene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
1-Methylnaphthalene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
1-Methylnaphthalene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
1-Methylnaphthalene	8270D	SLP-10	2109B64-016B	7.37	3.33	mg/kg	J-	HT-EX, LR-SUR
2,2-oxybis(1-Chloropropane)	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2,2-oxybis(1-Chloropropane)	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
2,2-oxybis(1-Chloropropane)	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2,2-oxybis(1-Chloropropane)	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2,4,6-Trichlorophenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2,4,6-Trichlorophenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
2,4,6-Trichlorophenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2,4,6-Trichlorophenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2,4-Dichlorophenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2,4-Dichlorophenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
2,4-Dichlorophenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2,4-Dichlorophenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2,4-Dimethylphenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2,4-Dimethylphenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
2,4-Dimethylphenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2,4-Dimethylphenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2,4-Dinitrophenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2,4-Dinitrophenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
2,4-Dinitrophenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2,4-Dinitrophenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2,4-Dinitrotoluene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2,4-Dinitrotoluene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2,4-Dinitrotoluene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2,4-Dinitrotoluene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2,6-Dinitrotoluene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2,6-Dinitrotoluene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
2,6-Dinitrotoluene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2,6-Dinitrotoluene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2-Butanone	SW8260B	SL-EB-09202021	2109B64-014a	2.7	10	µg/L	J	MDLRL
2-Butanone	SW8260B	SLP-EB-09212021	2109B64-019a	2.8	10	µg/L	J	MDLRL
2-Chloronaphthalene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
2-Chloronaphthalene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
2-Chloronaphthalene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
2-Chloronaphthalene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
2-Chlorophenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2-Chlorophenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
2-Chlorophenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2-Chlorophenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2-Methylnaphthalene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2-Methylnaphthalene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2-Methylnaphthalene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2-Methylnaphthalene	8270D	SLP-10	2109B64-016B	5.71	1.67	mg/kg	J+	HR-SUR, HT-EX
2-Methylphenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2-Methylphenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
2-Methylphenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
2-Methylphenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
2-Nitrophenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
2-Nitrophenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
2-Nitrophenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2-Nitrophenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
3,3-Dichlorobenzidine	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
3,3-Dichlorobenzidine	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
3,3-Dichlorobenzidine	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
3,3-Dichlorobenzidine	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
3,4-Methylphenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
3,4-Methylphenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
3,4-Methylphenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
3,4-Methylphenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
4,6-Dinitro-2-methylphenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
4,6-Dinitro-2-methylphenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
4,6-Dinitro-2-methylphenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
4,6-Dinitro-2-methylphenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
4-Bromophenyl-phenylether	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
4-Bromophenyl-phenylether	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
4-Bromophenyl-phenylether	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
4-Bromophenyl-phenylether	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
4-Chloro-3-Methylphenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
4-Chloro-3-Methylphenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
4-Chloro-3-Methylphenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
4-Chloro-3-Methylphenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
4-Chlorophenyl-phenylether	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
4-Chlorophenyl-phenylether	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
4-Chlorophenyl-phenylether	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
4-Chlorophenyl-phenylether	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
4-Nitrophenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
4-Nitrophenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
4-Nitrophenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
4-Nitrophenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Acenaphthene	8270D	SLP-10	2109B64-016B	0.472	0.0333	mg/kg	J	HT-EX
Acenaphthene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Acenaphthene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Acenaphthene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Acenaphthylene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Acenaphthylene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
Acenaphthylene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Acenaphthylene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Acetone	SW8260B	SL-EB-09202021	2109B64-014a	4.0	10	µg/L	J	MDLRL
Acetone	SW8260B	SLP-EB-09212021	2109B64-019a	4.4	10	µg/L	J	MDLRL
Anthracene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Anthracene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
Anthracene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Anthracene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Bacteria, Fecal Coliform	9222D	SLP-01	2109B64-015C	ND	0	MPN/g	UJ	HT-AN
Bacteria, Fecal Coliform	9222D	SLP-03	2109B64-017C	ND	0	MPN/g	UJ	HT-AN
Benzidine	8270D	SLP-01	2109B64-015B	ND	1.67	mg/kg	R	HT-EX
Benzidine	8270D	SLP-10	2109B64-016B	ND	1.67	mg/kg	R	HT-EX
Benzidine	8270D	SLP-03	2109B64-017B	ND	1.67	mg/kg	R	HT-EX
Benzidine	8270D	SLP-BD-09212021	2109B64-018B	ND	1.67	mg/kg	R	HT-EX
Benzo(a)anthracene	8270D	SLP-10	2109B64-016B	0.0406	0.0333	mg/kg	J	HT-EX
Benzo(a)anthracene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Benzo(a)anthracene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Benzo(a)anthracene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Benzo(a)pyrene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Benzo(a)pyrene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
Benzo(a)pyrene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Benzo(a)pyrene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Benzo(b)fluoranthene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Benzo(b)fluoranthene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
Benzo(b)fluoranthene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Benzo(b)fluoranthene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Benzo(g,h,i)perylene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Benzo(g,h,i)perylene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
Benzo(g,h,i)perylene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Benzo(g,h,i)perylene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Benzo(k)fluoranthene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Benzo(k)fluoranthene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
Benzo(k)fluoranthene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Benzo(k)fluoranthene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Bis(2-chloroethoxy)methane	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Bis(2-chloroethoxy)methane	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Bis(2-chloroethoxy)methane	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Bis(2-chloroethoxy)methane	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Bis(2-chloroethyl)ether	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Bis(2-chloroethyl)ether	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Bis(2-chloroethyl)ether	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Bis(2-chloroethyl)ether	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Bis(2-ethylhexyl)phthalate	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Bis(2-ethylhexyl)phthalate	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Bis(2-ethylhexyl)phthalate	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Bis(2-ethylhexyl)phthalate	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Butylbenzylphthalate	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Butylbenzylphthalate	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Butylbenzylphthalate	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Butylbenzylphthalate	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Carbon Disulfide	SW8260B	SL-EB-09202021	2109B64-014a	2.7	10	µg/L	J	MDLRL
Carbon Disulfide	SW8260B	SLP-EB-09212021	2109B64-019a	1.8	10	µg/L	J	MDLRL
Chrysene	8270D	SLP-10	2109B64-016B	0.0406	0.0333	mg/kg	J	HT-EX
Chrysene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Chrysene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Chrysene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Dibenzo(a,h)anthracene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Dibenzo(a,h)anthracene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
Dibenzo(a,h)anthracene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Dibenzo(a,h)anthracene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Diethylphthalate	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Diethylphthalate	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Diethylphthalate	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Diethylphthalate	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Dimethylphthalate	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Dimethylphthalate	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Dimethylphthalate	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Dimethylphthalate	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Di-n-butylphthalate	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Di-n-butylphthalate	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Di-n-butylphthalate	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Di-n-butylphthalate	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Di-n-octylphthalate	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Di-n-octylphthalate	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Di-n-octylphthalate	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Di-n-octylphthalate	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Fluoranthene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Fluoranthene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
Fluoranthene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Fluoranthene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Fluorene	8270D	SLP-10	2109B64-016B	0.786	0.0333	mg/kg	J	HT-EX
Fluorene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Fluorene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Fluorene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Hexachlorobenzene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Hexachlorobenzene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Hexachlorobenzene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Hexachlorobenzene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Hexachlorobutadiene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Hexachlorobutadiene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Hexachlorobutadiene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Hexachlorobutadiene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Hexachlorocyclopentadiene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Hexachlorocyclopentadiene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Hexachlorocyclopentadiene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Hexachlorocyclopentadiene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Hexachloroethane	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Hexachloroethane	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Hexachloroethane	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Hexachloroethane	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Indeno(1,2,3-cd)pyrene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Indeno(1,2,3-cd)pyrene	8270D	SLP-10	2109B64-016B	ND	0.0333	mg/kg	R	HT-EX
Indeno(1,2,3-cd)pyrene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Indeno(1,2,3-cd)pyrene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Isophorone	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Isophorone	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Isophorone	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Isophorone	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Lead, Total	SW6010B	SLP-01	2109B64-015A	2.1	0.30	mg/kg	J-	LR-MS
Lead, Total	SW6010B	SLP-10	2109B64-016A	2.0	0.29	mg/kg	J-	LR-MS
Lead, Total	SW6010B	SLP-03	2109B64-017A	1.9	0.31	mg/kg	J-	LR-MS
Lead, Total	SW6010B	SLP-BD-09212021	2109B64-018A	2.4	0.29	mg/kg	J-	LR-MS
Mercury, Total	SW7471	SLP-01	2109B64-015A	0.0029	0.034	mg/kg	J	MDLRL
Mercury, Total	SW7471	SLP-10	2109B64-016A	0.0045	0.035	mg/kg	J	MDLRL
Mercury, Total	SW7471	SLP-03	2109B64-017A	0.0031	0.034	mg/kg	J	MDLRL
Naphthalene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Naphthalene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Naphthalene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Naphthalene	8270D	SLP-10	2109B64-016B	7.43	0.167	mg/kg	J+	HR-SUR, HT-EX
Nitrobenzene	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Nitrobenzene	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Nitrobenzene	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Nitrobenzene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Nitrogen, Nitrate	E300	SLP-01	2109B64-015A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrate	E300	SLP-10	2109B64-016A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrate	E300	SLP-03	2109B64-017A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrate	E300	SLP-BD-09212021	2109B64-018A	ND	1.5	mg/kg	R	HT-AN



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Nitrogen, Nitrite	E300	SLP-01	2109B64-015A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-10	2109B64-016A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-03	2109B64-017A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-BD-09212021	2109B64-018A	ND	1.5	mg/kg	R	HT-AN
N-Nitrosodimethylamine	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodimethylamine	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodimethylamine	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodimethylamine	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodi-n-propylamine	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodi-n-propylamine	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodi-n-propylamine	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodi-n-propylamine	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodiphenylamine	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodiphenylamine	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodiphenylamine	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
N-Nitrosodiphenylamine	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Pentachlorophenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Pentachlorophenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Pentachlorophenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Pentachlorophenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Phenanthrene	8270D	SLP-10	2109B64-016B	1.66	0.167	mg/kg	J	HT-EX
Phenanthrene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Phenanthrene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Phenanthrene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Phenol	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Phenol	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Phenol	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Phenol	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Pyrene	8270D	SLP-10	2109B64-016B	0.348	0.0333	mg/kg	J	HT-EX
Pyrene	8270D	SLP-01	2109B64-015B	ND	0.0333	mg/kg	R	HT-EX
Pyrene	8270D	SLP-03	2109B64-017B	ND	0.0333	mg/kg	R	HT-EX
Pyrene	8270D	SLP-BD-09212021	2109B64-018B	ND	0.0333	mg/kg	R	HT-EX
Pyridine	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Pyridine	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Pyridine	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Pyridine	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Quinoline	8270D	SLP-01	2109B64-015B	ND	0.333	mg/kg	R	HT-EX
Quinoline	8270D	SLP-10	2109B64-016B	ND	0.333	mg/kg	R	HT-EX
Quinoline	8270D	SLP-03	2109B64-017B	ND	0.333	mg/kg	R	HT-EX
Quinoline	8270D	SLP-BD-09212021	2109B64-018B	ND	0.333	mg/kg	R	HT-EX
Styrene	SW8260B	SL-EB-09202021	2109B64-014a	0.20	1.0	µg/L	J	MDLRL
Styrene	SW8260B	SLP-EB-09212021	2109B64-019a	0.21	1.0	µg/L	J	MDLRL
TPH DRO	SW8015	SL-04 (0.5)	2109B64-003A	7.4	9.6	mg/kg	J	MDLRL
TPH DRO	SW8015	SL-05(2.5)	2109B64-010A	8.5	9.8	mg/kg	J	MDLRL
TPH DRO	SW8015	SL-BD-09202021	2109B64-013A	8.6	9.5	mg/kg	J	MDLRL
TPH GRO	SW8015	SLP-10	2109B64-016a	1,000	290	mg/kg	J+	HR-SUR
Xylenes, Total	SW8260B	SLP-03	2109b64-017a	0.019	0.050	mg/kg	J	MDLRL



Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: Sanitary Sewer Lagoon	Sample Matrix: Soil, QA Water
Project Number: 697-094-001 Task: 0002	Sample Start Date: 09/22/2021
Date Validated: 11/08/2021	Sample End Date: 09/22/2021
Parameters Included: <ul style="list-style-type: none"> ▪ Volatile Organic Compounds (VOC) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270D ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D MOD ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015M/D ▪ Anions by EPA Method 300.0 ▪ Hexavalent Chromium by SW-846 Method 7196A ▪ Total Metals by SW-846 Method 6010B ▪ Total Mercury by SW-846 Method 7471 ▪ Cyanide by SW-846 Method 9012B ▪ Total Coliform and E.Coli by Standard Methods for the Examination of Water and Wastewater (SM) Method 9223B 	
Laboratory Project ID: 2109C60	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report package generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace National of Mount Juliet, Tennessee evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Field duplicate pairs
- Laboratory duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- Laboratory control samples (LCS)
- Organic system monitoring compounds (surrogates)





Tier II Data Validation Report Summary

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
SLP-BD-09222021	2109C60-001
SLP-EB-09222021	2109C60-002
SLP-09	2109C60-003
SLP-05	2109C60-004
SLP-06	2109C60-005
SLP-08	2109C60-006
SLP-07	2109C60-007





Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ⊗ Laboratory Qualifiers (Item 2)
- ✓ CoC Documentation (Item 3)
- ⊗ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ✓ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ✓ LCS (Items 15 and 16)
- ⊗ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ✓ Equipment Blanks (Items 18 and 19)
- ⊗ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)
- Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-542-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, February 2021.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

<u>Qualifier</u>	<u>Definition</u>
J	Estimated concentration
J+	The result is an estimated concentration, but may be biased high
UJ	Estimated reporting limit
R	Rejected, data not usable

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete combined data package consisted of 642 data points. The data completeness calculation does not include any submitted blank sample results. Forty-seven data points were rejected. The data completeness measure for this data package is calculated to be 92.68% and is acceptable.

VALIDATION CRITERIA CHECKLIST																																													
1. Was the report free of non-conformances identified by the laboratory? Comments: The laboratory did not report non-conformances related to the analytical data for this sample set.	Yes																																												
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define. Comments: The laboratory used the following data qualification flags with this data set. D – Sample diluted due to matrix. E – The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL). The target analytes 1-methylnaphthalene and 2-methylnaphthalene in sample SLP-07 and 2-methylnaphthalene in sample SLP-08 were flagged by the laboratory with the E flag. These results were assigned J qualifiers to indicate estimated concentrations. H – Holding times for preparation or analysis exceeded. J – Analyte detected below quantitation limits. J1 – Surrogate recovery limits have been exceeded; values are outside upper control limits. J2 – Surrogate recovery limits have been exceeded; values are outside lower control limits. J3 – The associated batch QC was outside the established quality control range for precision. J6 – The sample matrix interfered with the ability to make any accurate determination; spike value is low. O1 – The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference. P1 – RPD value not applicable for sample concentrations less than 5 times the reporting limit. S – % Recovery outside of range due to dilution or matrix. T8 – Sample(s) received past/too close to holding time expiration.	No																																												
3. Were sample CoC forms and custody procedures complete? Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were present, but not required since the samples were delivered to the laboratory by a laboratory courier, and custody was maintained at all times.	Yes																																												
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable? Comments: The reporting limits for the data set were reviewed and appeared to be acceptable. The following dilutions were applied to the project samples.	Yes																																												
<table border="1"> <thead> <tr> <th>Method</th> <th>Sample(s)</th> <th>Analyte(s)</th> <th>Dilution Factor</th> </tr> </thead> <tbody> <tr> <td>300.0</td> <td>Submitted Samples</td> <td>Anions</td> <td>5</td> </tr> <tr> <td>6010B</td> <td>Submitted Samples</td> <td>Select Metals</td> <td>5</td> </tr> <tr> <td>8015</td> <td>SLP-BD-09222021, SLP-05, SLP-06</td> <td>GRO</td> <td>5</td> </tr> <tr> <td>8015</td> <td>SLP-08</td> <td>DRO and MRO</td> <td>5</td> </tr> <tr> <td>8270D</td> <td>SLP-09, SLP-08</td> <td>Select SVOC</td> <td>5</td> </tr> <tr> <td>8015</td> <td>SLP-09</td> <td>GRO</td> <td>20</td> </tr> <tr> <td>8260B</td> <td>Submitted Samples</td> <td>VOC</td> <td>20</td> </tr> <tr> <td>8015</td> <td>SLP-08, SLP-07</td> <td>GRO</td> <td>50</td> </tr> <tr> <td>6010B</td> <td>Submitted Samples</td> <td>Iron</td> <td>100</td> </tr> <tr> <td>9223B</td> <td>Submitted Samples</td> <td>Total Coliform and E.Coli</td> <td>1,000</td> </tr> </tbody> </table>		Method	Sample(s)	Analyte(s)	Dilution Factor	300.0	Submitted Samples	Anions	5	6010B	Submitted Samples	Select Metals	5	8015	SLP-BD-09222021, SLP-05, SLP-06	GRO	5	8015	SLP-08	DRO and MRO	5	8270D	SLP-09, SLP-08	Select SVOC	5	8015	SLP-09	GRO	20	8260B	Submitted Samples	VOC	20	8015	SLP-08, SLP-07	GRO	50	6010B	Submitted Samples	Iron	100	9223B	Submitted Samples	Total Coliform and E.Coli	1,000
Method	Sample(s)	Analyte(s)	Dilution Factor																																										
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VALIDATION CRITERIA CHECKLIST	
<p>5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?</p> <p>Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC, with the following exceptions.</p> <p>The CoC requested nitrite and sulfate using Method 300.3, and total coliforms and E.Coli by Methods SM922SB and SM92238, respectively; however, the laboratory analyzed the samples using Method 300.0 and Method 9223B. These substituted analytical methods met similar sensitivity, accuracy, and precision goals and, therefore, were acceptable replacements.</p>	No
<p>6. Were samples received in good condition within method-specified requirements?</p> <p>Comments: Samples were received on ice, in good condition, and with the cooler temperature outside the recommended temperature range of 4°C ± 2°C at 7.0°C as noted on the Sample Log-in Check List. Samples transferred to Pace National were received in good condition with the cooler temperature within the recommended range at 2.6°C as noted on the CoC. The cooler temperature above 6°C was evaluated to be acceptable since the samples were received at the laboratory on the same day (within 24 hours) of the last sample collection time, and temperature equilibrium had not been established.</p>	No
<p>7. Were samples extracted/digested and analyzed within method-specified or technical holding times?</p> <p>Comments: The samples were digested/extracted and analyzed within method-specific holding times, with the following exceptions.</p> <p>Method 9223B: The submitted samples were analyzed for total coliforms and E.Coli outside the defined holding time of 24 hours by approximately 4.25 to 7 hours. Detected results for total coliforms and E.Coli were assigned J qualifiers based on the holding time exceedances. Non-detect results were assigned UJ qualifiers based on the holding time exceedances.</p> <p>Method 300.0: The submitted samples were analyzed for nitrate and nitrite outside the defined holding time of 2 days by approximately 12 days. Nitrate and nitrite were not detected in the submitted samples. These results were assigned R qualifiers to indicate that the data were rejected due to the holding time being exceeded.</p>	No
<p>8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.</p> <p>Comments: The results were reported in concentration units of micrograms per liter (µg/L), milligrams per kilogram (mg/kg), and most probable number per 100 milliliters (MPN/100mL), which were acceptable for the sample matrix and the analyses requested. The analytical results for the soil samples were reported on a wet weight, as received basis for this sample set.</p>	Yes
<p>9. Did the laboratory provide any specific initial and/or continuing calibration results?</p> <p>Comments: Initial and continuing calibration data were not included as part of this data set.</p>	No
<p>10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?</p> <p>Comments: Initial and continuing calibration data were not included as part of this data set.</p>	N/A
<p>11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?</p> <p>Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.</p>	Yes
<p>12. Were target analytes reported as not detected in the laboratory blanks?</p> <p>Comments: Target analytes were reported as not detected in the laboratory blanks.</p>	Yes



VALIDATION CRITERIA CHECKLIST

13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
9223B	Total Coliforms, E.Coli	WG1745591 / R82014	Not Prepared
300.0	Anions	63078	Not Prepared
6010B	Metals	62806	Not Prepared
7196A	Hexavalent Chromium	WG1748884 / R82014	SLP-BD-09222021
7471	Mercury	62905	Not Prepared
8015D MOD	GRO	B81560	Not Prepared
8015M/D	DRO / MRO	62799	Not Prepared
8015M/D	DRO / MRO	62827	Not Prepared
8260B	VOCs	R81575	Not Prepared
8260B	VOCs	S81575	Not Prepared
8260B	VOCs	V81541	Not Prepared
8270D	SVOCs	WG1750662 / R82028	Not Associated
9012B	Cyanide	WG1749144 / R82014	Not Associated, SLP-09
9012B	Cyanide	WG1749587 / R82014	Not Associated

Not Associated – The MS sample source was not associated with this project.

Not Prepared – Matrix spikes were not prepared for this batch.

14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits? No

Comments: The percent recoveries and RPDs for MS/MSDs prepared from project samples were within data validation and laboratory QC limits or were not applicable because the unspiked amount was more than four times the spike added, with the following exceptions.

The MS and MSD recoveries for hexavalent chromium in Method 7196A batch WG1748884 / R82014 were outside the QC limits of 75.0-125% at 8.72% and 8.24%, respectively. Hexavalent chromium was not detected in the associated samples, and the results were qualified as UJ due to evidence of potential low bias. Since the recovery was below 30%, the parent sample SLP-BD-09222021 was qualified R to indicate rejected (not usable) data based on evidence of extreme low bias.

The MS and MSD recoveries for cyanide in Method 9012B batch WG1749144 / R82014 were outside the QC limits of 75.0-125% at 27.1% and 33.3%, respectively. Cyanide was not detected in the associated samples, and the results were qualified as UJ due to evidence of potential low bias. Since the MS recovery was below 30%, the parent sample SLP-09 was qualified R to indicate rejected (not usable) data based on evidence of extreme low bias.

Recoveries and RPDs for MS/MSDs prepared from non-project samples were considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.



VALIDATION CRITERIA CHECKLIST

16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits? Yes

Comments: The LCS percent recoveries were within laboratory QC limits. LCSDs were not analyzed as part of this sample set.

17. Were surrogate recoveries within laboratory QC limits? No

Comments: Surrogate recoveries in the analyses of the submitted samples were within laboratory QC limits, with the following exceptions.

Method	Surrogate	Sample	Surrogate Recovery	QC Limits
8015D	BFB	SLP-BD-09222021	222%	70-130%
8015D	BFB	SLP-09	183%	70-130%
8015D	BFB	SLP-05	140%	70-130%
8015D	BFB	SLP-06	142%	70-130%
8015D	BFB	SLP-08	145%	70-130%
8270C	Nitrobenzene-d ₅	SLP-09	0.0%	10.0-122%
8270C	Nitrobenzene-d ₅	SLP-09	149%	10.0-122%
8270C	2-Fluorophenol	SLP-08	0.0%	12.0-120%
8270C	Phenol-d ₅	SLP-08	0.0%	10.0-120%
8270C	Phenol-d ₅	SLP-08	0.0%	10.0-120%
8270C	Nitrobenzene-d ₅	SLP-08	0.0%	10.0-122%
8270C	Nitrobenzene-d ₅	SLP-08	229%	10.0-122%

GRO was detected in the indicated samples, and these results were qualified as J+ due to evidence of potential high bias.

The recoveries for the Method 8270C surrogates (2-fluorophenol, phenol-d₅, and nitrobenzene-d₅) for sample SLP-8 and nitrobenzene-d₅ for sample SLP-09 were less than 10%. The SVOC target analytes associated with these surrogate recoveries that were less than 10% were not detected in samples SLP-08 and SLP-09, and the results were qualified as R indicating rejected results, data not usable.

The analytes 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were detected in samples SLP-8 and SLP-9, and these results were qualified as J+ due to evidence of potential high bias.

18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the total number of samples. One equipment blank sample, SLP-EB-09222021, was collected as part of this sample set.

19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples? No

Comments: Target analytes were reported as not detected in the equipment blank sample, with the following exception. Carbon disulfide was detected in the 8260B analysis of equipment blank sample SLP-EB-09222021 at 2.4 µg/L. Carbon disulfide was not detected in the associated samples, and the results did not require qualification.

20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? Yes

Comments: The number of field duplicates collected was equal to at least 10% of the number of samples. Sample SLP-BD-09222021 was collected as a field duplicate of sample SLP-06.



VALIDATION CRITERIA CHECKLIST

21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? No

Comment: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-50% for soil samples, with the following exceptions.

The RPD values for ethylbenzene, toluene, total xylenes, and naphthalene exceeded the data validation limit of 50% at 87.5%, 79.5%, 84.4%, and 78.7%, respectively, which was evidence of poor precision. The ethylbenzene, toluene, total xylenes, and naphthalene results were qualified as J for samples SLP-06 and SLP-BD-09222021.

The RPD value for TPH GRO greatly exceeded the data validation limit of 50% at 103.2%. The TPH GRO results were qualified as J for the parent and duplicate samples, SLP-06 and SLP-BD-09222021, as well as the remaining associated samples based on evidence of extremely poor precision (RPD > 100%).

22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits? N/A

Comments: Laboratory duplicates were prepared for these analyses and the laboratory duplicate sample sources are summarized in the following table.

<u>Method</u>	<u>Analytes</u>	<u>Batch</u>	<u>Laboratory Duplicate Sample Source</u>
7196A	Hexavalent Chromium	WG1748884 / R82014	Not Associated
9012B	Cyanide	WG1749144 / R82014	Not Associated, SLP-BD-09222021
9012B	Cyanide	WG1749587 / R82014	Not Associated

Not Associated – The laboratory duplicate sample source was not associated with this project.

The RPDs for laboratory duplicates prepared from project samples were not applicable since the results for one or both measurements were within 5 times the reporting limit.

The RPD values for laboratory duplicate samples prepared from non-project samples were evaluated and considered, but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

23. Were the following data relationships realistic and acceptable? N/A

- Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement?

Comments: Target analytes were not reported by more than one method.

- Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results? N/A

Comments: Only total metals were analyzed as part of this data set.



FIELD DUPLICATE SUMMARY

Client Sample ID: SLP-06				
Field Duplicate Sample ID: SLP-BD-09222021				
Analyte	Method	Laboratory Result	Duplicate Result	Relative Percent Difference (RPD)
Chloride	E300	88 mg/kg	93 mg/kg	5.5%
Fluoride, Total	E300	4.4 mg/kg	4.7 mg/kg	6.6%
Sulfate	E300	8.0 mg/kg	13 mg/kg	47.6% +/-RL
Arsenic, Total	SW6010B	ND (2.6 mg/kg)	1.4 mg/kg	DL
Barium, Total	SW6010B	420 mg/kg	430 mg/kg	2.4%
Beryllium, Total	SW6010B	0.80 mg/kg	0.77 mg/kg	3.8%
Chromium, Total	SW6010B	7.8 mg/kg	5.8 mg/kg	29.4%
Cobalt, Total	SW6010B	3.8 mg/kg	3.4 mg/kg	11.1%
Iron, Total	SW6010B	13,000 mg/kg	10,000 mg/kg	26.1%
Lead, Total	SW6010B	2.4 mg/kg	3.0 mg/kg	22.2%
Manganese, Total	SW6010B	510 mg/kg	460 mg/kg	10.3%
Nickel, Total	SW6010B	7.3 mg/kg	6.9 mg/kg	5.6%
Vanadium, Total	SW6010B	16 mg/kg	12 mg/kg	28.6%
Zinc, Total	SW6010B	12 mg/kg	10 mg/kg	18.2%
Mercury, Total	SW7471	0.0028 mg/kg	0.0032 mg/kg	13.3% +/-RL
TPH DRO	SW8015	8.9 mg/kg	ND (9.6 mg/kg)	DL
TPH GRO	SW8015	150 mg/kg	470 mg/kg	103.2%
Benzene	SW8260B	1.2 mg/kg	1.9 mg/kg	45.2%
Ethylbenzene	SW8260B	0.90 mg/kg	2.3 mg/kg	87.5%
Toluene	SW8260B	0.22 mg/kg	0.51 mg/kg	79.5%
Xylenes, Total	SW8260B	2.6 mg/kg	6.4 mg/kg	84.4%
2-Methylnaphthalene	8270D	ND (0.333) mg/kg	0.333 mg/kg	DL
Naphthalene	8270D	0.0666 mg/kg	0.153 mg/kg	78.7%
Bacteria, Total Coliform	A9223 B	ND (0 MPN/100mL)	1000 MPN/100mL	DL

Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.

DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL).

+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.

The RPD values for ethylbenzene, toluene, total xylenes, and naphthalene exceeded the data validation limit of 50% at 87.5%, 79.5%, 84.4%, and 78.7%, respectively, which was evidence of poor precision. The ethylbenzene, toluene, total xylenes, and naphthalene results were qualified as J for samples SLP-06 and SLP-BD-09222021.

The RPD value for TPH GRO greatly exceeded the data validation limit of 50% at 103.2%. The TPH GRO results were qualified as J for the parent and duplicate samples, SLP-06 and SLP-BD-09222021, as well as the remaining associated samples based on evidence of extremely poor precision (RPD > 100%).



DATA QUALIFICATION SUMMARY

Abbreviation	Reason
ECAL	The result exceeds the calibration range.
ERPFD-FD	High field duplicate RPD.
HT-AN	Sample was analyzed outside of the method holding time.
HR-SUR	The surrogate percent recovery was greater than the upper acceptable limit indicating a possible high bias.
LR-MS	The MS and/or MSD percent recovery was less than the lower acceptable limit indicating possible matrix interference.
LR-SUR	The surrogate percent recovery was less than the lower acceptable limit indicating a possible low bias.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,2,4-Trichlorobenzene	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
1,2,4-Trichlorobenzene	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
1,2-Dichlorobenzene	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
1,2-Dichloroethane	SW8260B	SLP-08	2109c60-006a	0.25	0.48	mg/kg	J	MDLRL
1,3-Dichlorobenzene	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
1,4-Dichlorobenzene	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
1-Methylnaphthalene	8270D	SLP-09	2109C60-003C	3.3	1.67	mg/kg	J+	HR-SUR
1-Methylnaphthalene	8270D	SLP-08	2109C60-006C	4.73	1.67	mg/kg	J+	HR-SUR
1-Methylnaphthalene	8270D	SLP-07	2109C60-007C	2.15	0.333	mg/kg	J	ECAL
2,2-oxybis(1-Chloropropane)	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
2,4-Dichlorophenol	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
2,4-Dichlorophenol	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
2,4-Dimethylphenol	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
2,4-Dimethylphenol	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
2-Chlorophenol	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
2-Methylnaphthalene	8270D	SLP-09	2109C60-003C	4.96	1.67	mg/kg	J+	HR-SUR
2-Methylnaphthalene	8270D	SLP-07	2109C60-007C	3.52	0.333	mg/kg	J	ECAL



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
2-Methylnaphthalene	8270D	SLP-08	2109C60-006C	8.05	1.67	mg/kg	J+	ECAL, HR-SUR
2-Methylphenol	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
2-Nitrophenol	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
2-Nitrophenol	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
3,4-Methylphenol	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
4-Chloro-3-Methylphenol	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
4-Chloro-3-Methylphenol	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Arsenic, Total	SW6010B	SLP-BD-09222021	2109C60-001A	1.4	2.4	mg/kg	J	MDLRL
Arsenic, Total	SW6010B	SLP-08	2109C60-006A	1.4	2.4	mg/kg	J	MDLRL
Bacteria, Total Coliform	A9223 B	SLP-BD-09222021	2109C60-001B	1,000	0	MPN/100ml	J	HT-AN
Bacteria, Total Coliform	A9223 B	SLP-05	2109C60-004B	8,400	0	MPN/100mL	J	HT-AN
Bacteria, Total Coliform	A9223 B	SLP-08	2109C60-006B	79,400	0	MPN/100mL	J	HT-AN
Bacteria, Total Coliform	A9223 B	SLP-09	2109C60-003B	ND	0	MPN/100mL	UJ	HT-AN
Bacteria, Total Coliform	A9223 B	SLP-06	2109C60-005B	ND	0	MPN/100mL	UJ	HT-AN
Bacteria, Total Coliform	A9223 B	SLP-07	2109C60-007B	ND	0	MPN/100mL	UJ	HT-AN
Bis(2-chloroethoxy)methane	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
Bis(2-chloroethoxy)methane	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Bis(2-chloroethyl)ether	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Carbon Disulfide	SW8260B	SLP-EB-09222021	2109c60-002a	2.4	10	ug/L	J	MDLRL
Chlorobenzene	SW8260B	SLP-08	2109c60-006a	0.15	0.19	mg/kg	J	MDLRL
Chromium, Hexavalent, Dissolved	SW7196A	SLP-BD-09222021	2109C60-001C	ND	2.0	mg/kg	R	LR-MS
Chromium, Hexavalent, Dissolved	SW7196A	SLP-09	2109C60-003C	ND	2.0	mg/kg	UJ	LR-MS
Chromium, Hexavalent, Dissolved	SW7196A	SLP-05	2109C60-004C	ND	2.0	mg/kg	UJ	LR-MS
Chromium, Hexavalent, Dissolved	SW7196A	SLP-06	2109C60-005C	ND	2.0	mg/kg	UJ	LR-MS
Chromium, Hexavalent, Dissolved	SW7196A	SLP-08	2109C60-006C	ND	2.0	mg/kg	UJ	LR-MS
Chromium, Hexavalent, Dissolved	SW7196A	SLP-07	2109C60-007C	ND	2.0	mg/kg	UJ	LR-MS
Cyanide, Total	SW9012	SLP-09	2109C60-003C	ND	0.25	mg/kg	R	LR-MS



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Cyanide, Total	SW9012	SLP-BD-09222021	2109C60-001C	ND	0.25	mg/kg	UJ	LR-MS
E-Coli	A9223 B	SLP-09	2109C60-003B	2,000	0	MPN/100mL	J	HT-AN
E-Coli	A9223 B	SLP-BD-09222021	2109C60-001B	ND	0	MPN/100mL	UJ	HT-AN
E-Coli	A9223 B	SLP-05	2109C60-004B	ND	0	MPN/100mL	UJ	HT-AN
E-Coli	A9223 B	SLP-06	2109C60-005B	ND	0	MPN/100mL	UJ	HT-AN
E-Coli	A9223 B	SLP-08	2109C60-006B	ND	0	MPN/100mL	UJ	HT-AN
E-Coli	A9223 B	SLP-07	2109C60-007B	ND	0	MPN/100mL	UJ	HT-AN
Ethylbenzene	SW8260B	SLP-BD-09222021	2109c60-001a	2.3	0.22	mg/kg	J	ERPD-FD
Ethylbenzene	SW8260B	SLP-06	2109c60-005a	0.90	0.44	mg/kg	J	ERPD-FD
Hexachlorobutadiene	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
Hexachlorobutadiene	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Hexachloroethane	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Isophorone	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
Isophorone	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Mercury, Total	SW7471	SLP-BD-09222021	2109C60-001A	0.0032	0.031	mg/kg	J	MDLRL
Mercury, Total	SW7471	SLP-06	2109C60-005A	0.0028	0.035	mg/kg	J	MDLRL
Mercury, Total	SW7471	SLP-07	2109C60-007A	0.0035	0.033	mg/kg	J	MDLRL
Naphthalene	8270D	SLP-09	2109C60-003C	2.74	0.167	mg/kg	J+	HR-SUR
Naphthalene	8270D	SLP-08	2109C60-006C	5.93	0.167	mg/kg	J+	HR-SUR
Naphthalene	8270D	SLP-BD-09222021	2109C60-001C	0.153	0.0333	mg/kg	J	ERPD-FD
Naphthalene	8270D	SLP-06	2109C60-005C	0.0666	0.0333	mg/kg	J	ERPD-FD
Nitrobenzene	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
Nitrobenzene	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Nitrogen, Nitrate	E300	SLP-BD-09222021	2109C60-001A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrate	E300	SLP-09	2109C60-003A	ND	1.5	mg/kg	R	HT-AN



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Nitrogen, Nitrate	E300	SLP-05	2109C60-004A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrate	E300	SLP-06	2109C60-005A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrate	E300	SLP-08	2109C60-006A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrate	E300	SLP-07	2109C60-007A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-BD-09222021	2109C60-001A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-09	2109C60-003A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-05	2109C60-004A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-06	2109C60-005A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-08	2109C60-006A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-07	2109C60-007A	ND	1.5	mg/kg	R	HT-AN
N-Nitrosodimethylamine	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
N-Nitrosodi-n-propylamine	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Phenol	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Pyridine	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Quinoline	8270D	SLP-09	2109C60-003C	ND	0.333	mg/kg	R	LR-SUR
Quinoline	8270D	SLP-08	2109C60-006C	ND	0.333	mg/kg	R	LR-SUR
Toluene	SW8260B	SLP-BD-09222021	2109c60-001a	0.51	0.22	mg/kg	J	ERPD-FD
Toluene	SW8260B	SLP-06	2109c60-005a	0.22	0.44	mg/kg	J	ERPD-FD, MDLRL
TPH DRO	SW8015	SLP-06	2109C60-005A	8.9	9.2	mg/kg	J	MDLRL
TPH GRO	SW8015	SLP-07	2109c60-007a	960	140	mg/kg	J	ERPD-FD
TPH GRO	SW8015	SLP-BD-09222021	2109c60-001a	470	14	mg/kg	J+	ERPD-FD, HR-SUR
TPH GRO	SW8015	SLP-09	2109c60-003a	890	57	mg/kg	J+	ERPD-FD, HR-SUR
TPH GRO	SW8015	SLP-05	2109c60-004a	65	13	mg/kg	J+	ERPD-FD, HR-SUR
TPH GRO	SW8015	SLP-06	2109c60-005a	150	11	mg/kg	J+	ERPD-FD, HR-SUR
TPH GRO	SW8015	SLP-08	2109c60-006a	1,700	120	mg/kg	J+	ERPD-FD, HR-SUR
Xylenes, Total	SW8260B	SLP-BD-09222021	2109c60-001a	6.4	0.43	mg/kg	J	ERPD-FD



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Xylenes, Total	SW8260B	SLP-06	2109c60-005a	2.6	0.89	mg/kg	J	ERPD-FD





Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental
Project Name: Sanitary Sewer Lagoon Investigation	Sample Matrix: Soil
Project Number: 697-094-001 Task: 0002	Sample Start Date: 09/23/2021
Date Validated: 11/11/2021	Sample End Date: 09/23/2021
Parameters Included:	
<ul style="list-style-type: none"> ▪ Volatile Organic Compounds (VOC) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8260B ▪ Semivolatile Organic Compounds (SVOC) by SW-846 Method 8270D ▪ Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) by SW-846 Method 8015D MOD ▪ TPH Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by SW-846 Method 8015M/D ▪ Anions by EPA Method 300.0 ▪ Hexavalent Chromium by SW-846 Method 7196A ▪ Total Metals by SW-846 Method 6010B ▪ Total Mercury by SW-846 Method 7471 ▪ Cyanide by SW-846 Method 9012B ▪ Total Coliform and <i>Escherichia coli</i> (<i>E. Coli</i>) by Standard Methods for the Examination of Water and Wastewater (SM) Method 9223B 	
Laboratory Project ID: 2109D24	
Data Validator: Charles Ballek, Senior Chemist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report packages generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, with additional data from Pace National of Mount Juliet, Tennessee, evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values from:

- Laboratory duplicate pairs
- Field duplicate pairs
- Matrix spike (MS) and matrix spike duplicate (MSD) pairs

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- MS/MSD samples
- Laboratory control samples (LCS)
- Organic system monitoring compounds (surrogates)





Tier II Data Validation Report Summary

Field accuracy was established by collecting and analyzing the following samples to monitor for possible ambient or cross contamination during sampling and transportation.

- Equipment blanks

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
SLP-BD-09232021	2109D24-001
SLP-EB-09232021	2109D24-002
SLP-11	2109D24-003
SLP-02	2109D24-004
SLP-04	2109D24-005



Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ⊗ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ✓ Laboratory Blanks (Items 11 and 12)
- ⊗ MS/MSD (Items 13 and 14)
- ✓ LCS (Items 15 and 16)
- ✓ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- ✓ Equipment Blanks (Items 18 and 19)
- ⊗ Field Duplicates (Items 20 and 21)
- ✓ Laboratory Duplicates (Item 22)
- ✓ Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, document number EPA-542-R-20-006, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Inorganic Data Review, document number EPA 540-R-04-004, October 2004.
- Review of field duplicates was conducted according to the USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.
- Trihydro Data Validation Variance Documentation, February 2021.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers used during this validation are included in the following table.

<u>Qualifier</u>	<u>Definition</u>
J	Estimated concentration
J-	The result is an estimated concentration, but may be biased low
UJ	Estimated reporting limit
R	Rejected, data not usable

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 428 data points. The data completeness calculation does not include any submitted blank sample results. Eight data points were rejected. The data completeness measure for this data package is calculated to be 98.13% and is acceptable.

VALIDATION CRITERIA CHECKLIST	
1. Was the report free of non-conformances identified by the laboratory?	Yes
Comments: The laboratory did not identify analytical non-conformances related to this data set.	
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define.	No
Comments: The laboratory used the following data qualification flags with this data set. J – Analyte detected below quantitation limits J3 – The associated batch QC was outside the established quality control range for precision. J6 – The sample matrix interfered with the ability to make any accurate determination; spike value is low. T8 – Sample(s) received past/too close to holding time expiration.	
3. Were sample CoC forms and custody procedures complete?	Yes
Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were not present or required since the samples were delivered to the laboratory by courier, and custody was maintained at all times.	
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable?	Yes
Comments: The reporting limits for the data set were reviewed and appeared to be acceptable. The following dilutions were applied to the project samples. <u>Method 8260B</u> : A dilution factor of 10 times was applied to sample SLP-11 for the analysis of VOCs. <u>Method 8015</u> : Sample SLP-11 was diluted by a factor of 50 times for the analysis of GRO. <u>Method 300.0</u> : Dilution factors of 5 times were applied to the submitted samples for the analysis of anions. <u>Method 6010B</u> : Select samples were diluted by factors of 5 to 100 times for the analysis of metals. <u>Method 9223B</u> : Dilution factors of 1000 times were applied to the samples for the analysis of Total Coliform and <i>E.Coli</i> .	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	Yes
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC.	
6. Were samples received in good condition within method-specified requirements?	Yes
Comments: Samples were received at Hall Environmental on ice, in good condition, and with the cooler temperature within the recommended temperature range of 4°C ± 2°C at 3.3°C as noted on the <i>Sample Log-in Check List</i> . Samples transferred to Pace National were received in good condition with the cooler temperature within the recommended range at 2.9°C as noted on the CoC.	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	No
Comments: The samples were digested/extracted and analyzed within method-specific holding times, with the following exceptions. <u>Method 9223B</u> : The submitted samples were analyzed for total coliforms and <i>E.Coli</i> outside the defined holding time of 24 hours by approximately 3 days. Total coliforms and <i>E.Coli</i> were not detected in the samples, and the results were assigned UJ qualifiers based on the holding time exceedances. <u>Method 300.0</u> : The submitted samples were analyzed for nitrate and nitrite outside the defined holding time of 2 days by approximately 11 days. Nitrate and nitrite were not detected in the submitted samples. These results were assigned R qualifiers to indicate that the data were rejected due to the holding time exceedances.	



VALIDATION CRITERIA CHECKLIST																																																					
<p>8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.</p> <p>Comments: The results were reported in concentration units of milligrams per kilogram (mg/kg), and most probable number per 100 milliliters (MPN/100mL), which were acceptable for the sample matrix and the analyses requested. The analytical results for the soil samples were reported on a wet weight, as received basis for this sample set.</p> <p>Analytical results for the aqueous equipment blank were reported in units of micrograms per liter (µg/L).</p>	<p>Yes</p>																																																				
<p>9. Did the laboratory provide any specific initial and/or continuing calibration results?</p> <p>Comments: Initial and continuing calibration data were not included as part of this data set.</p>	<p>No</p>																																																				
<p>10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?</p> <p>Comments: Initial and continuing calibration data were not included as part of this data set.</p>	<p>N/A</p>																																																				
<p>11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?</p> <p>Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.</p>	<p>Yes</p>																																																				
<p>12. Were target analytes reported as not detected in the laboratory blanks?</p> <p>Comments: Target analytes were reported as not detected in the laboratory blanks, with the following exception. Cadmium was detected in the method blank for Method 6010B batch 62888 at a concentration of 0.050 mg/kg. Cadmium was not detected in the remaining associated samples, and qualification of those results was not required based on the method blank detection.</p>	<p>No</p>																																																				
<p>13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?</p> <p>Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples, although MS samples were not prepared for all analyses and/or batches. The matrix spike sample source for each analytical batch in this sample set has been indicated below.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><u>Method</u></th> <th style="text-align: center;"><u>Analytes</u></th> <th style="text-align: center;"><u>Batch</u></th> <th style="text-align: center;"><u>MS Sample Source</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">8260B</td> <td style="text-align: center;">VOCs</td> <td style="text-align: center;">R81575</td> <td style="text-align: center;">Not Prepared</td> </tr> <tr> <td style="text-align: center;">8260B</td> <td style="text-align: center;">VOCs</td> <td style="text-align: center;">S81617</td> <td style="text-align: center;">SLP-BD-09232021</td> </tr> <tr> <td style="text-align: center;">8270C</td> <td style="text-align: center;">SVOCs</td> <td style="text-align: center;">WG1751574 (R82028)</td> <td style="text-align: center;">Not Associated</td> </tr> <tr> <td style="text-align: center;">8015D</td> <td style="text-align: center;">GRO</td> <td style="text-align: center;">B81560</td> <td style="text-align: center;">Not Prepared</td> </tr> <tr> <td style="text-align: center;">8015D</td> <td style="text-align: center;">GRO</td> <td style="text-align: center;">G81561</td> <td style="text-align: center;">SLP-02</td> </tr> <tr> <td style="text-align: center;">8015 MOD</td> <td style="text-align: center;">DRO</td> <td style="text-align: center;">62827</td> <td style="text-align: center;">Not Prepared</td> </tr> <tr> <td style="text-align: center;">300.0</td> <td style="text-align: center;">Anions</td> <td style="text-align: center;">63078</td> <td style="text-align: center;">SLP-04</td> </tr> <tr> <td style="text-align: center;">6010B</td> <td style="text-align: center;">Total Metals</td> <td style="text-align: center;">62888</td> <td style="text-align: center;">Not Prepared</td> </tr> <tr> <td style="text-align: center;">7196A</td> <td style="text-align: center;">Hexavalent Chromium</td> <td style="text-align: center;">WG1748884 (R82014)</td> <td style="text-align: center;">Not Associated</td> </tr> <tr> <td style="text-align: center;">7471</td> <td style="text-align: center;">Mercury</td> <td style="text-align: center;">62905</td> <td style="text-align: center;">Not Prepared</td> </tr> <tr> <td style="text-align: center;">9012</td> <td style="text-align: center;">Cyanide</td> <td style="text-align: center;">WG1749587 (R82014)</td> <td style="text-align: center;">Not Associated</td> </tr> <tr> <td style="text-align: center;">9223B</td> <td style="text-align: center;">Bacteria</td> <td style="text-align: center;">WG1747276 (R82014)</td> <td style="text-align: center;">Not Prepared</td> </tr> </tbody> </table> <p><i>Not Associated – The MS sample source was not associated with this project.</i></p> <p><i>Not Prepared – Matrix spikes were not prepared for this batch.</i></p>	<u>Method</u>	<u>Analytes</u>	<u>Batch</u>	<u>MS Sample Source</u>	8260B	VOCs	R81575	Not Prepared	8260B	VOCs	S81617	SLP-BD-09232021	8270C	SVOCs	WG1751574 (R82028)	Not Associated	8015D	GRO	B81560	Not Prepared	8015D	GRO	G81561	SLP-02	8015 MOD	DRO	62827	Not Prepared	300.0	Anions	63078	SLP-04	6010B	Total Metals	62888	Not Prepared	7196A	Hexavalent Chromium	WG1748884 (R82014)	Not Associated	7471	Mercury	62905	Not Prepared	9012	Cyanide	WG1749587 (R82014)	Not Associated	9223B	Bacteria	WG1747276 (R82014)	Not Prepared	<p>Yes</p>
<u>Method</u>	<u>Analytes</u>	<u>Batch</u>	<u>MS Sample Source</u>																																																		
8260B	VOCs	R81575	Not Prepared																																																		
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7471	Mercury	62905	Not Prepared																																																		
9012	Cyanide	WG1749587 (R82014)	Not Associated																																																		
9223B	Bacteria	WG1747276 (R82014)	Not Prepared																																																		



VALIDATION CRITERIA CHECKLIST	
14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits?	No
<p>Comments: The percent recoveries and RPDs for the MS/MSDs prepared from project samples were within laboratory and data validation QC limits, with the following exception.</p> <p>The reported recoveries for sulfate in the MS and MSD for Method 300.0 batch 63078 were within laboratory limits but outside the data validation limits of 80-120% at 77.5% and 69.1%, respectively. Detections of sulfate in the associated samples in this batch were assigned J- qualifiers and the non-detect result for sample SLP-11 was assigned a UJ qualifier due to the evidence of potential low bias.</p>	
15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method?	Yes
<p>Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.</p>	
16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits?	Yes
<p>Comments: The LCS percent recoveries were within laboratory QC limits. Analyses of LCSD were not performed for the analytical batches in this data set.</p>	
17. Were surrogate recoveries within laboratory QC limits?	Yes
<p>Comments: Surrogate recoveries in the analyses of the submitted samples were within laboratory QC limits.</p>	
18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?	Yes
<p>Comments: The number of trip, field, and equipment blanks collected was equal to at least 10% of the total number of samples. One equipment blank sample, SLP-EB-09232021, was collected as part of this sample set.</p>	
19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples?	Yes
<p>Comments: Target analytes were reported as not detected in the equipment blank sample.</p>	
20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?	Yes
<p>Comments: The number of field duplicates collected was equal to at least 10% of the number of samples. Sample SLP-BD-09232021 was collected as a field duplicate of sample SLP-02.</p>	
21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)?	No
<p>Comment: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-30% for water samples, with the following exception.</p> <p>The RPD value for sulfate exceeded the data validation limit of 50% at 70.4%. The reported results for sulfate were assigned J qualifiers for the parent and field duplicate samples, SLP-02 and SLP-BD-09232021, due to evidence of poor precision.</p>	

FIELD DUPLICATE SUMMARY

Client Sample ID: SLP-02				
Field Duplicate Sample ID: SLP-BD-09232021				
Method	Analyte	Laboratory Result (mg/kg)	Duplicate Result (mg/kg)	Relative Percent Difference (RPD)
SW8015	Diesel Range Organics (DRO)	ND (9.9)	5.6	DL
E300.0	Chloride	260	210	21.3%
E300.0	Fluoride	3.7	3.8	2.7%
E300.0	Sulfate	480	230	70.4%
SW6010B	Barium	120	140	15.4%
SW6010B	Beryllium	1.2	1	18.2%
SW6010B	Chromium	12	8.2	37.6%
SW6010B	Cobalt	5.6	4.6	19.6%
SW6010B	Iron	19,000	14,000	30.3%
SW6010B	Lead	2.3	3.5	41.4%
SW6010B	Manganese	400	460	14.0%
SW6010B	Nickel	11	8.4	26.8%
SW6010B	Vanadium	20	14	35.3%
SW6010B	Zinc	15	12	22.2%
SW7471	Mercury	0.0038	0.0089	80.3% +/-RL
<p>Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 - New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures, EQADR-Supplement2, September 2020.</p> <p>DL – Indicates that the analyte was detected in one of the duplicate samples and was undetected in the other sample, and therefore an RPD could not be calculated. Data were not qualified since the detection was within two times the reporting limit. Non-detected results are indicated above with the applicable reporting limit as ND (RL).</p> <p>+/-RL – Indicates that the detections in both of the samples were within two times the reporting limit. Qualification of data was not required.</p> <p>The RPD value for sulfate exceeded the data validation limit of 50%. The reported results for sulfate were assigned J qualifiers for the parent and field duplicate samples, SLP-02 and SLP-BD-09232021, due to evidence of poor precision.</p>				

DATA QUALIFICATION SUMMARY

Abbreviation	Reason
HT-AN	Sample was analyzed outside of the method holding time.
LR-MS	The MS and/or MSD percent recovery was less than the lower acceptable limit indicating possible matrix interference.
ERP-D-FD	High field duplicate RPD.
MDLRL	Flagged by the laboratory: The result was greater than the MDL but less than the RL.

Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
1,1-Dichloroethane	SW8260B	SLP-04	2109d24-005a	0.014	0.028	mg/kg	J	MDLRL
1,2-Dichloroethane	SW8260B	SLP-11	2109d24-003a	0.12	0.24	mg/kg	J	MDLRL
2-Butanone	SW8260B	SLP-04	2109d24-005a	0.24	0.28	mg/kg	J	MDLRL
Bacteria, Total Coliform	A9223 B	SLP-BD-09232021	2109D24-001B	ND	0	MPN/100ml	UJ	HT-AN
Bacteria, Total Coliform	A9223 B	SLP-11	2109D24-003B	ND	0	MPN/100ml	UJ	HT-AN
Bacteria, Total Coliform	A9223 B	SLP-02	2109D24-004B	ND	0	MPN/100ml	UJ	HT-AN
Bacteria, Total Coliform	A9223 B	SLP-04	2109D24-005B	ND	0	MPN/100ml	UJ	HT-AN
Beryllium, Total	SW6010B	SLP-11	2109D24-003A	0.56	0.78	mg/kg	J	MDLRL
Chlorobenzene	SW8260B	SLP-11	2109d24-003a	0.056	0.24	mg/kg	J	MDLRL
E-Coli	A9223 B	SLP-BD-09232021	2109D24-001B	ND	0	MPN/100ml	UJ	HT-AN
E-Coli	A9223 B	SLP-11	2109D24-003B	ND	0	MPN/100ml	UJ	HT-AN
E-Coli	A9223 B	SLP-02	2109D24-004B	ND	0	MPN/100ml	UJ	HT-AN
E-Coli	A9223 B	SLP-04	2109D24-005B	ND	0	MPN/100ml	UJ	HT-AN
Mercury, Total	SW7471	SLP-BD-09232021	2109D24-001A	0.0089	0.032	mg/kg	J	MDLRL
Mercury, Total	SW7471	SLP-11	2109D24-003A	0.015	0.035	mg/kg	J	MDLRL
Mercury, Total	SW7471	SLP-02	2109D24-004A	0.0038	0.034	mg/kg	J	MDLRL
MTBE	SW8260B	SLP-04	2109d24-005a	0.021	0.028	mg/kg	J	MDLRL
Nitrogen, Nitrate	E300	SLP-BD-09232021	2109D24-001A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrate	E300	SLP-11	2109D24-003A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrate	E300	SLP-02	2109D24-004A	ND	1.5	mg/kg	R	HT-AN



Analyte	Method	Field Sample ID	Lab Sample ID	Result	Limit	Units	Reviewer Qualifier	DV Flag Reasons
Nitrogen, Nitrate	E300	SLP-04	2109D24-005A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-BD-09232021	2109D24-001A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-11	2109D24-003A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-02	2109D24-004A	ND	1.5	mg/kg	R	HT-AN
Nitrogen, Nitrite	E300	SLP-04	2109D24-005A	ND	1.5	mg/kg	R	HT-AN
Sulfate	E300	SLP-BD-09232021	2109D24-001A	230	7.5	mg/kg	J-	ERPD-FD, LR-MS
Sulfate	E300	SLP-11	2109D24-003A	ND	7.5	mg/kg	UJ	LR-MS
Sulfate	E300	SLP-02	2109D24-004A	480	7.5	mg/kg	J-	ERPD-FD, LR-MS
Sulfate	E300	SLP-04	2109D24-005A	11	7.5	mg/kg	J-	LR-MS
Toluene	SW8260B	SLP-04	2109d24-005a	0.0095	0.028	mg/kg	J	MDLRL
TPH DRO	SW8015	SLP-BD-09232021	2109D24-001A	5.6	10	mg/kg	J	MDLRL
Zinc, Total	SW6010B	SLP-11	2109D24-003A	8.5	13	mg/kg	J	MDLRL



Tier II Data Validation Report Summary

Client: Marathon Oil	Laboratory: Hall Environmental Analysis Laboratory
Project Name: Western Refining Southwest, Sanitary Lagoon	Sample Matrix: Soil
Project Number: 697-094-001 Task: 0002	Sample Start Date: 12/17/2021
Date Validated: 01/04/2022	Sample End Date: 12/17/2021
Parameters Included: <ul style="list-style-type: none"> Total Petroleum Hydrocarbons (TPH) Diesel Range Organics (DRO) and Motor Oil Range Organics (MRO) by Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) Method 8015D Modified 	
Laboratory Project ID: 2112B72	
Data Validator: Daran O'Hollearn, Lead Project Scientist	
Reviewer: Mike Phillips, Senior Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report package generated by Hall Environmental Analysis Laboratory of Albuquerque, New Mexico, evaluating samples from the Marathon Oil site, located in Gallup, New Mexico.

Laboratory accuracy was established by reviewing the demonstrated percent recoveries (%R) of the following items to verify that data are not biased.

- Laboratory control samples (LCS)
- Organic system monitoring compounds (surrogates)

Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS percent recoveries against method-specific requirements.

Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
SL-05a	2112B72-001A





Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. An empty circle (○) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ✓ CoC Documentation (Item 3)
- ✓ Holding Times and Preservation (Items 6 and 7)
- Initial and Continuing Calibrations (Items 9 and 10)
- ✓ Laboratory Blanks (Items 11 and 12)
- Matrix Spikes (MS) and Matrix Spike Duplicates (MSD) (Items 13 and 14)
- ✓ LCS (Items 15 and 16)
- ✓ System Monitoring Compounds (i.e., Surrogates) (Item 17)
- Field, Equipment, and Trip Blanks (Items 18 and 19)
- Field Duplicates (Items 20 and 21)
- Laboratory Duplicates (Item 22)
- Data Relationships (Item 23)

Guidance References

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for the analyses listed below, or by the appropriate method if not covered in the National Functional Guidelines.

- Data for organic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Organic Superfund Methods Data Review, document number EPA-540-R-20-005, November 2020 with additional reference to the USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99/008, October 1999.
- Trihydro Data Validation Variance Documentation, February 2021.





Tier II Data Validation Report Summary

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Validation Criteria Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an R (rejected, data not usable), the data may be used for site evaluation; however, consideration should be given to the reasons for qualification when interpreting sample concentrations. Data points that are assigned an R qualifier should not be used for site evaluation purposes.

If applicable, text was identified in **bold font** in the Validation Criteria Checklist to indicate that further action and/or qualification of the data were required. Data may have been qualified with J data flags by the laboratory if the result was greater than or equal to the method detection limit (MDL) but less than the reporting limit (RL). These laboratory-applied J flags were preserved, if present, and included in the Data Qualification Summary table at the end of this report. If applicable, data validation qualifiers were added for the items noted with crossed circles in the Validation Criteria section above. Please see the Data Qualification Summary table at the end of this report for a complete list of samples and analytes qualified.

If data would be qualified with more than one flag, one qualifier was assigned based on the severity; however, all reasons for qualification were retained. Data that would be qualified with both J+ and J- flags were evaluated based on validation criteria and assigned the appropriate flag. The hierarchy of qualifiers from the most to least severe is as follows:

- R > JB/U > NJ > J+/J- > J/UJ

Data qualifiers were not applied as a result of this validation.

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly unless otherwise noted in the Criteria Checklist below. The complete data package consisted of 2 data points. Data points were not rejected. The data completeness measure for this data package is calculated to be 100% and is acceptable.



VALIDATION CRITERIA CHECKLIST	
1. Was the report free of non-conformances identified by the laboratory?	Yes
Comments: The laboratory did not identify non-conformances regarding the analytical data.	
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define.	Yes
Comments: The laboratory did not apply qualification flags or other notes to the data in the laboratory report.	
3. Were sample CoC forms and custody procedures complete?	Yes
Comments: The CoC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Custody seals were not present or required since the samples were delivered to the laboratory by courier, and custody was maintained at all times.	
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable?	Yes
Comments: The reporting limits for the analyses were reviewed and appeared to be acceptable. Dilutions were not applied for the analyses of the submitted sample.	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC?	Yes
Comments: The reported analytical methods were in compliance with the CoC, and the laboratory reported the requested constituents in accordance with the CoC.	
6. Were samples received in good condition within method-specified requirements?	Yes
Comments: The sample was received on ice, in good condition, and with the cooler temperature within the recommended temperature range of 4°C ± 2°C at 3.8°C as noted on the CoC and the <i>Sample Log-in Check List</i> .	
7. Were samples extracted/digested and analyzed within method-specified or technical holding times?	Yes
Comments: The sample was extracted and analyzed within method-specific holding times.	
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)? Specify if wet or dry units were used for soil.	Yes
Comments: The results were reported in concentration units of milligrams per kilogram (mg/kg), which were acceptable for the sample matrix and the analyses requested. The analytical results for the soil sample were reported on a wet weight as-received basis for this sample set.	
9. Did the laboratory provide any specific initial and/or continuing calibration results?	No
Comments: Initial and continuing calibration data were not included as part of this data set.	
10. If initial and/or continuing calibration results were provided, were the results within acceptable limits?	N/A
Comments: Initial and continuing calibration data were not included as part of this data set.	
11. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?	Yes
Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples.	
12. Were target analytes reported as not detected in the laboratory blanks?	Yes
Comments: Target analytes were reported as not detected in the laboratory blanks.	



VALIDATION CRITERIA CHECKLIST	
13. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method?	No
Comments: The total number of matrix spike samples prepared was not equal to at least 5% of the total number of samples. Matrix spikes were not prepared for the analyses in this data set.	
14. For MS/MSDs prepared from project samples, were percent recoveries and RPDs within data validation or laboratory quality control (QC) limits?	N/A
Comments: MS/MSD samples were not prepared using project samples as the sample source.	
15. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method?	Yes
Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples.	
16. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within data validation or laboratory QC limits?	Yes
Comments: The LCS percent recoveries were within laboratory QC limits. LCSDs were not analyzed as part of this sample set.	
17. Were surrogate recoveries within laboratory QC limits?	Yes
Comments: The surrogate recoveries were within laboratory QC limits.	
18. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?	No
Comments: Trip, field, and equipment blank samples were not collected for this sample set.	
19. Were target analytes reported as not detected in the trip blank, field blank, and/or equipment blank samples?	N/A
Comments: Trip, field, and equipment blank samples were not collected for this sample set.	
20. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit?	No
Comments: Field duplicates were not collected as part of this sample set.	
21. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)?	N/A
Comments: Field duplicates were not collected as part of this sample set.	
22. For laboratory duplicates prepared from project samples, were RPDs within laboratory QC limits?	N/A
Comments: Laboratory duplicate samples were not prepared for this sample set.	



VALIDATION CRITERIA CHECKLIST	
23. Were the following data relationships realistic and acceptable?	
<ul style="list-style-type: none">Target analytes were reported by more than one method (e.g., 8260/8270, EPH/8270), and the results were in agreement?	N/A
Comments: Target analytes were not reported by more than one method in this data set.	
<ul style="list-style-type: none">Both total and dissolved metals analyses were performed, and the total metals results were greater than or equal to the dissolved metals results?	N/A
Comments: Total and dissolved metals analyses were not performed for this data set.	



DATA QUALIFICATION SUMMARY

Data qualifiers were not applied as a result of this validation.





Investigation Phase II Report Sanitary Lagoon

Appendix C – Laboratory Reports



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

October 13, 2021

Brian McLoughlin
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: Sanitary Lagoon Investigation Phase II

OrderNo.: 2109B64

Dear Brian McLoughlin:

Hall Environmental Analysis Laboratory received 20 sample(s) on 9/21/2021 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

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

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-03 (0.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 2:30:00 PM

Lab ID: 2109B64-001

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	180	4.8	9.7		mg/Kg	1	9/27/2021 5:19:25 PM	62780
Motor Oil Range Organics (MRO)	91	48	48		mg/Kg	1	9/27/2021 5:19:25 PM	62780
Surr: DNOP	104	0	70-130		%Rec	1	9/27/2021 5:19:25 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-03(2.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 2:35:00 PM

Lab ID: 2109B64-002

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	13	4.6	9.4		mg/Kg	1	9/27/2021 8:32:15 PM	62780
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	9/27/2021 8:32:15 PM	62780
Surr: DNOP	116	0	70-130		%Rec	1	9/27/2021 8:32:15 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-04 (0.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 2:45:00 PM

Lab ID: 2109B64-003

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	7.4	4.7	9.6	J	mg/Kg	1	9/24/2021 9:19:38 PM	62780
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	9/24/2021 9:19:38 PM	62780
Surr: DNOP	100	0	70-130		%Rec	1	9/24/2021 9:19:38 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-04(2.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 2:50:00 PM

Lab ID: 2109B64-004

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	170	4.7	9.5		mg/Kg	1	9/27/2021 8:19:56 PM	62780
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	9/27/2021 8:19:56 PM	62780
Surr: DNOP	95.3	0	70-130		%Rec	1	9/27/2021 8:19:56 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-02(0.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 3:00:00 PM

Lab ID: 2109B64-005

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	160	4.9	9.8		mg/Kg	1	9/27/2021 5:43:46 PM	62780
Motor Oil Range Organics (MRO)	81	49	49		mg/Kg	1	9/27/2021 5:43:46 PM	62780
Surr: DNOP	110	0	70-130		%Rec	1	9/27/2021 5:43:46 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-02(2.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 3:03:00 PM

Lab ID: 2109B64-006

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	ND	4.7	9.6		mg/Kg	1	9/24/2021 10:08:25 PM	62780
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	9/24/2021 10:08:25 PM	62780
Surr: DNOP	93.6	0	70-130		%Rec	1	9/24/2021 10:08:25 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-01(0.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 3:10:00 PM

Lab ID: 2109B64-007

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: SB
Diesel Range Organics (DRO)	57	4.8	9.7		mg/Kg	1	9/27/2021 6:08:01 PM	62780
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	9/27/2021 6:08:01 PM	62780
Surr: DNOP	98.6	0	70-130		%Rec	1	9/27/2021 6:08:01 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-01(2.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 3:12:00 PM

Lab ID: 2109B64-008

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: SB
Diesel Range Organics (DRO)	ND	4.5	9.0		mg/Kg	1	9/24/2021 10:32:46 PM	62780
Motor Oil Range Organics (MRO)	ND	45	45		mg/Kg	1	9/24/2021 10:32:46 PM	62780
Surr: DNOP	90.0	0	70-130		%Rec	1	9/24/2021 10:32:46 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-05(0.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 3:15:00 PM

Lab ID: 2109B64-009

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: SB
Diesel Range Organics (DRO)	7400	120	230		mg/Kg	20	9/28/2021 4:51:14 PM	62780
Motor Oil Range Organics (MRO)	2500	1200	1200		mg/Kg	20	9/28/2021 4:51:14 PM	62780
Surr: DNOP	0	0	70-130	S	%Rec	20	9/28/2021 4:51:14 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-05(2.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 3:17:00 PM

Lab ID: 2109B64-010

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	8.5	4.8	9.8	J	mg/Kg	1	9/24/2021 10:57:05 PM	62780
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	9/24/2021 10:57:05 PM	62780
Surr: DNOP	93.5	0	70-130		%Rec	1	9/24/2021 10:57:05 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-06(0.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 3:20:00 PM

Lab ID: 2109B64-011

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	42	4.7	9.6		mg/Kg	1	9/27/2021 6:32:16 PM	62780
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	9/27/2021 6:32:16 PM	62780
Surr: DNOP	102	0	70-130		%Rec	1	9/27/2021 6:32:16 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-06(2.5)

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 3:25:00 PM

Lab ID: 2109B64-012

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	290	4.8	9.7		mg/Kg	1	9/27/2021 7:20:44 PM	62780
Motor Oil Range Organics (MRO)	63	48	48		mg/Kg	1	9/27/2021 7:20:44 PM	62780
Surr: DNOP	93.8	0	70-130		%Rec	1	9/27/2021 7:20:44 PM	62780

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-BD-09202021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021

Lab ID: 2109B64-013

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: SB	
Diesel Range Organics (DRO)	8.6	4.7	9.5	J	mg/Kg	1	9/24/2021 11:21:32 PM	62780
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	9/24/2021 11:21:32 PM	62780
Surr: DNOP	94.4	0	70-130		%Rec	1	9/24/2021 11:21:32 PM	62780

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

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

Analytical Report

Lab Order 2109B64

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-EB-09202021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 1:15:00 PM

Lab ID: 2109B64-014

Matrix: AQUEOUS

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								Analyst: CCM
Benzene	ND	0.23	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Toluene	ND	0.20	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,2,4-Trimethylbenzene	0.17	0.12	1.0	J	µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Naphthalene	ND	0.50	2.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Acetone	4.0	2.5	10	J	µg/L	1	9/23/2021 7:23:00 AM	B8147C
Bromobenzene	ND	0.28	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Bromoform	ND	0.31	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Bromomethane	ND	0.85	3.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
2-Butanone	2.7	2.0	10	J	µg/L	1	9/23/2021 7:23:00 AM	B8147C
Carbon disulfide	2.7	0.59	10	J	µg/L	1	9/23/2021 7:23:00 AM	B8147C
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Chloroethane	ND	0.38	2.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Chloroform	ND	0.13	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Chloromethane	ND	0.41	3.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Dibromomethane	ND	0.31	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

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Analytical Report

Lab Order 2109B64

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-EB-09202021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/20/2021 1:15:00 PM

Lab ID: 2109B64-014

Matrix: AQUEOUS

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								Analyst: CCM
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
2-Hexanone	ND	1.8	10		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Styrene	0.20	0.14	1.0	J	µg/L	1	9/23/2021 7:23:00 AM	B8147C
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/23/2021 7:23:00 AM	B8147C
Surr: 1,2-Dichloroethane-d4	104	0	70-130		%Rec	1	9/23/2021 7:23:00 AM	B8147C
Surr: 4-Bromofluorobenzene	99.8	0	70-130		%Rec	1	9/23/2021 7:23:00 AM	B8147C
Surr: Dibromofluoromethane	101	0	70-130		%Rec	1	9/23/2021 7:23:00 AM	B8147C
Surr: Toluene-d8	96.4	0	70-130		%Rec	1	9/23/2021 7:23:00 AM	B8147C

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

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Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-01

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021 10:10:00 AM

Lab ID: 2109B64-015

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: SB								
Diesel Range Organics (DRO)	ND	4.6	9.4		mg/Kg	1	9/24/2021 11:45:41 PM	62780
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	9/24/2021 11:45:41 PM	62780
Surr: DNOP	94.5	0	70-130		%Rec	1	9/24/2021 11:45:41 PM	62780
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: NSB								
Gasoline Range Organics (GRO)	ND	2.2	3.4		mg/Kg	1	9/25/2021 3:54:10 AM	B81560
Surr: BFB	102	0	70-130		%Rec	1	9/25/2021 3:54:10 AM	B81560
EPA METHOD 300.0: ANIONS								
Analyst: VP								
Fluoride	14	1.5	1.5		mg/Kg	5	10/1/2021 2:00:54 AM	62945
Chloride	86	7.5	7.5		mg/Kg	5	10/1/2021 2:00:54 AM	62945
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/1/2021 2:00:54 AM	62945
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/1/2021 2:00:54 AM	62945
Sulfate	19	7.5	7.5		mg/Kg	5	10/1/2021 2:00:54 AM	62945
EPA METHOD 7471B: MERCURY								
Analyst: ags								
Mercury	0.0029	0.0027	0.034	J	mg/Kg	1	10/8/2021 10:10:04 AM	63122
EPA METHOD 6010B: SOIL METALS								
Analyst: JLF								
Antimony	ND	1.6	2.5		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Arsenic	ND	1.4	2.5		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Barium	78	0.060	0.099		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Beryllium	1.1	0.029	0.15		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Cadmium	ND	0.050	0.099		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Chromium	9.2	0.15	0.30		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Cobalt	4.4	0.060	0.30		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Iron	16000	250	250		mg/Kg	100	10/7/2021 1:59:47 PM	63108
Lead	2.1	0.27	0.30		mg/Kg	1	10/7/2021 3:20:56 PM	63108
Manganese	350	1.6	2.0		mg/Kg	10	10/7/2021 1:57:49 PM	63108
Nickel	9.4	0.20	0.50		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Selenium	ND	2.2	2.5		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Silver	ND	0.14	0.25		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Vanadium	16	0.11	2.5		mg/Kg	1	10/7/2021 12:46:56 PM	63108
Zinc	13	1.3	2.5		mg/Kg	1	10/7/2021 12:46:56 PM	63108
EPA METHOD 8260B: VOLATILES								
Analyst: RAA								
Benzene	ND	0.0065	0.017		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
Toluene	ND	0.0043	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
Methyl tert-butyl ether (MTBE)	ND	0.019	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
1,2-Dichloroethane (EDC)	ND	0.0077	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
1,2-Dibromoethane (EDB)	ND	0.013	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
2-Butanone	ND	0.15	0.34		mg/Kg	1	9/22/2021 9:26:17 PM	R81513

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-01

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021 10:10:00 AM

Lab ID: 2109B64-015

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
Carbon disulfide	ND	0.014	0.34		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
Chlorobenzene	ND	0.0061	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
Chloroform	ND	0.0048	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
1,1-Dichloroethane	ND	0.0098	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
Styrene	ND	0.0046	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
1,1,1-Trichloroethane	ND	0.0074	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
Trichloroethene (TCE)	ND	0.0066	0.034		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
Xylenes, Total	ND	0.018	0.067		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
1,4-Dioxane	ND	0.19	0.34		mg/Kg	1	9/22/2021 9:26:17 PM	R81513
Surr: Dibromofluoromethane	116		70-130		%Rec	1	9/22/2021 9:26:17 PM	R81513
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	9/22/2021 9:26:17 PM	R81513
Surr: Toluene-d8	97.4		70-130		%Rec	1	9/22/2021 9:26:17 PM	R81513
Surr: 4-Bromofluorobenzene	92.9		70-130		%Rec	1	9/22/2021 9:26:17 PM	R81513

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-10

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021 12:45:00 PM

Lab ID: 2109B64-016

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: SB
Diesel Range Organics (DRO)	6800	46	92		mg/Kg	10	9/24/2021 1:09:52 PM	62780
Motor Oil Range Organics (MRO)	ND	460	460	D	mg/Kg	10	9/24/2021 1:09:52 PM	62780
Surr: DNOP	0	0	70-130	S	%Rec	10	9/24/2021 1:09:52 PM	62780
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	1000	190	290		mg/Kg	100	9/25/2021 4:17:38 AM	B81560
Surr: BFB	133	0	70-130	S	%Rec	100	9/25/2021 4:17:38 AM	B81560
EPA METHOD 300.0: ANIONS								Analyst: VP
Fluoride	1.7	1.5	1.5		mg/Kg	5	10/1/2021 2:50:34 AM	62945
Chloride	23	7.5	7.5		mg/Kg	5	10/1/2021 2:50:34 AM	62945
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/1/2021 2:50:34 AM	62945
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/1/2021 2:50:34 AM	62945
Sulfate	17	7.5	7.5		mg/Kg	5	10/1/2021 2:50:34 AM	62945
EPA METHOD 7471B: MERCURY								Analyst: ags
Mercury	0.0045	0.0028	0.035	J	mg/Kg	1	10/8/2021 10:12:12 AM	63122
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Antimony	ND	1.6	2.4		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Arsenic	ND	1.4	2.4		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Barium	440	0.58	0.97		mg/Kg	10	10/7/2021 2:01:50 PM	63108
Beryllium	0.56	0.028	0.15		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Cadmium	ND	0.048	0.097		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Chromium	6.6	0.15	0.29		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Cobalt	3.2	0.059	0.29		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Iron	11000	240	240		mg/Kg	100	10/7/2021 2:03:48 PM	63108
Lead	2.0	0.26	0.29		mg/Kg	1	10/7/2021 3:26:43 PM	63108
Manganese	750	1.6	1.9		mg/Kg	10	10/7/2021 2:01:50 PM	63108
Nickel	6.0	0.19	0.48		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Selenium	ND	2.1	2.4		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Silver	ND	0.14	0.24		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Vanadium	15	0.11	2.4		mg/Kg	1	10/7/2021 1:06:43 PM	63108
Zinc	12	1.3	2.4		mg/Kg	1	10/7/2021 1:06:43 PM	63108
EPA METHOD 8260B: VOLATILES								Analyst: RAA
Benzene	9.7	0.28	0.72		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
Toluene	1.5	0.19	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
Methyl tert-butyl ether (MTBE)	ND	0.81	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
1,2-Dichloroethane (EDC)	ND	0.33	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
1,2-Dibromoethane (EDB)	ND	0.57	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
2-Butanone	ND	6.2	14		mg/Kg	50	9/22/2021 10:20:06 PM	R81513

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-10

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021 12:45:00 PM

Lab ID: 2109B64-016

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
Carbon disulfide	ND	0.59	14		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
Chlorobenzene	ND	0.26	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
Chloroform	ND	0.20	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
1,1-Dichloroethane	ND	0.42	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
Styrene	ND	0.20	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
1,1,1-Trichloroethane	ND	0.32	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
Trichloroethene (TCE)	ND	0.28	1.4		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
Xylenes, Total	26	0.76	2.9		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
1,4-Dioxane	ND	8.2	14		mg/Kg	50	9/22/2021 10:20:06 PM	R81513
Surr: Dibromofluoromethane	98.4		70-130		%Rec	50	9/22/2021 10:20:06 PM	R81513
Surr: 1,2-Dichloroethane-d4	96.0		70-130		%Rec	50	9/22/2021 10:20:06 PM	R81513
Surr: Toluene-d8	101		70-130		%Rec	50	9/22/2021 10:20:06 PM	R81513
Surr: 4-Bromofluorobenzene	113		70-130		%Rec	50	9/22/2021 10:20:06 PM	R81513

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-03

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021 1:15:00 PM

Lab ID: 2109B64-017

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: SB
Diesel Range Organics (DRO)	160	4.8	9.7		mg/Kg	1	9/28/2021 6:50:21 PM	62780
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	9/28/2021 6:50:21 PM	62780
Surr: DNOP	108	0	70-130		%Rec	1	9/28/2021 6:50:21 PM	62780
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.7	2.5		mg/Kg	1	9/26/2021 11:58:51 AM	G81561
Surr: BFB	113	0	70-130		%Rec	1	9/26/2021 11:58:51 AM	G81561
EPA METHOD 300.0: ANIONS								Analyst: VP
Fluoride	6.9	1.5	1.5		mg/Kg	5	10/1/2021 4:05:02 AM	62945
Chloride	87	7.5	7.5		mg/Kg	5	10/1/2021 4:05:02 AM	62945
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/1/2021 4:05:02 AM	62945
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/1/2021 4:05:02 AM	62945
Sulfate	14	7.5	7.5		mg/Kg	5	10/1/2021 4:05:02 AM	62945
EPA METHOD 7471B: MERCURY								Analyst: ags
Mercury	0.0031	0.0027	0.034	J	mg/Kg	1	10/8/2021 10:18:36 AM	63122
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Antimony	ND	1.7	2.5		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Arsenic	ND	1.4	2.5		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Barium	150	0.061	0.10		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Beryllium	0.87	0.030	0.15		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Cadmium	ND	0.051	0.10		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Chromium	8.9	0.15	0.31		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Cobalt	3.9	0.062	0.31		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Iron	15000	250	250		mg/Kg	100	10/7/2021 2:07:47 PM	63108
Lead	1.9	0.27	0.31		mg/Kg	1	10/7/2021 3:32:33 PM	63108
Manganese	360	1.7	2.0		mg/Kg	10	10/7/2021 2:05:50 PM	63108
Nickel	8.4	0.20	0.51		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Selenium	ND	2.2	2.5		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Silver	ND	0.15	0.25		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Vanadium	16	0.12	2.5		mg/Kg	1	10/7/2021 1:08:57 PM	63108
Zinc	11	1.4	2.5		mg/Kg	1	10/7/2021 1:08:57 PM	63108
EPA METHOD 8260B: VOLATILES								Analyst: RAA
Benzene	ND	0.0048	0.013		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
Toluene	ND	0.0032	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
Methyl tert-butyl ether (MTBE)	ND	0.014	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
1,2-Dichloroethane (EDC)	ND	0.0057	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
1,2-Dibromoethane (EDB)	ND	0.0099	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
2-Butanone	ND	0.11	0.25		mg/Kg	1	9/22/2021 9:53:13 PM	R81513

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order 2109B64

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-03

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021 1:15:00 PM

Lab ID: 2109B64-017

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
Carbon disulfide	ND	0.010	0.25		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
Chlorobenzene	ND	0.0045	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
Chloroform	ND	0.0036	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
1,1-Dichloroethane	ND	0.0073	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
Styrene	ND	0.0034	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
1,1,1-Trichloroethane	ND	0.0055	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
Trichloroethene (TCE)	ND	0.0049	0.025		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
Xylenes, Total	0.019	0.013	0.050	J	mg/Kg	1	9/22/2021 9:53:13 PM	R81513
1,4-Dioxane	ND	0.14	0.25		mg/Kg	1	9/22/2021 9:53:13 PM	R81513
Surr: Dibromofluoromethane	113		70-130		%Rec	1	9/22/2021 9:53:13 PM	R81513
Surr: 1,2-Dichloroethane-d4	103		70-130		%Rec	1	9/22/2021 9:53:13 PM	R81513
Surr: Toluene-d8	102		70-130		%Rec	1	9/22/2021 9:53:13 PM	R81513
Surr: 4-Bromofluorobenzene	105		70-130		%Rec	1	9/22/2021 9:53:13 PM	R81513

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

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

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-BD-09212021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021

Lab ID: 2109B64-018

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: SB								
Diesel Range Organics (DRO)	260	4.7	9.4		mg/Kg	1	9/27/2021 7:42:56 PM	62781
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	9/27/2021 7:42:56 PM	62781
Surr: DNOP	94.2	0	70-130		%Rec	1	9/27/2021 7:42:56 PM	62781
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: NSB								
Gasoline Range Organics (GRO)	ND	9.6	14	D	mg/Kg	5	9/26/2021 12:46:02 PM	G81561
Surr: BFB	116	0	70-130	D	%Rec	5	9/26/2021 12:46:02 PM	G81561
EPA METHOD 300.0: ANIONS								
Analyst: VP								
Fluoride	7.7	1.5	1.5		mg/Kg	5	10/1/2021 4:29:52 AM	62945
Chloride	91	7.5	7.5		mg/Kg	5	10/1/2021 4:29:52 AM	62945
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/1/2021 4:29:52 AM	62945
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/1/2021 4:29:52 AM	62945
Sulfate	17	7.5	7.5		mg/Kg	5	10/1/2021 4:29:52 AM	62945
EPA METHOD 7471B: MERCURY								
Analyst: ags								
Mercury	ND	0.0026	0.033		mg/Kg	1	10/8/2021 10:20:43 AM	63122
EPA METHOD 6010B: SOIL METALS								
Analyst: JLF								
Antimony	ND	1.6	2.4		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Arsenic	ND	1.4	2.4		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Barium	150	0.058	0.097		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Beryllium	0.83	0.028	0.15		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Cadmium	ND	0.049	0.097		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Chromium	8.2	0.15	0.29		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Cobalt	3.8	0.059	0.29		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Iron	14000	240	240		mg/Kg	100	10/7/2021 2:11:46 PM	63108
Lead	2.4	0.26	0.29		mg/Kg	1	10/7/2021 3:34:05 PM	63108
Manganese	380	1.6	1.9		mg/Kg	10	10/7/2021 2:09:49 PM	63108
Nickel	8.9	0.19	0.49		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Selenium	ND	2.1	2.4		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Silver	ND	0.14	0.24		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Vanadium	16	0.11	2.4		mg/Kg	1	10/7/2021 1:11:09 PM	63108
Zinc	11	1.3	2.4		mg/Kg	1	10/7/2021 1:11:09 PM	63108
EPA METHOD 8260B: VOLATILES								
Analyst: RAA								
Benzene	ND	0.028	0.072	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
Toluene	ND	0.019	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
Methyl tert-butyl ether (MTBE)	ND	0.082	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
1,2-Dichloroethane (EDC)	ND	0.033	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
1,2-Dibromoethane (EDB)	ND	0.057	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
2-Butanone	ND	0.63	1.4	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order **2109B64**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-BD-09212021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021

Lab ID: 2109B64-018

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
Carbon disulfide	ND	0.060	1.4	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
Chlorobenzene	ND	0.026	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
Chloroform	ND	0.021	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
1,1-Dichloroethane	ND	0.042	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
Styrene	ND	0.020	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
1,1,1-Trichloroethane	ND	0.032	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
Trichloroethene (TCE)	ND	0.028	0.14	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
Xylenes, Total	ND	0.076	0.29	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
1,4-Dioxane	ND	0.83	1.4	D	mg/Kg	5	9/24/2021 5:28:54 PM	S81575
Surr: Dibromofluoromethane	94.7		70-130	D	%Rec	5	9/24/2021 5:28:54 PM	S81575
Surr: 1,2-Dichloroethane-d4	89.7		70-130	D	%Rec	5	9/24/2021 5:28:54 PM	S81575
Surr: Toluene-d8	95.4		70-130	D	%Rec	5	9/24/2021 5:28:54 PM	S81575
Surr: 4-Bromofluorobenzene	99.8		70-130	D	%Rec	5	9/24/2021 5:28:54 PM	S81575

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

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

Analytical Report

Lab Order 2109B64

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-EB-09212021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021 1:15:00 PM

Lab ID: 2109B64-019

Matrix: AQUEOUS

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								
						Analyst: CCM		
Benzene	ND	0.23	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Toluene	ND	0.20	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,2,4-Trimethylbenzene	0.17	0.12	1.0	J	µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,3,5-Trimethylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Naphthalene	ND	0.50	2.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1-Methylnaphthalene	ND	0.84	4.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
2-Methylnaphthalene	ND	0.69	4.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Acetone	4.4	2.5	10	J	µg/L	1	9/23/2021 7:46:00 AM	B8147C
Bromobenzene	ND	0.28	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Bromodichloromethane	ND	0.20	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Bromoform	ND	0.31	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Bromomethane	ND	0.85	3.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
2-Butanone	2.8	2.0	10	J	µg/L	1	9/23/2021 7:46:00 AM	B8147C
Carbon disulfide	1.8	0.59	10	J	µg/L	1	9/23/2021 7:46:00 AM	B8147C
Carbon Tetrachloride	ND	0.18	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Chloroethane	ND	0.38	2.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Chloroform	ND	0.13	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Chloromethane	ND	0.41	3.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
2-Chlorotoluene	ND	0.13	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
4-Chlorotoluene	ND	0.34	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
cis-1,2-DCE	ND	0.39	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
cis-1,3-Dichloropropene	ND	0.36	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,2-Dibromo-3-chloropropane	ND	0.59	2.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Dibromochloromethane	ND	0.28	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Dibromomethane	ND	0.31	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,2-Dichlorobenzene	ND	0.15	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,3-Dichlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,4-Dichlorobenzene	ND	0.21	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Dichlorodifluoromethane	ND	0.40	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,1-Dichloroethene	ND	0.20	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,2-Dichloropropane	ND	0.20	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,3-Dichloropropane	ND	0.18	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
2,2-Dichloropropane	ND	0.26	2.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 24 of 42

Analytical Report

Lab Order 2109B64

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-EB-09212021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/21/2021 1:15:00 PM

Lab ID: 2109B64-019

Matrix: AQUEOUS

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								Analyst: CCM
1,1-Dichloropropene	ND	0.18	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Hexachlorobutadiene	ND	0.56	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
2-Hexanone	ND	1.8	10		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Isopropylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
4-Isopropyltoluene	ND	0.20	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
4-Methyl-2-pentanone	ND	0.88	10		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Methylene Chloride	ND	0.50	3.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
n-Butylbenzene	ND	0.25	3.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
n-Propylbenzene	ND	0.18	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
sec-Butylbenzene	ND	0.14	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Styrene	0.21	0.14	1.0	J	µg/L	1	9/23/2021 7:46:00 AM	B8147C
tert-Butylbenzene	ND	0.24	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,1,1,2-Tetrachloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,1,2,2-Tetrachloroethane	ND	0.27	2.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
trans-1,2-DCE	ND	0.19	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
trans-1,3-Dichloropropene	ND	0.34	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,2,3-Trichlorobenzene	ND	0.25	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,2,4-Trichlorobenzene	ND	0.24	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,1,2-Trichloroethane	ND	0.20	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Trichlorofluoromethane	ND	0.16	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
1,2,3-Trichloropropane	ND	0.44	2.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Vinyl chloride	ND	0.32	1.0		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/23/2021 7:46:00 AM	B8147C
Surr: 1,2-Dichloroethane-d4	105	0	70-130		%Rec	1	9/23/2021 7:46:00 AM	B8147C
Surr: 4-Bromofluorobenzene	98.9	0	70-130		%Rec	1	9/23/2021 7:46:00 AM	B8147C
Surr: Dibromofluoromethane	105	0	70-130		%Rec	1	9/23/2021 7:46:00 AM	B8147C
Surr: Toluene-d8	96.6	0	70-130		%Rec	1	9/23/2021 7:46:00 AM	B8147C

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order 2109B64

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MeOH Blank

Project: Sanitary Lagoon Investigation Phase II

Collection Date:

Lab ID: 2109B64-020

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								Analyst: RAA
Benzene	ND	0.0096	0.025		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Toluene	ND	0.0064	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Ethylbenzene	ND	0.012	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Methyl tert-butyl ether (MTBE)	ND	0.028	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,2,4-Trimethylbenzene	ND	0.0071	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,3,5-Trimethylbenzene	ND	0.011	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,2-Dichloroethane (EDC)	ND	0.011	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,2-Dibromoethane (EDB)	ND	0.020	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Naphthalene	ND	0.019	0.10		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
2-Methylnaphthalene	ND	0.046	0.20		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Acetone	ND	0.16	0.75		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Bromobenzene	ND	0.011	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Bromoform	ND	0.012	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
2-Butanone	ND	0.22	0.50		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Carbon disulfide	ND	0.021	0.50		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Carbon tetrachloride	ND	0.0056	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Chlorobenzene	ND	0.0090	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Chloroethane	ND	0.019	0.10		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Chloroform	ND	0.0071	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Chloromethane	ND	0.018	0.15		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
2-Chlorotoluene	ND	0.0067	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
4-Chlorotoluene	ND	0.026	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
cis-1,2-DCE	ND	0.025	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
cis-1,3-Dichloropropene	ND	0.0074	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,2-Dibromo-3-chloropropane	ND	0.022	0.10		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Dibromochloromethane	ND	0.0080	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Dibromomethane	ND	0.012	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,2-Dichlorobenzene	ND	0.010	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,3-Dichlorobenzene	ND	0.0094	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,4-Dichlorobenzene	ND	0.013	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Dichlorodifluoromethane	ND	0.019	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,1-Dichloroethane	ND	0.015	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,1-Dichloroethene	ND	0.011	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,2-Dichloropropane	ND	0.0097	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,3-Dichloropropane	ND	0.011	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
2,2-Dichloropropane	ND	0.0071	0.10		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,1-Dichloropropene	ND	0.0060	0.10		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Hexachlorobutadiene	ND	0.034	0.10		mg/Kg	1	9/24/2021 6:50:08 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

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Analytical Report

Lab Order 2109B64

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MeOH Blank

Project: Sanitary Lagoon Investigation Phase II

Collection Date:

Lab ID: 2109B64-020

Matrix: SOIL

Received Date: 9/21/2021 4:30:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								Analyst: RAA
2-Hexanone	ND	0.022	0.50		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Isopropylbenzene	ND	0.0093	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
4-Isopropyltoluene	ND	0.013	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
4-Methyl-2-pentanone	ND	0.058	0.50		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Methylene chloride	ND	0.036	0.15		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
n-Butylbenzene	ND	0.013	0.15		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
n-Propylbenzene	ND	0.0081	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
sec-Butylbenzene	ND	0.041	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Styrene	ND	0.0068	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
tert-Butylbenzene	ND	0.012	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,1,1,2-Tetrachloroethane	ND	0.0073	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,1,2,2-Tetrachloroethane	ND	0.016	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Tetrachloroethene (PCE)	ND	0.014	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
trans-1,2-DCE	ND	0.0097	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
trans-1,3-Dichloropropene	ND	0.012	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,2,3-Trichlorobenzene	ND	0.0077	0.10		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,2,4-Trichlorobenzene	ND	0.017	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,1,1-Trichloroethane	ND	0.011	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,1,2-Trichloroethane	ND	0.013	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Trichloroethene (TCE)	ND	0.0098	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Trichlorofluoromethane	ND	0.011	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
1,2,3-Trichloropropane	ND	0.021	0.10		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Vinyl chloride	ND	0.0095	0.050		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Xylenes, Total	ND	0.026	0.10		mg/Kg	1	9/24/2021 6:50:08 PM	S81575
Surr: Dibromofluoromethane	112		70-130		%Rec	1	9/24/2021 6:50:08 PM	S81575
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	9/24/2021 6:50:08 PM	S81575
Surr: Toluene-d8	97.8		70-130		%Rec	1	9/24/2021 6:50:08 PM	S81575
Surr: 4-Bromofluorobenzene	92.1		70-130		%Rec	1	9/24/2021 6:50:08 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

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ANALYTICAL REPORT

October 04, 2021

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

Hall Environmental Analysis Laboratory

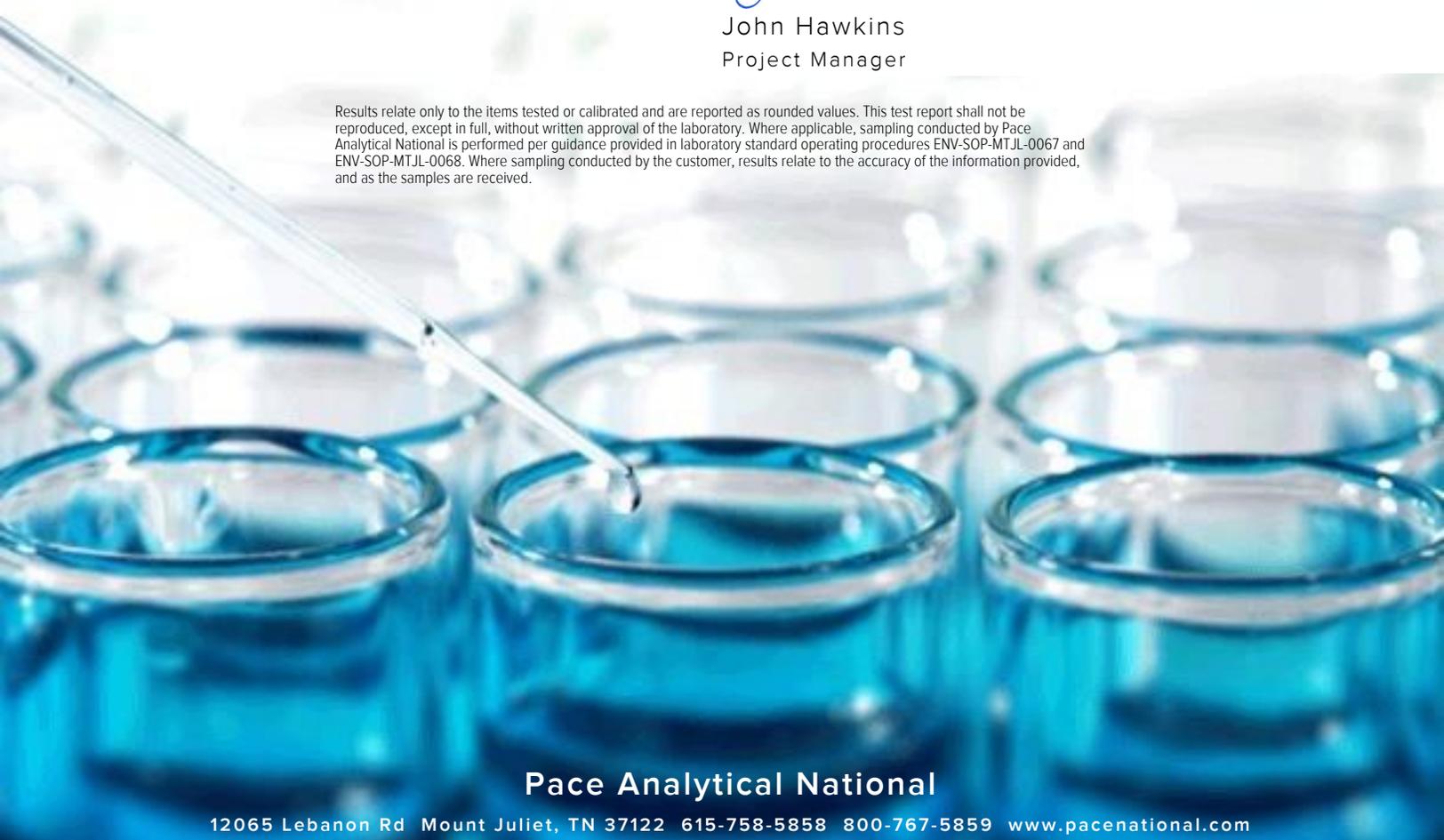
Sample Delivery Group: L1406936
 Samples Received: 09/22/2021
 Project Number:
 Description:

Report To: Andy Freeman
 4901 Hawkins NE
 Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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Tc: Table of Contents 2

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Cn: Case Narrative 4

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 2109B64-016B SLP-10 L1406936-03 7

 2109B64-016C SLP-10 L1406936-04 8

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 2109B64-018B SLP-BD-09212021 L1406936-07 11

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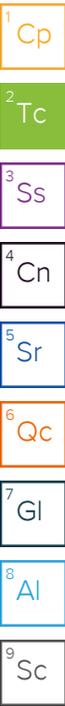
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2109B64-015B SLP-01 L1406936-01 Solid

Collected by
Collected date/time
Received date/time

09/21/21 10:10
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1747651	1	09/28/21 10:29	09/29/21 12:33	GB	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749144	1	09/30/21 14:34	09/30/21 19:02	SDL	Mt. Juliet, TN



2109B64-015C SLP-01 L1406936-02 Solid

Collected by
Collected date/time
Received date/time

09/21/21 10:10
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method EPA 1681	WG1745590	1000	09/22/21 13:55	09/22/21 13:55	BGE	Mt. Juliet, TN



2109B64-016B SLP-10 L1406936-03 Solid

Collected by
Collected date/time
Received date/time

09/21/21 12:45
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1747651	1	09/28/21 10:29	09/29/21 12:38	GB	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749144	1	09/30/21 14:34	09/30/21 19:03	SDL	Mt. Juliet, TN



2109B64-016C SLP-10 L1406936-04 Solid

Collected by
Collected date/time
Received date/time

09/21/21 12:45
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method EPA 1681	WG1745590	1000	09/22/21 13:55	09/22/21 13:55	BGE	Mt. Juliet, TN

2109B64-017B SLP-03 L1406936-05 Solid

Collected by
Collected date/time
Received date/time

09/21/21 13:15
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1747651	1	09/28/21 10:29	09/29/21 12:43	GB	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749144	1	09/30/21 14:34	09/30/21 19:04	SDL	Mt. Juliet, TN

2109B64-017C SLP-03 L1406936-06 Solid

Collected by
Collected date/time
Received date/time

09/21/21 13:15
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method EPA 1681	WG1745590	1000	09/22/21 13:55	09/22/21 13:55	BGE	Mt. Juliet, TN

2109B64-018B SLP-BD-09212021 L1406936-07 Solid

Collected by
Collected date/time
Received date/time

09/21/21 00:00
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1747651	1	09/28/21 10:29	09/29/21 12:49	GB	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749144	1	09/30/21 14:34	09/30/21 19:05	SDL	Mt. Juliet, TN

2109B64-018C SLP-BD-09212021 L1406936-08 Solid

Collected by
Collected date/time
Received date/time

09/21/21 00:00
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method EPA 1681	WG1745590	1000	09/22/21 13:55	09/22/21 13:55	BGE	Mt. Juliet, TN

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



John Hawkins
Project Manager

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1406936-04	2109B64-016C SLP-10	EPA 1681

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

2109B04-015B-SLP-01
Collected date/time: 09/21/21 10:10

L1406936

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/29/2021 12:33	WG1747651

¹ Cp

² Tc

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/30/2021 19:02	WG1749144

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

2109B04-015C-SEP-201

Collected date/time: 09/21/21 10:10

L1406936

Microbiology by Method EPA 1681

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Fecal Coliform	<226.1	<u>T8</u>	1000	09/22/2021 13:55	WG1745590

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

2109B04-016B-SLP-10
Collected date/time: 09/21/21 12:45

L1406936

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/29/2021 12:38	WG1747651

¹Cp

²Tc

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/30/2021 19:03	WG1749144

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

2109B04-016C-3LP-10
Collected date/time: 09/21/21 12:45

L1406936

Microbiology by Method EPA 1681

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Fecal Coliform	<223.5	<u>T8</u>	1000	09/22/2021 13:55	WG1745590

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Collected date/time: 09/21/21 13:15

L1406936

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/29/2021 12:43	WG1747651

¹ Cp

² Tc

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/30/2021 19:04	WG1749144

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

2109B04-017C SLP 03
Collected date/time: 09/21/21 13:15

L1406936

Microbiology by Method EPA 1681

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Fecal Coliform	<224.6	<u>T8</u>	1000	09/22/2021 13:55	WG1745590

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Collected date/time: 09/21/21 00:00

L1406936

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/29/2021 12:49	WG1747651

¹ Cp

² Tc

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	09/30/2021 19:05	WG1749144

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Collected date/time: 09/21/21 00:00

L1406936

Microbiology by Method EPA 1681

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Fecal Coliform	<219.5	<u>T8</u>	1000	09/22/2021 13:55	WG1745590

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

Wet Chemistry by Method 7199

[L1406936-01,03,05,07](#)

Method Blank (MB)

(MB) R3710903-1 09/29/21 12:20

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	U		0.255	1.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1406936-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1406936-07 09/29/21 12:49 • (DUP) R3710903-3 09/29/21 12:54

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

L1407403-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1407403-03 09/29/21 14:01 • (DUP) R3710903-8 09/29/21 14:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3710903-2 09/29/21 12:28

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	9.06	90.6	80.0-120	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3710903-4 09/29/21 13:30 • (MSD) R3710903-5 09/29/21 13:35

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0		ND	ND	0.000	0.000	1	75.0-125	<u>J6</u>	<u>J6</u>	0.000	20

Original Sample (OS) • Matrix Spike (MS)

(OS) • (MS) R3710903-6 09/29/21 13:41

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	643		574	89.3	50	75.0-125	

Wet Chemistry by Method 9012B

[L1406936-01.03.05.07](#)

Method Blank (MB)

(MB) R3711018-1 09/30/21 18:46

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Cyanide	U		0.0733	0.250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1407340-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1407340-02 09/30/21 19:10 • (DUP) R3711018-3 09/30/21 19:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Cyanide	ND	0.279	1	90.2	P1	20

L1407688-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1407688-02 09/30/21 19:16 • (DUP) R3711018-6 09/30/21 19:17

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3711018-2 09/30/21 18:47

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Cyanide	2.50	2.52	101	85.0-115	

L1407395-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1407395-02 09/30/21 19:12 • (MS) R3711018-4 09/30/21 19:13 • (MSD) R3711018-5 09/30/21 19:15

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	1.67	ND	0.622	0.582	37.3	34.9	1	75.0-125	J6	J6	6.56	20

L1407688-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1407688-04 09/30/21 19:18 • (MS) R3711018-7 09/30/21 19:19 • (MSD) R3711018-8 09/30/21 19:20

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	1.67	ND	0.451	0.555	27.1	33.3	1	75.0-125	J6	J3 J6	20.8	20

Guide to Reading and Understanding Your Laboratory Report

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

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.





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

K197

SUB CONTRACTOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2109B64-015B	SLP-01	40ZGU	Soil	9/21/2021 10:10:00 AM	2	Cr6, Total Cyanide in soil -01
2	2109B64-015C	SLP-01	120 ML NA2S2O3	Soil	9/21/2021 10:10:00 AM	1	Total Coliform and E.Coli in soil -02
3	2109B64-016B	SLP-10	40ZGU	Soil	9/21/2021 12:45:00 PM	2	Cr6, Total Cyanide in soil -03
4	2109B64-016C	SLP-10	120 ML NA2S2O3	Soil	9/21/2021 12:45:00 PM	1	Total Coliform and E.Coli in soil -04
5	2109B64-017B	SLP-03	40ZGU	Soil	9/21/2021 1:15:00 PM	2	Cr6, Total Cyanide in soil -05
6	2109B64-017C	SLP-03	120 ML NA2S2O3	Soil	9/21/2021 1:15:00 PM	1	Total Coliform and E.Coli in soil -06
7	2109B64-018B	SLP-bd-09212021	40ZGU	Soil	9/21/2021	2	Cr6, Total Cyanide in soil -07
8	2109B64-018C	SLP-bd-09212021	120 ML NA2S2O3	Soil	9/21/2021	1	Total Coliform and E.Coli in soil -08

4406936

IO 09-21-2021

Sample Receipt Checklist

COC Seal Present/Intact: Y N If Applicable
 COC Signed/Accurate: Y N VOA Zero Headspace: Y N
 Bottles arrive intact: Y N Pres. Correct/Check: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 RAD Screen <0.5 mR/hr: Y N

5,6 + 5 = 5.6 PAR

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: <i>TOB</i>	Date: 9/21/2021	Time: 4:52 PM	Received By: <i>Roy Joe</i>	Date: 9/21/2021	Time: 9:15
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

REPORT TRANSMITTAL DESIRED:

HARDCOPY (extra cost) FAX EMAIL ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool? _____

Comments: _____

TAT: Standard RUSH Next BD 2nd BD 3rd BD

CLIENT: HALLENVANM Page L# L1406936-02,-04,-06,-08

DATE ON: 9/22/2021 DATE OFF: 9/23/2021

Data entered into excel spreadsheet by: ML 607

Sample No.
1
2
3
4
5
6
7

Dilution	ml filtered
A	0.001
B	0.0001
C	0.00001
D	0.000001

←Highest dilution (If not all samples share the same dil. Then must change dilution below to make the calculation correct)

**Enter data into areas that are in blue font.

sample type:

cake

MPN/mL From Table 4 Method 1681

Sample No.	Combination of Positives			MPN/mL	Dilution	MPN Result
1	0	0	0	<0.1803	0.001	<226.1
2	0	0	0	<0.1803	0.001	<223.5
3	0	0	0	<0.1803	0.001	<224.6
4	0	0	0	<0.1803	0.001	<219.5
5						#DIV/0!
6						#DIV/0!
7						#DIV/0!

Log Values
2.354239084
2.349215
2.3513443
2.341478001
#DIV/0!
#DIV/0!
#DIV/0!
#DIV/0!

GEO MEAN #DIV/0!

[FCMPN/g] =
$$\frac{\text{(MPN/1mL) From Table 4}}{\text{(Largest Vol tested) X (\% total solids-expressed as a decimal)}}$$

% Total Solids =
$$\frac{\text{Dry wt - Initial wt}}{\text{Wet wt - Initial wt}}$$

(expressed as a decimal)

Sample #	Percent Total Solids			% Solids (expressed as a decimal)	Amount required	Weight used
	Initial Weight	Wet Weight	Dry weight			
1	1.27719	9.52644	7.85636	0.80	30.0	29.92328
2	1.28264	7.16966	6.03245	0.81	30.0	30.00241
3	1.27349	7.34334	6.14686	0.80	30.0	30.02351
4	1.26948	8.33284	7.07083	0.82	30.0	29.98639
5				#DIV/0!	30.0	
6				#DIV/0!	30.0	
7				#DIV/0!	30.0	

BIO-05

H:\DOCS\BIOMON\QA-QC Excel (Micro Calc)\2021 Calculated Sludge\HALLENVANM L1406936-02,-04,-06,-08 BIO-05 Rev 2
MPN ClassB CAKE

4/21/2020

(-04 W)

AIITS

Class B Fecal Coliform Analysis by MPN- EPA 1681

[Liquid or Solid]

ESC Sample #: L1406936-02, -04, -06, -08

Final pH must be between 7.0-7.5 and must not use more than 15mL of (HCl or NaOH) per 300mL

Client Name: HALLENYANM

	(10mL per tube of 10,000x)	(10mL per tube of 100,000x)	(10mL per tube of 1,000,000x)	(10mL per tube of 10,000,000x)	Initial pH				
1	Set up 35 deg	Move to 44.5 deg	Test end info	1,000x	10,000x	100,000x	1,000,000x	Initial pH	7.5
	Date/Time: 9-22-21 1355	Date/Time: 9-22-21 1643	Date/Time: 9-23-21 1410	0	0	0	0	Final pH	7.5
	Temp: 35	Temp: 44.5	Temp: 44.5	0	0	0	0	Method Blank	-1-
	Analyst: BE/M	Analyst: M	Analyst: M	0	0	0	0	Negative Con	-
	SAMPLE COLLECTION: 9-21-21 1210	Combination of Positive: 0-0-0 @ 0.001		0	0	0	0	Positive Con	+
	MPN/mL from table: < 0.1803			0	0	0	0	MPN Result	< 226.1
2	Set up 35 deg	Move to 44.5 deg	Test end info	1,000x	10,000x	100,000x	1,000,000x	Initial pH	7.5
	Date/Time:	Date/Time:	Date/Time:	0	0	0	0	Final pH	7.5
	Temp:	Temp:	Temp:	0	0	0	0	Method Blank	-1-
	Analyst:	Analyst:	Analyst:	0	0	0	0	Negative Con	-
	SAMPLE COLLECTION: 9-21-21 1215	Combination of Positive: 0-0-0 @ 0.001		0	0	0	0	Positive Con	+
	MPN/mL from table: < 0.1803			0	0	0	0	MPN Result	< 223.5
3	Set up 35 deg	Move to 44.5 deg	Test end info	1,000x	10,000x	100,000x	1,000,000x	Initial pH	7.5
	Date/Time:	Date/Time:	Date/Time:	0	0	0	0	Final pH	7.5
	Temp:	Temp:	Temp:	0	0	0	0	Method Blank	-1-
	Analyst:	Analyst:	Analyst:	0	0	0	0	Negative Con	-
	SAMPLE COLLECTION: 9-21-21 1315	Combination of Positive: 0-0-0 @ 0.001		0	0	0	0	Positive Con	+
	MPN/mL from table: < 0.1803			0	0	0	0	MPN Result	< 224.6
4	Set up 35 deg	Move to 44.5 deg	Test end info	1,000x	10,000x	100,000x	1,000,000x	Initial pH	7.6
	Date/Time:	Date/Time:	Date/Time:	0	0	0	0	Final pH	7.5
	Temp:	Temp:	Temp:	0	0	0	0	Method Blank	-1-
	Analyst:	Analyst:	Analyst:	0	0	0	0	Negative Con	-
	SAMPLE COLLECTION: 9-21-21 0000	Combination of Positive: 0-0-0 @ 0.001		0	0	0	0	Positive Con	+
	MPN/mL from table: < 0.1803			0	0	0	0	MPN Result	< 219.5
5	Set up 35 deg	Move to 44.5 deg	Test end info	1,000x	10,000x	100,000x	1,000,000x	Initial pH	
	Date/Time:	Date/Time:	Date/Time:					Final pH	
	Temp:	Temp:	Temp:					Method Blank	/
	Analyst:	Analyst:	Analyst:					Negative Con	
	SAMPLE COLLECTION:	Combination of Positive:						Positive Con	
	MPN/mL from table:							MPN Result	
6	Set up 35 deg	Move to 44.5 deg	Test end info	1,000x	10,000x	100,000x	1,000,000x	Initial pH	
	Date/Time:	Date/Time:	Date/Time:					Final pH	
	Temp:	Temp:	Temp:					Method Blank	/
	Analyst:	Analyst:	Analyst:					Negative Con	
	SAMPLE COLLECTION:	Combination of Positive:						Positive Con	
	MPN/mL from table:							MPN Result	
7	Set up 35 deg	Move to 44.5 deg	Test end info	1,000x	10,000x	100,000x	1,000,000x	Initial pH	
	Date/Time:	Date/Time:	Date/Time:					Final pH	
	Temp:	Temp:	Temp:					Method Blank	/
	Analyst:	Analyst:	Analyst:					Negative Con	
	SAMPLE COLLECTION:	Combination of Positive:						Positive Con	
	MPN/mL from table:							MPN Result	

notes Positive tube
notes Negative tube

Total Solids Analysis

(30g +/- .1g)

Sample	Dish Label	Initial wt (g)	Wet wt (g)	Dry wt (g)	%Tot Solids	Amt used (g)
-02 Sample #1	936-02	1.27719	9.52644	7.85636	.80	29.42328
-04 Sample #2	936-04	1.28204	7.11966	6.03245	.81	30.00241
-06 Sample #3	936-06	1.27349	7.34334	6.14686	.80	30.02351
-08 Sample #4	936-08	1.26448	8.33284	7.867053	.82	29.98659
Sample #5						
Sample #6						
Sample #7						

Media/Reagents Lot # Lot: Exp date

A1 medium Lot #:	48061	7-31-22	48062 7-31-22
Phosphate Buffer:	47391	11-30-22	
NaOH Lot:	NA	NA	
HCl Lot: IN	46699	10-30-22	
Positive Control: E. coli	092121	9-22-21	
Negative Control: E.aerogenes	091021 092121	12-10-21	DBE 9-22-21
^(only need for OPR or MS)			
^TSA Slant Lot #:	NA	NA	
^1% LTB Lot #:	↓	↓	



ANALYTICAL REPORT

October 13, 2021

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

Hall Environmental Analysis Laboratory

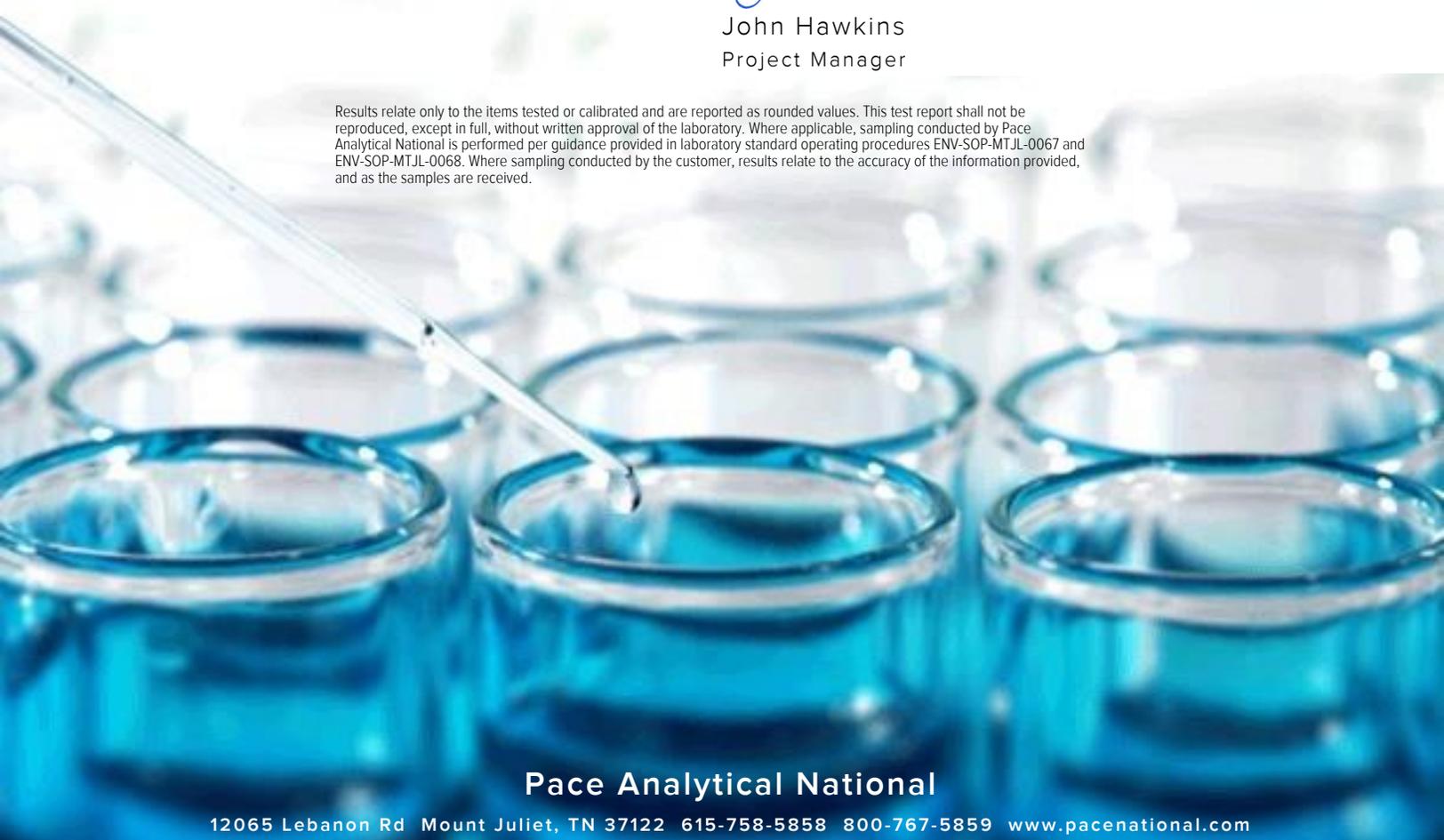
Sample Delivery Group: L1414472
 Samples Received: 09/22/2021
 Project Number:
 Description:

Report To: Andy Freeman
 4901 Hawkins NE
 Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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Al: Accreditations & Locations 20

Sc: Sample Chain of Custody 21



2109B64-015B SLP-01 L1414472-01 Solid

Collected by
Collected date/time
Received date/time

09/21/21 10:10
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1753989	1	10/09/21 14:15	10/10/21 17:08	ADF	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

2109B64-016B SLP-10 L1414472-02 Solid

Collected by
Collected date/time
Received date/time

09/21/21 12:45
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1753989	1	10/09/21 14:15	10/10/21 18:13	ADF	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1753989	10	10/09/21 14:15	10/12/21 11:09	AMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1753989	5	10/09/21 14:15	10/11/21 18:00	AMG	Mt. Juliet, TN

4 Cn

5 Sr

6 Qc

2109B64-017B SLP-03 L1414472-03 Solid

Collected by
Collected date/time
Received date/time

09/21/21 13:15
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1753989	1	10/09/21 14:15	10/10/21 17:51	ADF	Mt. Juliet, TN

7 Gl

8 Al

9 Sc

2109B64-018B SLP-BD-09212021 L1414472-04 Solid

Collected by
Collected date/time
Received date/time

09/21/21 00:00
09/22/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1753989	1	10/09/21 14:15	10/10/21 17:30	ADF	Mt. Juliet, TN

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

John Hawkins
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Collected date/time: 09/21/21 10:10

L1414472

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Acenaphthylene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Anthracene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Benzdine	ND	T8	1.67	1	10/10/2021 17:08	WG1753989
Benzo(a)anthracene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Benzo(b)fluoranthene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Benzo(k)fluoranthene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Benzo(g,h,i)perylene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Benzo(a)pyrene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Bis(2-chlorethoxy)methane	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Bis(2-chloroethyl)ether	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
2,2-Oxybis(1-Chloropropane)	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
4-Bromophenyl-phenylether	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
2-Chloronaphthalene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
4-Chlorophenyl-phenylether	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Chrysene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Dibenz(a,h)anthracene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
1,2-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
1,3-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
1,4-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
3,3-Dichlorobenzidine	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
2,4-Dinitrotoluene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
2,6-Dinitrotoluene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Fluoranthene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Fluorene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Hexachlorobenzene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Hexachloro-1,3-butadiene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Hexachlorocyclopentadiene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Hexachloroethane	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Indeno(1,2,3-cd)pyrene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Isophorone	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Naphthalene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
1-Methylnaphthalene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
2-Methylnaphthalene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Nitrobenzene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
n-Nitrosodimethylamine	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
n-Nitrosodiphenylamine	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
n-Nitrosodi-n-propylamine	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Phenanthrene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Benzylbutyl phthalate	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Bis(2-ethylhexyl)phthalate	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Di-n-butyl phthalate	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Diethyl phthalate	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Dimethyl phthalate	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Di-n-octyl phthalate	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Pyrene	ND	T8	0.0333	1	10/10/2021 17:08	WG1753989
Pyridine	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
1,2,4-Trichlorobenzene	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
Quinoline	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
2-Methylphenol	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
3&4-Methyl Phenol	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
4-Chloro-3-methylphenol	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
2-Chlorophenol	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
2,4-Dichlorophenol	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
2,4-Dimethylphenol	ND	T8	0.333	1	10/10/2021 17:08	WG1753989
4,6-Dinitro-2-methylphenol	ND	T8	0.333	1	10/10/2021 17:08	WG1753989

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

2109B04-015B-SLP-01
 Collected date/time: 09/21/21 10:10

L1414472

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-Dinitrophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:08	WG1753989
2-Nitrophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:08	WG1753989
4-Nitrophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:08	WG1753989
Pentachlorophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:08	WG1753989
Phenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:08	WG1753989
2,4,6-Trichlorophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:08	WG1753989
(S) 2-Fluorophenol	60.1		12.0-120		10/10/2021 17:08	WG1753989
(S) Phenol-d5	59.6		10.0-120		10/10/2021 17:08	WG1753989
(S) Nitrobenzene-d5	48.8		10.0-122		10/10/2021 17:08	WG1753989
(S) 2-Fluorobiphenyl	60.7		15.0-120		10/10/2021 17:08	WG1753989
(S) 2,4,6-Tribromophenol	87.0		10.0-127		10/10/2021 17:08	WG1753989
(S) p-Terphenyl-d14	70.1		10.0-120		10/10/2021 17:08	WG1753989

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

Collected date/time: 09/21/21 12:45

L1414472

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.472	T8	0.0333	1	10/10/2021 18:13	WG1753989
Acenaphthylene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
Anthracene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
Benzdine	ND	T8	1.67	1	10/10/2021 18:13	WG1753989
Benzo(a)anthracene	0.0406	T8	0.0333	1	10/10/2021 18:13	WG1753989
Benzo(b)fluoranthene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
Benzo(k)fluoranthene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
Benzo(g,h,i)perylene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
Benzo(a)pyrene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
Bis(2-chlorethoxy)methane	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Bis(2-chloroethyl)ether	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2,2-Oxybis(1-Chloropropane)	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
4-Bromophenyl-phenylether	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2-Chloronaphthalene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
4-Chlorophenyl-phenylether	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Chrysene	0.0406	T8	0.0333	1	10/10/2021 18:13	WG1753989
Dibenz(a,h)anthracene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
1,2-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
1,3-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
1,4-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
3,3-Dichlorobenzidine	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2,4-Dinitrotoluene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2,6-Dinitrotoluene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Fluoranthene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
Fluorene	0.786	T8	0.0333	1	10/10/2021 18:13	WG1753989
Hexachlorobenzene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Hexachloro-1,3-butadiene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Hexachlorocyclopentadiene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Hexachloroethane	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Indeno(1,2,3-cd)pyrene	ND	T8	0.0333	1	10/10/2021 18:13	WG1753989
Isophorone	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Naphthalene	7.43	T8	0.167	5	10/11/2021 18:00	WG1753989
1-Methylnaphthalene	7.37	T8	3.33	10	10/12/2021 11:09	WG1753989
2-Methylnaphthalene	5.71	T8	1.67	5	10/11/2021 18:00	WG1753989
Nitrobenzene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
n-Nitrosodimethylamine	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
n-Nitrosodiphenylamine	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
n-Nitrosodi-n-propylamine	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Phenanthrene	1.66	T8	0.167	5	10/11/2021 18:00	WG1753989
Benzylbutyl phthalate	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Bis(2-ethylhexyl)phthalate	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Di-n-butyl phthalate	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Diethyl phthalate	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Dimethyl phthalate	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Di-n-octyl phthalate	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Pyrene	0.348	T8	0.0333	1	10/10/2021 18:13	WG1753989
Pyridine	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
1,2,4-Trichlorobenzene	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Quinoline	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2-Methylphenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
3&4-Methyl Phenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
4-Chloro-3-methylphenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2-Chlorophenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2,4-Dichlorophenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2,4-Dimethylphenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
4,6-Dinitro-2-methylphenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989

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

2109B04-016B-SLP-10
 Collected date/time: 09/21/21 12:45

L1414472

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-Dinitrophenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2-Nitrophenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
4-Nitrophenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Pentachlorophenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
Phenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
2,4,6-Trichlorophenol	ND	T8	0.333	1	10/10/2021 18:13	WG1753989
(S) 2-Fluorophenol	40.2		12.0-120		10/10/2021 18:13	WG1753989
(S) 2-Fluorophenol	59.2		12.0-120		10/12/2021 11:09	WG1753989
(S) 2-Fluorophenol	35.7		12.0-120		10/11/2021 18:00	WG1753989
(S) Phenol-d5	60.4		10.0-120		10/11/2021 18:00	WG1753989
(S) Phenol-d5	46.7		10.0-120		10/10/2021 18:13	WG1753989
(S) Phenol-d5	69.3		10.0-120		10/12/2021 11:09	WG1753989
(S) Nitrobenzene-d5	352	J1	10.0-122		10/10/2021 18:13	WG1753989
(S) Nitrobenzene-d5	0.000	J2	10.0-122		10/12/2021 11:09	WG1753989
(S) Nitrobenzene-d5	407	J1	10.0-122		10/11/2021 18:00	WG1753989
(S) 2-Fluorobiphenyl	45.8		15.0-120		10/11/2021 18:00	WG1753989
(S) 2-Fluorobiphenyl	75.0		15.0-120		10/12/2021 11:09	WG1753989
(S) 2-Fluorobiphenyl	53.6		15.0-120		10/10/2021 18:13	WG1753989
(S) 2,4,6-Tribromophenol	50.8		10.0-127		10/12/2021 11:09	WG1753989
(S) 2,4,6-Tribromophenol	79.1		10.0-127		10/10/2021 18:13	WG1753989
(S) 2,4,6-Tribromophenol	64.3		10.0-127		10/11/2021 18:00	WG1753989
(S) p-Terphenyl-d14	54.2		10.0-120		10/11/2021 18:00	WG1753989
(S) p-Terphenyl-d14	66.0		10.0-120		10/10/2021 18:13	WG1753989
(S) p-Terphenyl-d14	48.2		10.0-120		10/12/2021 11:09	WG1753989

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

Sample Narrative:

L1414472-02 WG1753989: Surrogate failure due to matrix interference

Collected date/time: 09/21/21 13:15

L1414472

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Acenaphthylene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Anthracene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Benzdine	ND	T8	1.67	1	10/10/2021 17:51	WG1753989
Benzo(a)anthracene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Benzo(b)fluoranthene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Benzo(k)fluoranthene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Benzo(g,h,i)perylene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Benzo(a)pyrene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Bis(2-chlorethoxy)methane	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Bis(2-chloroethyl)ether	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
2,2-Oxybis(1-Chloropropane)	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
4-Bromophenyl-phenylether	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
2-Chloronaphthalene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
4-Chlorophenyl-phenylether	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Chrysene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Dibenz(a,h)anthracene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
1,2-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
1,3-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
1,4-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
3,3-Dichlorobenzidine	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
2,4-Dinitrotoluene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
2,6-Dinitrotoluene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Fluoranthene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Fluorene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Hexachlorobenzene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Hexachloro-1,3-butadiene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Hexachlorocyclopentadiene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Hexachloroethane	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Indeno(1,2,3-cd)pyrene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Isophorone	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Naphthalene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
1-Methylnaphthalene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
2-Methylnaphthalene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Nitrobenzene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
n-Nitrosodimethylamine	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
n-Nitrosodiphenylamine	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
n-Nitrosodi-n-propylamine	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Phenanthrene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Benzylbutyl phthalate	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Bis(2-ethylhexyl)phthalate	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Di-n-butyl phthalate	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Diethyl phthalate	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Dimethyl phthalate	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Di-n-octyl phthalate	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Pyrene	ND	T8	0.0333	1	10/10/2021 17:51	WG1753989
Pyridine	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
1,2,4-Trichlorobenzene	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
Quinoline	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
2-Methylphenol	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
3&4-Methyl Phenol	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
4-Chloro-3-methylphenol	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
2-Chlorophenol	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
2,4-Dichlorophenol	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
2,4-Dimethylphenol	ND	T8	0.333	1	10/10/2021 17:51	WG1753989
4,6-Dinitro-2-methylphenol	ND	T8	0.333	1	10/10/2021 17:51	WG1753989

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

Collected date/time: 09/21/21 13:15

L1414472

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-Dinitrophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:51	WG1753989
2-Nitrophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:51	WG1753989
4-Nitrophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:51	WG1753989
Pentachlorophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:51	WG1753989
Phenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:51	WG1753989
2,4,6-Trichlorophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:51	WG1753989
(S) 2-Fluorophenol	65.4		12.0-120		10/10/2021 17:51	WG1753989
(S) Phenol-d5	63.1		10.0-120		10/10/2021 17:51	WG1753989
(S) Nitrobenzene-d5	59.2		10.0-122		10/10/2021 17:51	WG1753989
(S) 2-Fluorobiphenyl	67.1		15.0-120		10/10/2021 17:51	WG1753989
(S) 2,4,6-Tribromophenol	88.4		10.0-127		10/10/2021 17:51	WG1753989
(S) p-Terphenyl-d14	67.1		10.0-120		10/10/2021 17:51	WG1753989

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

Collected date/time: 09/21/21 00:00

L1414472

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Acenaphthylene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Anthracene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Benzdine	ND	T8	1.67	1	10/10/2021 17:30	WG1753989
Benzo(a)anthracene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Benzo(b)fluoranthene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Benzo(k)fluoranthene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Benzo(g,h,i)perylene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Benzo(a)pyrene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Bis(2-chloroethoxy)methane	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Bis(2-chloroethyl)ether	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
2,2-Oxybis(1-Chloropropane)	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
4-Bromophenyl-phenylether	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
2-Chloronaphthalene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
4-Chlorophenyl-phenylether	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Chrysene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Dibenz(a,h)anthracene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
1,2-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
1,3-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
1,4-Dichlorobenzene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
3,3-Dichlorobenzidine	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
2,4-Dinitrotoluene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
2,6-Dinitrotoluene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Fluoranthene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Fluorene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Hexachlorobenzene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Hexachloro-1,3-butadiene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Hexachlorocyclopentadiene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Hexachloroethane	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Indeno(1,2,3-cd)pyrene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Isophorone	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Naphthalene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
1-Methylnaphthalene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
2-Methylnaphthalene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Nitrobenzene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
n-Nitrosodimethylamine	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
n-Nitrosodiphenylamine	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
n-Nitrosodi-n-propylamine	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Phenanthrene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Benzylbutyl phthalate	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Bis(2-ethylhexyl)phthalate	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Di-n-butyl phthalate	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Diethyl phthalate	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Dimethyl phthalate	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Di-n-octyl phthalate	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Pyrene	ND	T8	0.0333	1	10/10/2021 17:30	WG1753989
Pyridine	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
1,2,4-Trichlorobenzene	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
Quinoline	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
2-Methylphenol	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
3&4-Methyl Phenol	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
4-Chloro-3-methylphenol	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
2-Chlorophenol	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
2,4-Dichlorophenol	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
2,4-Dimethylphenol	ND	T8	0.333	1	10/10/2021 17:30	WG1753989
4,6-Dinitro-2-methylphenol	ND	T8	0.333	1	10/10/2021 17:30	WG1753989

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/21/21 00:00

L1414472

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-Dinitrophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:30	WG1753989
2-Nitrophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:30	WG1753989
4-Nitrophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:30	WG1753989
Pentachlorophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:30	WG1753989
Phenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:30	WG1753989
2,4,6-Trichlorophenol	ND	<u>T8</u>	0.333	1	10/10/2021 17:30	WG1753989
(S) 2-Fluorophenol	60.1		12.0-120		10/10/2021 17:30	WG1753989
(S) Phenol-d5	56.9		10.0-120		10/10/2021 17:30	WG1753989
(S) Nitrobenzene-d5	54.1		10.0-122		10/10/2021 17:30	WG1753989
(S) 2-Fluorobiphenyl	61.0		15.0-120		10/10/2021 17:30	WG1753989
(S) 2,4,6-Tribromophenol	81.1		10.0-127		10/10/2021 17:30	WG1753989
(S) p-Terphenyl-d14	62.2		10.0-120		10/10/2021 17:30	WG1753989

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

Method Blank (MB)

(MB) R3714755-2 10/10/21 15:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00539	0.0333
Acenaphthylene	U		0.00469	0.0333
Anthracene	U		0.00593	0.0333
Benzidine	U		0.0626	1.67
Benzo(a)anthracene	U		0.00587	0.0333
Benzo(b)fluoranthene	U		0.00621	0.0333
Benzo(k)fluoranthene	U		0.00592	0.0333
Benzo(g,h,i)perylene	U		0.00609	0.0333
Benzo(a)pyrene	U		0.00619	0.0333
Bis(2-chlorethoxy)methane	U		0.0100	0.333
Bis(2-chloroethyl)ether	U		0.0110	0.333
2,2-oxybis(1-chloropropane)	U		0.0144	0.333
4-Bromophenyl-phenylether	U		0.0117	0.333
2-Chloronaphthalene	U		0.00585	0.0333
4-Chlorophenyl-phenylether	U		0.0116	0.333
Chrysene	U		0.00662	0.0333
Dibenz(a,h)anthracene	U		0.00923	0.0333
1,2-Dichlorobenzene	U		0.00987	0.333
1,3-Dichlorobenzene	U		0.0101	0.333
1,4-Dichlorobenzene	U		0.00991	0.333
3,3-Dichlorobenzidine	U		0.0123	0.333
2,4-Dinitrotoluene	U		0.00955	0.333
2,6-Dinitrotoluene	U		0.0109	0.333
Fluoranthene	U		0.00601	0.0333
Fluorene	U		0.00542	0.0333
Hexachlorobenzene	U		0.0118	0.333
Hexachloro-1,3-butadiene	U		0.0112	0.333
Hexachlorocyclopentadiene	U		0.0175	0.333
Hexachloroethane	U		0.0131	0.333
Indeno(1,2,3-cd)pyrene	U		0.00941	0.0333
Isophorone	U		0.0102	0.333
1-Methylnaphthalene	U		0.00426	0.333
2-Methylnaphthalene	U		0.00432	0.333
Naphthalene	U		0.00836	0.0333
Nitrobenzene	U		0.0116	0.333
n-Nitrosodimethylamine	U		0.0494	0.333
n-Nitrosodiphenylamine	U		0.0252	0.333
n-Nitrosodi-n-propylamine	U		0.0111	0.333
Phenanthrene	U		0.00661	0.0333
Benzylbutyl phthalate	U		0.0104	0.333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

[L1414472-01,02,03,04](#)

Method Blank (MB)

(MB) R3714755-2 10/10/21 15:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Bis(2-ethylhexyl)phthalate	U		0.0422	0.333
Di-n-butyl phthalate	U		0.0114	0.333
Diethyl phthalate	U		0.0110	0.333
Dimethyl phthalate	U		0.0706	0.333
Di-n-octyl phthalate	U		0.0225	0.333
Pyrene	U		0.00648	0.0333
Pyridine	U		0.0220	0.333
1,2,4-Trichlorobenzene	U		0.0104	0.333
4-Chloro-3-methylphenol	U		0.0108	0.333
2-Chlorophenol	U		0.0110	0.333
2-Methylphenol	U		0.0100	0.333
3&4-Methyl Phenol	U		0.0104	0.333
2,4-Dichlorophenol	U		0.00970	0.333
2,4-Dimethylphenol	U		0.00870	0.333
4,6-Dinitro-2-methylphenol	U		0.0755	0.333
2,4-Dinitrophenol	U		0.0779	0.333
2-Nitrophenol	U		0.0119	0.333
4-Nitrophenol	U		0.0104	0.333
Pentachlorophenol	U		0.00896	0.333
Phenol	U		0.0134	0.333
2,4,6-Trichlorophenol	U		0.0107	0.333
Quinoline	U		0.00861	0.333
(S) Nitrobenzene-d5	56.8			10.0-122
(S) 2-Fluorobiphenyl	70.9			15.0-120
(S) p-Terphenyl-d14	73.3			10.0-120
(S) Phenol-d5	64.7			10.0-120
(S) 2-Fluorophenol	70.3			12.0-120
(S) 2,4,6-Tribromophenol	85.0			10.0-127

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3714755-1 10/10/21 14:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.666	0.464	69.7	38.0-120	
Acenaphthylene	0.666	0.467	70.1	40.0-120	
Anthracene	0.666	0.499	74.9	42.0-120	
Benzidine	1.33	0.480	36.1	10.0-120	
Benzo(a)anthracene	0.666	0.552	82.9	44.0-120	

Laboratory Control Sample (LCS)

(LCS) R3714755-1 10/10/21 14:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Benzo(b)fluoranthene	0.666	0.527	79.1	43.0-120	
Benzo(k)fluoranthene	0.666	0.519	77.9	44.0-120	
Benzo(g,h,i)perylene	0.666	0.538	80.8	43.0-120	
Benzo(a)pyrene	0.666	0.523	78.5	45.0-120	
Bis(2-chlorethoxy)methane	0.666	0.366	55.0	20.0-120	
Bis(2-chloroethyl)ether	0.666	0.502	75.4	16.0-120	
2,2-Oxybis(1-Chloropropane)	0.666	0.405	60.8	23.0-120	
4-Bromophenyl-phenylether	0.666	0.555	83.3	40.0-120	
2-Chloronaphthalene	0.666	0.452	67.9	35.0-120	
4-Chlorophenyl-phenylether	0.666	0.500	75.1	40.0-120	
Chrysene	0.666	0.504	75.7	43.0-120	
Dibenz(a,h)anthracene	0.666	0.537	80.6	44.0-120	
1,2-Dichlorobenzene	0.666	0.420	63.1	32.0-120	
1,3-Dichlorobenzene	0.666	0.407	61.1	30.0-120	
1,4-Dichlorobenzene	0.666	0.406	61.0	31.0-120	
3,3-Dichlorobenzidine	1.33	1.02	76.7	28.0-120	
2,4-Dinitrotoluene	0.666	0.569	85.4	45.0-120	
2,6-Dinitrotoluene	0.666	0.523	78.5	42.0-120	
Fluoranthene	0.666	0.538	80.8	44.0-120	
Fluorene	0.666	0.500	75.1	41.0-120	
Hexachlorobenzene	0.666	0.556	83.5	39.0-120	
Hexachloro-1,3-butadiene	0.666	0.407	61.1	15.0-120	
Hexachlorocyclopentadiene	0.666	0.449	67.4	15.0-120	
Hexachloroethane	0.666	0.395	59.3	17.0-120	
Indeno(1,2,3-cd)pyrene	0.666	0.569	85.4	45.0-120	
Isophorone	0.666	0.376	56.5	23.0-120	
1-Methylnaphthalene	0.666	0.402	60.4	34.0-120	
2-Methylnaphthalene	0.666	0.390	58.6	34.0-120	
Naphthalene	0.666	0.355	53.3	18.0-120	
Nitrobenzene	0.666	0.361	54.2	17.0-120	
n-Nitrosodimethylamine	0.666	0.313	47.0	10.0-125	
n-Nitrosodiphenylamine	0.666	0.490	73.6	40.0-120	
n-Nitrosodi-n-propylamine	0.666	0.425	63.8	26.0-120	
Phenanthrene	0.666	0.494	74.2	42.0-120	
Benzylbutyl phthalate	0.666	0.533	80.0	40.0-120	
Bis(2-ethylhexyl)phthalate	0.666	0.527	79.1	41.0-120	
Di-n-butyl phthalate	0.666	0.519	77.9	43.0-120	
Diethyl phthalate	0.666	0.510	76.6	43.0-120	
Dimethyl phthalate	0.666	0.485	72.8	43.0-120	
Di-n-octyl phthalate	0.666	0.505	75.8	40.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

[L1414472-01,02,03,04](#)

Laboratory Control Sample (LCS)

(LCS) R3714755-1 10/10/21 14:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Pyrene	0.666	0.503	75.5	41.0-120	
Pyridine	0.666	0.262	39.3	10.0-120	
1,2,4-Trichlorobenzene	0.666	0.400	60.1	17.0-120	
4-Chloro-3-methylphenol	0.666	0.424	63.7	28.0-120	
2-Chlorophenol	0.666	0.458	68.8	28.0-120	
2-Methylphenol	0.666	0.453	68.0	35.0-120	
3&4-Methyl Phenol	0.666	0.537	80.6	42.0-120	
2,4-Dichlorophenol	0.666	0.434	65.2	25.0-120	
2,4-Dimethylphenol	0.666	0.401	60.2	15.0-120	
4,6-Dinitro-2-methylphenol	0.666	0.549	82.4	16.0-120	
2,4-Dinitrophenol	0.666	0.489	73.4	10.0-120	
2-Nitrophenol	0.666	0.462	69.4	20.0-120	
4-Nitrophenol	0.666	0.514	77.2	27.0-120	
Pentachlorophenol	0.666	0.609	91.4	29.0-120	
Phenol	0.666	0.387	58.1	28.0-120	
2,4,6-Trichlorophenol	0.666	0.543	81.5	37.0-120	
Quinoline	0.666	0.478	71.8	30.0-120	
<i>(S) Nitrobenzene-d5</i>			60.7	10.0-122	
<i>(S) 2-Fluorobiphenyl</i>			75.4	15.0-120	
<i>(S) p-Terphenyl-d14</i>			76.6	10.0-120	
<i>(S) Phenol-d5</i>			66.4	10.0-120	
<i>(S) 2-Fluorophenol</i>			70.9	12.0-120	
<i>(S) 2,4,6-Tribromophenol</i>			101	10.0-127	

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

L1412037-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412037-11 10/10/21 15:22 • (MS) R3714755-3 10/10/21 15:43 • (MSD) R3714755-4 10/10/21 16:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.666	ND	0.357	0.355	53.6	54.8	1	18.0-120			0.562	32
Acenaphthylene	0.666	ND	0.352	0.353	52.9	54.5	1	25.0-120			0.284	32
Anthracene	0.666	ND	0.438	0.380	65.8	58.6	1	22.0-120			14.2	29
Benzidine	1.33	ND	ND	ND	39.9	23.2	1	10.0-120		J3	55.3	40
Benzo(a)anthracene	0.666	ND	0.500	0.419	75.1	64.7	1	25.0-120			17.6	29
Benzo(b)fluoranthene	0.666	ND	0.469	0.388	70.4	59.9	1	19.0-122			18.9	31
Benzo(k)fluoranthene	0.666	ND	0.460	0.381	69.1	58.8	1	23.0-120			18.8	30
Benzo(g,h,i)perylene	0.666	ND	0.472	0.395	70.9	61.0	1	10.0-120			17.8	33
Benzo(a)pyrene	0.666	ND	0.477	0.397	71.6	61.3	1	24.0-120			18.3	30
Bis(2-chlorethoxy)methane	0.666	ND	ND	ND	43.7	43.1	1	10.0-120			4.21	34

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

L1414472-01,02,03,04

L1412037-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412037-11 10/10/21 15:22 • (MS) R3714755-3 10/10/21 15:43 • (MSD) R3714755-4 10/10/21 16:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bis(2-chloroethyl)ether	0.666	ND	ND	ND	45.6	39.8	1	10.0-120			16.4	40
2,2-Oxybis(1-Chloropropane)	0.666	ND	ND	ND	45.3	45.5	1	10.0-120			2.35	40
4-Bromophenyl-phenylether	0.666	ND	0.452	0.418	67.9	64.5	1	27.0-120			7.82	30
2-Chloronaphthalene	0.666	ND	0.344	0.340	51.7	52.5	1	20.0-120			1.17	32
4-Chlorophenyl-phenylether	0.666	ND	0.405	0.393	60.8	60.6	1	24.0-120			3.01	29
Chrysene	0.666	ND	0.457	0.383	68.6	59.1	1	21.0-120			17.6	29
Dibenz(a,h)anthracene	0.666	ND	0.482	0.393	72.4	60.6	1	10.0-120			20.3	32
1,2-Dichlorobenzene	0.666	ND	ND	ND	42.8	46.3	1	10.0-120			5.13	38
1,3-Dichlorobenzene	0.666	ND	ND	ND	39.0	43.8	1	10.0-120			8.82	40
1,4-Dichlorobenzene	0.666	ND	ND	ND	39.9	44.0	1	10.0-120			6.90	39
3,3-Dichlorobenzidine	1.33	ND	0.910	0.714	68.4	54.9	1	10.0-120			24.1	34
2,4-Dinitrotoluene	0.666	ND	0.486	0.451	73.0	69.6	1	30.0-120			7.47	31
2,6-Dinitrotoluene	0.666	ND	0.425	0.403	63.8	62.2	1	25.0-120			5.31	31
Fluoranthene	0.666	ND	0.487	0.410	73.1	63.3	1	18.0-126			17.2	32
Fluorene	0.666	ND	0.396	0.386	59.5	59.6	1	25.0-120			2.56	30
Hexachlorobenzene	0.666	ND	0.457	0.418	68.6	64.5	1	27.0-120			8.91	28
Hexachloro-1,3-butadiene	0.666	ND	ND	ND	41.3	46.8	1	10.0-120			9.69	38
Hexachlorocyclopentadiene	0.666	ND	ND	ND	40.8	31.0	1	10.0-120			30.0	40
Hexachloroethane	0.666	ND	ND	ND	37.7	41.8	1	10.0-120			7.66	40
Indeno(1,2,3-cd)pyrene	0.666	ND	0.509	0.433	76.4	66.8	1	10.0-120			16.1	32
Isophorone	0.666	ND	ND	ND	44.6	44.9	1	13.0-120			2.04	34
1-Methylnaphthalene	0.666	ND	ND	ND	44.6	48.0	1	10.0-120			4.61	36
2-Methylnaphthalene	0.666	ND	ND	ND	42.8	46.1	1	10.0-120			4.79	37
Naphthalene	0.666	ND	0.264	0.275	39.6	42.4	1	10.0-120			4.08	35
Nitrobenzene	0.666	ND	ND	ND	41.4	43.1	1	10.0-120			1.08	36
n-Nitrosodimethylamine	0.666	ND	ND	ND	36.3	40.6	1	10.0-127			8.32	40
n-Nitrosodiphenylamine	0.666	ND	0.380	0.347	57.1	53.5	1	17.0-120			9.08	29
n-Nitrosodi-n-propylamine	0.666	ND	0.343	ND	51.5	49.7	1	10.0-120			6.32	37
Phenanthrene	0.666	ND	0.422	0.382	63.4	59.0	1	17.0-120			9.95	31
Benzylbutyl phthalate	0.666	ND	0.477	0.403	71.6	62.2	1	23.0-120			16.8	30
Bis(2-ethylhexyl)phthalate	0.666	ND	0.472	0.393	70.9	60.6	1	17.0-126			18.3	30
Di-n-butyl phthalate	0.666	ND	0.466	0.390	70.0	60.2	1	30.0-120			17.8	29
Diethyl phthalate	0.666	ND	0.425	0.395	63.8	61.0	1	26.0-120			7.32	28
Dimethyl phthalate	0.666	ND	0.402	0.381	60.4	58.8	1	25.0-120			5.36	29
Di-n-octyl phthalate	0.666	ND	0.461	0.390	69.2	60.2	1	21.0-123			16.7	29
Pyrene	0.666	ND	0.450	0.388	67.6	59.9	1	16.0-121			14.8	32
Pyridine	0.666	ND	ND	ND	37.2	31.0	1	10.0-120			20.9	40
1,2,4-Trichlorobenzene	0.666	ND	ND	ND	43.4	48.0	1	12.0-120			7.33	37
4-Chloro-3-methylphenol	0.666	ND	0.352	ND	52.9	50.6	1	15.0-120			7.06	30
2-Chlorophenol	0.666	ND	0.356	0.338	53.5	52.2	1	15.0-120			5.19	37

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

[L1414472-01,02,03,04](#)

L1412037-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412037-11 10/10/21 15:22 • (MS) R3714755-3 10/10/21 15:43 • (MSD) R3714755-4 10/10/21 16:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2-Methylphenol	0.666	ND	0.382	0.341	57.4	52.6	1	11.0-120			11.3	40
3&4-Methyl Phenol	0.666	ND	0.437	0.389	65.6	60.0	1	12.0-123			11.6	38
2,4-Dichlorophenol	0.666	ND	0.339	ND	50.9	49.5	1	20.0-120			5.45	31
2,4-Dimethylphenol	0.666	ND	ND	ND	45.9	42.0	1	10.0-120			11.8	33
4,6-Dinitro-2-methylphenol	0.666	ND	ND	0.450	48.9	69.4	1	10.0-120			32.0	39
2,4-Dinitrophenol	0.666	ND	ND	0.452	36.5	69.8	1	10.0-121		J3	60.1	40
2-Nitrophenol	0.666	ND	0.350	0.369	52.6	56.9	1	12.0-120			5.29	39
4-Nitrophenol	0.666	ND	0.449	0.399	67.4	61.6	1	10.0-137			11.8	32
Pentachlorophenol	0.666	ND	0.444	0.433	66.7	66.8	1	10.0-160			2.51	31
Phenol	0.666	ND	ND	ND	49.7	41.2	1	12.0-120			21.4	38
2,4,6-Trichlorophenol	0.666	ND	0.424	0.387	63.7	59.7	1	19.0-120			9.12	32
Quinoline	0.666	ND	0.404	0.380	60.7	58.6	1	20.0-122			6.12	32
(S) Nitrobenzene-d5					45.0	49.7		10.0-122				
(S) 2-Fluorobiphenyl					53.8	56.8		15.0-120				
(S) p-Terphenyl-d14					66.1	58.6		10.0-120				
(S) Phenol-d5					56.3	50.6		10.0-120				
(S) 2-Fluorophenol					55.4	54.2		12.0-120				
(S) 2,4,6-Tribromophenol					76.7	77.2		10.0-127				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Guide to Reading and Understanding Your Laboratory Report

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

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
T8	Sample(s) received past/too close to holding time expiration.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

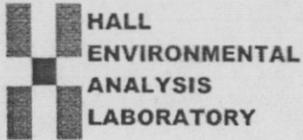
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.





CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

K197

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

SUB CONTRACTOR: **Pace TN** COMPANY: **PACE TN** PHONE: **(800) 767-5859** FAX: **(615) 758-5859**
 ADDRESS: **12065 Lebanon Rd** ACCOUNT # EMAIL:
 CITY, STATE, ZIP: **Mt. Juliet, TN 37122**

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2109B64-015B	SLP-01	4OZGU	Soil	9/21/2021 10:10:00 AM	2	Cr6, Total Cyanide in soil -01
2	2109B64-015C	SLP-01	120 ML NA2S2O3	Soil	9/21/2021 10:10:00 AM	1	Total Coliform and E.Coli in soil -02
3	2109B64-016B	SLP-10	4OZGU	Soil	9/21/2021 12:45:00 PM	2	Cr6, Total Cyanide in soil -03
4	2109B64-016C	SLP-10	120 ML NA2S2O3	Soil	9/21/2021 12:45:00 PM	1	Total Coliform and E.Coli in soil -04
5	2109B64-017B	SLP-03	4OZGU	Soil	9/21/2021 1:15:00 PM	2	Cr6, Total Cyanide in soil -05
6	2109B64-017C	SLP-03	120 ML NA2S2O3	Soil	9/21/2021 1:15:00 PM	1	Total Coliform and E.Coli in soil -06
7	2109B64-018B	SLP-bd-09212021	4OZGU	Soil	9/21/2021	2	Cr6, Total Cyanide in soil -07
8	2109B64-018C	SLP-bd-09212021	120 ML NA2S2O3	Soil	9/21/2021	1	Total Coliform and E.Coli in soil -08

L1414472
L4406736

NV
10/1/21

10 09-21-2021

Sample Receipt Checklist

COC Seal Present/Intact: Y N If Applicable
 COC Signed/Accurate: Y N VOA Zero Headspace: Y N
 Bottles arrive intact: Y N Pres. Correct/Check: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 RAD Screen <0.5 mR/hr: Y N

5, 6 + 5 - SLS
PAR

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: <i>DOB</i>	Date: 9/21/2021	Time: 4:52 PM	Received By: <i>roy-be</i>	Date: 9/21/21	Time: 9:15	REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE FOR LAB USE ONLY Temp of samples _____ C Attempt to Cool ? _____ Comments: _____
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	
TAT: Standard <input checked="" type="checkbox"/> RUSH <input type="checkbox"/> Next BD <input type="checkbox"/> 2nd BD <input type="checkbox"/> 3rd BD <input type="checkbox"/>						

CLIENT: HALLENVANM Pace L# L1406936-02,-04,-06,-08
 DATE ON: 9/22/2021 DATE OFF: 9/23/2021

Data entered into excel spreadsheet by: ML 607

Dilution	mi filtered
A	0.001
B	0.0001
C	0.00001
D	0.000001

Sample No.
1
2
3
4
5
6
7

<---Highest dilution (If not all samples share the same dil. Then must change dilution below to make the calculation correct)

**Enter data into areas that are in blue font.

sample type: **cake**

MPN/mL From Table 4 Method 1681

Sample No.	Combination of Positives	MPN/mL	Dilution	MPN Result	Log Values
1	0 0 0	<0.1803	0.001	<226.1	2.354239084
2	0 0 0	<0.1803	0.001	<223.5	2.349215
3	0 0 0	<0.1803	0.001	<224.6	2.3513443
4	0 0 0	<0.1803	0.001	<219.5	2.341478001
5				#DIV/0!	#DIV/0!
6				#DIV/0!	#DIV/0!
7				#DIV/0!	#DIV/0!

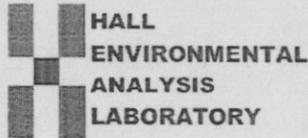
GEO MEAN #DIV/0!

[FCMPN/g]= (MPN/1mL) From Table 4
 (Largest Vol tested) X (% total solids-expressed as a decimal)

% Total Solids = $\frac{\text{Dry wt} - \text{Initial wt}}{\text{Wet wt} - \text{Initial wt}}$
 (expressed as a decimal)

Sample #	Percent Total Solids			% Solids (expressed as a decimal)	Amount required	Weight used
	Initial Weight	Wet Weig	Dry weight			
1	1.27719	9.52644	7.85636	0.80	30.0	29.92328
2	1.28264	7.16966	6.03245	0.81	30.0	30.00241
3	1.27349	7.34334	6.14686	0.80	30.0	30.02351
4	1.26948	8.33284	7.07083	0.82	30.0	29.98639
5				#DIV/0!	30.0	
6				#DIV/0!	30.0	
7				#DIV/0!	30.0	

H:\DOCS\BIOMON\QA-QC Excel (Micro Calc)\2021 Calculated Sludge\HALLENVANM L1406936-02,-04,-06,-08 BIO-ORF\Bioson 2
 MPN ClassB CAKE
 Page 1 of 1
 BIO-05
 4/21/2020



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRACTOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #	EMAIL
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2109B64-015B	SLP-01	4OZGU	Soil	9/21/2021 10:10:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL -01
2	2109B64-015C	SLP-01	120 ML NA2S2O3	Soil	9/21/2021 10:10:00 AM	1	Total Coliform and E.Coli in soil- J and MDL
3	2109B64-016B	SLP-10	4OZGU	Soil	9/21/2021 12:45:00 PM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL -02
4	2109B64-016C	SLP-10	120 ML NA2S2O3	Soil	9/21/2021 12:45:00 PM	1	Total Coliform and E.Coli in soil- J and MDL
5	2109B64-017B	SLP-03	4OZGU	Soil	9/21/2021 1:15:00 PM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL -03
6	2109B64-017C	SLP-03	120 ML NA2S2O3	Soil	9/21/2021 1:15:00 PM	1	Total Coliform and E.Coli in soil- J and MDL
7	2109B64-018B	SLP-bd-09212021	4OZGU	Soil	9/21/2021	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL -04
8	2109B64-018C	SLP-bd-09212021	120 ML NA2S2O3	Soil	9/21/2021	1	Total Coliform and E.Coli in soil- J and MDL

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 9/22/2021	Time: 8:28 AM	Received By:	Date:	Time:	REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE FOR LAB USE ONLY Temp of samples _____ C Attempt to Cool ? _____ Comments: _____
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	
TAT: Standard <input checked="" type="checkbox"/> RUSH Next BD <input type="checkbox"/> 2nd BD <input type="checkbox"/> 3rd BD <input type="checkbox"/>						

8270 Skinner List

ATTACHMENT I

Region 5 Waste Management Branch "Skinner List" Constituents of Concern for Wastes from Petroleum Processes	
Inorganics	
Antimony	Lead
Arsenic	Mercury
Barium	Metals
Beryllium	Selenium
Cadmium	Silver
Chromium	Vanadium
Cobalt	Zinc
Cyanide	
<u>Volatile Organics</u>	
Benzene	1,1,1-Trichloroethane
Carbon disulfide	Ethylene dibromide (EDB)
Chlorobenzene	Methyl ethyl ketone (MEK)
Chloroform	Styrene
	Toluene
1,2-Dichloroethane	
1,1-Dichloroethane	
1,4-Dioxane	
1,1,2,2-Tetrachloroethane	
<u>Semivolatle Organics</u>	
Acenaphthene	Diethyl phthalate
Anthracene	2,4 Dimethylphenol
Benzo(a)anthracene	Dimethyl phthalate
Benzo(b)fluoranthene	2,4 Dinitrophenol
Benzo(k)fluoranthene	Fluoranthene
Benzo(a)pyrene	Fluorene
Bis(2-ethylhexyl) phthalate	Indeno(1,2,3-cd)pyrene
Chrysene	Methyl tertiary butyl ether (MTBE) * - can be tested as a volatile
	Naphthalene
	4-Nitrophenol
	Phenanthrene
	Phenol
	Pyrene
	Pyridine
	Quinoline
<u>Low Concentration Polynuclear Aromatic Hydrocarbons (Optional)</u>	
Benzo(a)anthracene	Indeno(1,2,3-cd)pyrene
Benzo(k)fluoranthene	Dibenz(a,h)anthracene
Benzo(b)fluoranthene	Chrysene*
* added to this group to assist the chromatographic resolution of chrysene from Dibenz(a,h)anthracene in sample extracts	
<u>Optional Semivolatle Organics</u>	
Indene	Dibenz(a,h)anthracene
1-Methylnaphthalene	1-Methylnaphthalene *
*Note that 2-Methylnaphthalene is part of Appendix IX and is a CLP TCL organic. 1-Methylnaphthalene is not on these lists.	
**Benzenethiol can be detected in certain petroleum refinery wastes. Its measurement must compensate for its instability at neutral and acid pH values during sample preparation and its unstable instrument calibration standards	

L1406936

R3/R4/RX/EX

Please log for SV8270

- L1406936-01 2109B64-015B SLP-01
- L1406936-03 2109B64-016B SLP-10
- L1406936-05 2109B64-017B SLP-03
- L1406936-07 2109B64-018B SLP-BD-09212021

Time estimate: oh

Time spent: oh

Members

 JvH John V Hawkins (responsible)

Comments

John V Hawkins

7 October 2021 07:14

Revised COC attached

John V Hawkins

7 October 2021 09:20

Please make R4

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-62945	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 62945	RunNo: 81698								
Prep Date: 9/30/2021	Analysis Date: 9/30/2021	SeqNo: 2888548	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrite (As N)	ND	0.30								
Nitrogen, Nitrate (As N)	ND	0.30								
Sulfate	ND	1.5								

Sample ID: LCS-62945	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 62945	RunNo: 81698								
Prep Date: 9/30/2021	Analysis Date: 9/30/2021	SeqNo: 2888549	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.30	1.500	0	102	90	110			
Chloride	14	1.5	15.00	0	95.8	90	110			
Nitrogen, Nitrite (As N)	3.2	0.30	3.000	0	107	90	110			
Nitrogen, Nitrate (As N)	7.5	0.30	7.500	0	99.8	90	110			
Sulfate	29	1.5	30.00	0	97.0	90	110			

Sample ID: 2109B64-015AMS	SampType: MS	TestCode: EPA Method 300.0: Anions								
Client ID: SLP-01	Batch ID: 62945	RunNo: 81698								
Prep Date: 9/30/2021	Analysis Date: 10/1/2021	SeqNo: 2888561	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	14	1.5	1.500	13.52	55.8	15	125			
Nitrogen, Nitrate (As N)	7.3	1.5	7.500	0	97.0	64.4	122			
Sulfate	46	7.5	30.00	18.72	90.0	42.2	138			

Sample ID: 2109B64-015AMSD	SampType: MSD	TestCode: EPA Method 300.0: Anions								
Client ID: SLP-01	Batch ID: 62945	RunNo: 81698								
Prep Date: 9/30/2021	Analysis Date: 10/1/2021	SeqNo: 2888562	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	14	1.5	1.500	13.52	56.4	15	125	0.0643	20	
Nitrogen, Nitrate (As N)	7.1	1.5	7.500	0	95.0	64.4	122	2.07	20	
Sulfate	45	7.5	30.00	18.72	87.7	42.2	138	1.54	20	

Sample ID: 2109B64-016AMS	SampType: MS	TestCode: EPA Method 300.0: Anions								
Client ID: SLP-10	Batch ID: 62945	RunNo: 81698								
Prep Date: 9/30/2021	Analysis Date: 10/1/2021	SeqNo: 2888568	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 2109B64-016AMS	SampType: MS	TestCode: EPA Method 300.0: Anions								
Client ID: SLP-10	Batch ID: 62945	RunNo: 81698								
Prep Date: 9/30/2021	Analysis Date: 10/1/2021	SeqNo: 2888568	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.3	1.5	1.500	1.672	38.8	15	125			
Chloride	32	7.5	15.00	22.91	62.2	36.7	168			
Nitrogen, Nitrate (As N)	6.9	1.5	7.500	0	91.5	64.4	122			
Sulfate	37	7.5	30.00	17.42	66.9	42.2	138			

Sample ID: 2109B64-016AMSD	SampType: MSD	TestCode: EPA Method 300.0: Anions								
Client ID: SLP-10	Batch ID: 62945	RunNo: 81698								
Prep Date: 9/30/2021	Analysis Date: 10/1/2021	SeqNo: 2888569	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.4	1.5	1.500	1.672	46.2	15	125	4.81	20	
Chloride	36	7.5	15.00	22.91	90.5	36.7	168	12.4	20	
Nitrogen, Nitrate (As N)	7.5	1.5	7.500	0	101	64.4	122	9.45	20	
Sulfate	41	7.5	30.00	17.42	79.5	42.2	138	9.62	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: LCS-62781	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 62781	RunNo: 81579								
Prep Date: 9/23/2021	Analysis Date: 9/25/2021	SeqNo: 2883289	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	97.5	68.9	135			
Surr: DNOP	4.9		5.000		98.3	70	130			

Sample ID: MB-62780	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 62780	RunNo: 81579								
Prep Date: 9/23/2021	Analysis Date: 9/24/2021	SeqNo: 2883291	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		99.3	70	130			

Sample ID: MB-62781	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 62781	RunNo: 81579								
Prep Date: 9/23/2021	Analysis Date: 9/25/2021	SeqNo: 2883292	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		103	70	130			

Sample ID: 2109B64-018AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: SLP-BD-09212021	Batch ID: 62781	RunNo: 81594								
Prep Date: 9/23/2021	Analysis Date: 9/27/2021	SeqNo: 2883996	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	200	9.2	46.00	263.8	-135	39.3	155			S
Surr: DNOP	4.5		4.600		97.8	70	130			

Sample ID: 2109B64-018AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: SLP-BD-09212021	Batch ID: 62781	RunNo: 81594								
Prep Date: 9/23/2021	Analysis Date: 9/27/2021	SeqNo: 2883997	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	290	9.8	48.97	263.8	52.7	39.3	155	35.9	23.4	R
Surr: DNOP	4.9		4.897		99.2	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: LCS-62780	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 62780	RunNo: 81594								
Prep Date: 9/23/2021	Analysis Date: 9/27/2021	SeqNo: 2884001	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	57	10	50.00	0	115	68.9	135			
Surr: DNOP	5.6		5.000		111	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: B81560	RunNo: 81560								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882065			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		104	70	130			

Sample ID: 2.5ug gro lcs	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: B81560	RunNo: 81560								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882066			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	78.6	131			
Surr: BFB	1200		1000		115	70	130			

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: G81561	RunNo: 81561								
Prep Date:	Analysis Date: 9/26/2021	SeqNo: 2882163			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		107	70	130			

Sample ID: 2.5ug gro lcs	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: G81561	RunNo: 81561								
Prep Date:	Analysis Date: 9/26/2021	SeqNo: 2882164			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.5	78.6	131			
Surr: BFB	1200		1000		118	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: Volatiles							
Client ID: LCSS	Batch ID: R81513		RunNo: 81513							
Prep Date:	Analysis Date: 9/22/2021		SeqNo: 2879783		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	98.8	70	130			
Toluene	0.92	0.050	1.000	0	92.4	70	130			
Chlorobenzene	0.93	0.050	1.000	0	92.6	70	130			
Trichloroethene (TCE)	0.95	0.050	1.000	0	95.0	70	130			
Surr: Dibromofluoromethane	0.56		0.5000		112	70	130			
Surr: 1,2-Dichloroethane-d4	0.51		0.5000		102	70	130			
Surr: Toluene-d8	0.52		0.5000		104	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		101	70	130			

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8260B: Volatiles							
Client ID: PBS	Batch ID: R81513		RunNo: 81513							
Prep Date:	Analysis Date: 9/22/2021		SeqNo: 2879822		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Chlorobenzene	ND	0.050								
Chloroform	ND	0.050								
1,1-Dichloroethane	ND	0.050								
Styrene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Xylenes, Total	ND	0.10								
1,4-Dioxane	ND	0.50								
Surr: Dibromofluoromethane	0.56		0.5000		113	70	130			
Surr: 1,2-Dichloroethane-d4	0.52		0.5000		104	70	130			
Surr: Toluene-d8	0.49		0.5000		98.2	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		95.1	70	130			

Sample ID: 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: Volatiles							
Client ID: LCSS	Batch ID: S81575		RunNo: 81575							
Prep Date:	Analysis Date: 9/24/2021		SeqNo: 2882825		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	93.2	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: Volatiles								
Client ID: LCSS	Batch ID: S81575	RunNo: 81575								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882825	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	0.82	0.050	1.000	0	82.1	70	130			
Chlorobenzene	0.85	0.050	1.000	0	84.9	70	130			
1,1-Dichloroethene	0.83	0.050	1.000	0	83.0	70	130			
Trichloroethene (TCE)	0.86	0.050	1.000	0	85.6	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.4	70	130			
Surr: Toluene-d8	0.48		0.5000		96.9	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.8	70	130			

Sample ID: 2109b64-018a ms	SampType: MS	TestCode: EPA Method 8260B: Volatiles								
Client ID: SLP-BD-09212021	Batch ID: S81575	RunNo: 81575								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882828	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	3.1	0.072	2.898	0	105	70	130			D
Toluene	2.4	0.14	2.898	0	82.3	70	130			D
Chlorobenzene	2.5	0.14	2.898	0	85.2	70	130			D
1,1-Dichloroethene	2.8	0.14	2.898	0	97.4	49.9	132			D
Trichloroethene (TCE)	2.8	0.14	2.898	0	97.5	52.9	126			D
Surr: Dibromofluoromethane	1.6		1.449		108	70	130			D
Surr: 1,2-Dichloroethane-d4	1.5		1.449		105	70	130			D
Surr: Toluene-d8	1.3		1.449		93.1	70	130			D
Surr: 4-Bromofluorobenzene	1.5		1.449		107	70	130			D

Sample ID: 2109b64-018a msd	SampType: MSD	TestCode: EPA Method 8260B: Volatiles								
Client ID: SLP-BD-09212021	Batch ID: S81575	RunNo: 81575								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882829	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	2.8	0.072	2.898	0	94.9	70	130	10.5	20	D
Toluene	2.3	0.14	2.898	0	79.1	70	130	4.00	20	D
Chlorobenzene	2.3	0.14	2.898	0	80.8	70	130	5.31	20	D
1,1-Dichloroethene	2.5	0.14	2.898	0	86.9	49.9	132	11.4	20	D
Trichloroethene (TCE)	2.6	0.14	2.898	0	88.0	52.9	126	10.2	20	D
Surr: Dibromofluoromethane	1.5		1.449		105	70	130	0	0	D
Surr: 1,2-Dichloroethane-d4	1.4		1.449		98.2	70	130	0	0	D
Surr: Toluene-d8	1.4		1.449		93.3	70	130	0	0	D
Surr: 4-Bromofluorobenzene	1.5		1.449		102	70	130	0	0	D

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: Volatiles
Client ID: PBS	Batch ID: S81575	RunNo: 81575
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882837 Units: mg/Kg

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: Volatiles
Client ID: PBS	Batch ID: S81575	RunNo: 81575
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882837 Units: mg/Kg

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.49		0.5000		97.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		89.4	70	130			
Surr: Toluene-d8	0.52		0.5000		105	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		100	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 100ng 8260 lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: B81470	RunNo: 81470								
Prep Date:	Analysis Date: 9/23/2021	SeqNo: 2879190	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	70	130			
Toluene	19	1.0	20.00	0	94.6	70	130			
Chlorobenzene	19	1.0	20.00	0	95.3	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	94.3	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	94.0	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	9.7		10.00		97.0	70	130			

Sample ID: mb2	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: B81470	RunNo: 81470								
Prep Date:	Analysis Date: 9/23/2021	SeqNo: 2879191	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: mb2	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES
Client ID: PBW	Batch ID: B81470	RunNo: 81470
Prep Date:	Analysis Date: 9/23/2021	SeqNo: 2879191 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: mb2	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batch ID: B81470		RunNo: 81470							
Prep Date:	Analysis Date: 9/23/2021		SeqNo: 2879191		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	9.6		10.00		96.2	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-63122	SampType: MBLK	TestCode: EPA Method 7471B: Mercury								
Client ID: PBS	Batch ID: 63122	RunNo: 81906								
Prep Date: 10/7/2021	Analysis Date: 10/8/2021	SeqNo: 2898222	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: LLCS-63122	SampType: LCSLL	TestCode: EPA Method 7471B: Mercury								
Client ID: BatchQC	Batch ID: 63122	RunNo: 81906								
Prep Date: 10/7/2021	Analysis Date: 10/8/2021	SeqNo: 2898223	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0071	0.033	0.006660	0	107	70	130			J

Sample ID: LCS-63122	SampType: LCS	TestCode: EPA Method 7471B: Mercury								
Client ID: LCSS	Batch ID: 63122	RunNo: 81906								
Prep Date: 10/7/2021	Analysis Date: 10/8/2021	SeqNo: 2898224	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.033	0.1667	0	102	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-63108	SampType: MBLK	TestCode: EPA Method 6010B: Soil Metals								
Client ID: PBS	Batch ID: 63108	RunNo: 81872								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2896569	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	ND	2.5								
Manganese	ND	0.20								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	ND	2.5								

Sample ID: LCS-63108	SampType: LCS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: LCSS	Batch ID: 63108	RunNo: 81872								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2896570	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	23	2.5	25.00	0	91.6	80	120			
Arsenic	23	2.5	25.00	0	90.1	80	120			
Barium	23	0.10	25.00	0	92.8	80	120			
Beryllium	24	0.15	25.00	0	95.6	80	120			
Cadmium	23	0.10	25.00	0	92.3	80	120			
Chromium	24	0.30	25.00	0	94.1	80	120			
Cobalt	23	0.30	25.00	0	93.1	80	120			
Iron	24	2.5	25.00	0	97.5	80	120			
Manganese	23	0.20	25.00	0	92.7	80	120			
Nickel	23	0.50	25.00	0	93.0	80	120			
Selenium	21	2.5	25.00	0	85.1	80	120			
Silver	4.7	0.25	5.000	0	93.6	80	120			
Vanadium	23	2.5	25.00	0	93.8	80	120			
Zinc	22	2.5	25.00	0	87.9	80	120			

Sample ID: 2109B64-015AMS	SampType: MS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: SLP-01	Batch ID: 63108	RunNo: 81872								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2896577	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109B64

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 2109B64-015AMS	SampType: MS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: SLP-01	Batch ID: 63108	RunNo: 81872								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2896577	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	20	0.14	24.02	1.054	77.2	75	125			
Chromium	29	0.29	24.02	9.156	81.2	75	125			
Vanadium	38	2.4	24.02	15.54	95.2	75	125			

Sample ID: 2109B64-015AMSD	SampType: MSD	TestCode: EPA Method 6010B: Soil Metals								
Client ID: SLP-01	Batch ID: 63108	RunNo: 81872								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2896578	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	20	0.15	24.35	1.054	78.5	75	125	2.94	20	
Chromium	30	0.29	24.35	9.156	86.1	75	125	4.93	20	
Vanadium	39	2.4	24.35	15.54	96.8	75	125	1.83	20	

Sample ID: MB-63108	SampType: MBLK	TestCode: EPA Method 6010B: Soil Metals								
Client ID: PBS	Batch ID: 63108	RunNo: 81872								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2896775	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.30								

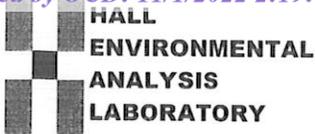
Sample ID: LCS-63108	SampType: LCS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: LCSS	Batch ID: 63108	RunNo: 81872								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2896777	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	23	0.30	25.00	0	90.1	80	120			

Sample ID: 2109B64-015AMS	SampType: MS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: SLP-01	Batch ID: 63108	RunNo: 81872								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2896781	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	18	0.29	24.02	2.085	65.1	75	125			S

Sample ID: 2109B64-015AMSD	SampType: MSD	TestCode: EPA Method 6010B: Soil Metals								
Client ID: SLP-01	Batch ID: 63108	RunNo: 81872								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2896782	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	18	0.29	24.35	2.085	67.1	75	125	3.92	20	S

Qualifiers:

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



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

Sample Log-In Check List

Client Name: Marathon Work Order Number: 2109B64 RcptNo: 1

Received By: Desiree Dominguez 9/21/2021 4:30:00 PM
Completed By: Desiree Dominguez 9/21/2021 4:31:53 PM
Reviewed By: Jn 9/22/21

Chain of Custody

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

Log In

- 3. Was an attempt made to cool the samples? Yes [checked] No [] NA []
4. Were all samples received at a temperature of >0° C to 6.0° C Yes [checked] No [] NA []
5. Sample(s) in proper container(s)? Yes [checked] No []
6. Sufficient sample volume for indicated test(s)? Yes [checked] No []
7. Are samples (except VOA and ONG) properly preserved? Yes [checked] No []
8. Was preservative added to bottles? Yes [] No [checked] NA []
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes [checked] No [] NA []
10. Were any sample containers received broken? Yes [] No [checked]
11. Does paperwork match bottle labels? Yes [checked] No []
12. Are matrices correctly identified on Chain of Custody? Yes [checked] No []
13. Is it clear what analyses were requested? Yes [checked] No []
14. Were all holding times able to be met? Yes [checked] No []

of preserved bottles checked for pH:
(<2 or >12 unless noted)
Adjusted?
Checked by: DAD 9/21/21 (015-020)
SPA 9-22-21 (011-018)

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 2.2, Good, Yes, , ,

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

PAGE: 1 OF: 1

CHAIN OF CUSTODY RECORD



SUB CONTRACTOR: **Pace TN** COMPANY: **PACE TN** PHONE: (800) 767-5859 FAX: (615) 758-5859
 ADDRESS: **12065 Lebanon Rd** ACCOUNT #: EMAIL:
 CITY, STATE, ZIP: **Mt. Juliet, TN 37122**

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2109864-015B	SLP-01	4OZGU	Soil	9/21/2021 10:10:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL
2	2109864-015C	SLP-01	120 ML NA25203	Soil	9/21/2021 10:10:00 AM	1	Total Coliform and E.Coli in soil- J and MDL
3	2109864-016B	SLP-10	4OZGU	Soil	9/21/2021 12:45:00 PM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL
4	2109864-016C	SLP-10	120 ML NA25203	Soil	9/21/2021 12:45:00 PM	1	Total Coliform and E.Coli in soil- J and MDL
5	2109864-017B	SLP-03	4OZGU	Soil	9/21/2021 1:15:00 PM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL
6	2109864-017C	SLP-03	120 ML NA25203	Soil	9/21/2021 1:15:00 PM	1	Total Coliform and E.Coli in soil- J and MDL
7	2109864-018B	SLP-bd-09212021	4OZGU	Soil	9/21/2021	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL
8	2109864-018C	SLP-bd-09212021	120 ML NA25203	Soil	9/21/2021	1	Total Coliform and E.Coli in soil- J and MDL

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: *[Signature]* Date: 9/22/2021 Time: 8:29 AM Received By: Date: Time: 3rd BD

Relinquished By: Date: Time: Received By: Date: Time: 2nd BD

Relinquished By: Date: Time: Received By: Date: Time: Standard RUSH Next BD

TAT: Standard RUSH Next BD 3rd BD

REPORT TRANSMITTAL DESIRED:
 HARDCOPY (extra cost) FAX EMAIL ONLINE
 Temp of samples: _____ C Attempt to Cool? _____
 Comments: _____

CHAIN OF CUSTODY RECORD



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

SUB CONTRACTOR: **Pace TN** COMPANY: **PACE TN** PHONE: **(800) 767-5859** FAX: **(615) 758-5859**
 ADDRESS: **12065 Lebanon Rd** ACCOUNT #: _____ EMAIL: _____
 CITY, STATE, ZIP: **Mt. Juliet, TN 37122**

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2109B64-015B	SLP-01	40ZGU	Soil	9/21/2021 10:10:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL
2	2109B64-015C	SLP-01	120 ML NA25203	Soil	9/21/2021 10:10:00 AM	1	Total Coliform and E.Coli in soil- J and MDL
3	2109B64-016B	SLP-10	40ZGU	Soil	9/21/2021 12:45:00 PM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL
4	2109B64-016C	SLP-10	120 ML NA25203	Soil	9/21/2021 12:45:00 PM	1	Total Coliform and E.Coli in soil- J and MDL
5	2109B64-017B	SLP-03	40ZGU	Soil	9/21/2021 1:15:00 PM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL
6	2109B64-017C	SLP-03	120 ML NA25203	Soil	9/21/2021 1:15:00 PM	1	Total Coliform and E.Coli in soil- J and MDL
7	2109B64-018B	SLP-bd-09212021	40ZGU	Soil	9/21/2021	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL
8	2109B64-018C	SLP-bd-09212021	120 ML NA25203	Soil	9/21/2021	1	Total Coliform and E.Coli in soil- J and MDL

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 9/22/2021	Time: 8:28 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard **RUSH** Next BD 2nd BD 3rd BD

REPORT TRANSMITTAL DESIRED:
 HARD COPY (extra cost) FAX EMAIL ONLINE

FOR LAB USE ONLY
 Temp of samples _____ °C Attempt to Cool? _____
 Comments: _____



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Standard Rush
 Project Name: Sanitary Lagoon Investigation
 Phase II
 Project #: 697-094-001
 PO# 4500273020

Project Manager:
 Jim Hageman / Brian McLoughlin

Sampler:
 On Ice: Yes No
 # of Coolers:

Cooler Temp (including CF): 20 + 0.2 = 20.2°C

Container Type and #
 Preservative Type
 HEAL No.
 2109364

Client: Marathon Petroleum Company
 Mailing Address: 92 Giant Crossing Rd.
 Jamestown, 87343
 Phone #: 808-640-1823
 Email or Fax#:

VQC Package: Level 4 (Full Validation)
 Accreditation: Az Compliance Other
 NELAC
 EDD (Type)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	Remarks
9/20/2021	14:30	soil	SL-03 (0.5)	1		-001	X
9/20/2021	14:35	soil	SL-03 (2.5)	1		-002	X
9/20/2021	14:45	soil	SL-04 (0.5)	1		-003	X
9/20/2021	14:50	soil	SL-04 (2.5)	1		-004	X
9/20/2021	15:00	soil	SL-02 (0.5)	1		-005	X
9/20/2021	15:03	soil	SL-02 (2.5)	1		-006	X
9/20/2021	15:10	soil	SL-01 (0.5)	1		-007	X
9/20/2021	15:12	soil	SL-01 (2.5)	1		-008	X
9/20/2021	15:15	soil	SL-05 (0.5)	1		-009	X
9/20/2021	15:17	soil	SL-05 (2.5)	1		-010	X
9/20/2021	15:20	soil	SL-06 (0.5)	1		-011	X
9/20/2021	15:25	soil	SL-06 (2.5)	1		-012	X

SEE ATTACHED LIST
DRO ONLY

Received by: *[Signature]* Date: 9/21/21 Time: 14:00
 Via: Courier
 Relinquished by: *[Signature]* Date: 9/21/21 Time: 16:30
 Relinquished by:

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



HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

X Standard Rush
Project Name Sanitary Lagoon Investigation
Phase II
Project #: 697-094-001
PO# 4500273020
Project Manager:
Jim Hageman / Brian McLoughlin
Sampler:
On Ice: Yes No
of Coolers:
Cooler Temp (including CF): 2.0 + 0.2 = 2.2°C

Client: Marathon Petroleum Company
Mailing Address: 92 Giant Crossing Rd.
Jamestown, 87343
Phone #: 808-640-1823
Email or Fax#:
VQC Package: Level 4 (Full Validation)
Standard Az Compliance Other
NELAC
EDD (Type)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	SEE ATTACHED LIST	DRO ONLY	8260
9/20/2021	-	soil	SL-BD-09202021	1		2109B64	X		
9/20/2021	13:15	water	SL-EB-09202021	2	HCl	-014		X	
9/21/2021	10:10	soil	SLP-01	6		-015	X		
9/21/2021	12:45	soil	SLP-10	6		-016	X		
9/21/2021	13:15	soil	SLP-03	6		-017	X		
9/21/2021	-	soil	SLP-BD-09212021	6		-018	X		
9/21/2021	13:15	water	SLP-EB-09212021	2	HCL	-019		X	

Remarks:

Date: 9/21
Time: 14:00
Relinquished by: [Signature]
Date: 9/21
Time: 16:30
Via: Courier
Received by: [Signature]

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

**TABLE 1. SOIL ANALYTE LIST
MARATHON PETROLEUM COMPANY
GALLUP REFINING DEVISION, GALLUP, NEW MEXICO**

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/3352 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020
Chloride	EPA Method 300
Fluoride	EPA Method 300
Nitrate	EPA Method 300
Nitrite	EPA Method 300.3
Sulfate	EPA Method 300.3
Total coliform	SM922SB <i>(signature)</i>
E. coli	SM92238 <i>(signature)</i>
Skinner list VOC	SW-846 Method 8260
Skinner list SVOC	SW-846 Method 8270 ++ ++
TPH - GRO, DRO, and MRO	SW-846 Method 8015B

Notes:

EPA = Environmental Protection Agency
 SW-846 = EPA Solid Waste Test Method
 VOC = volatile organic compounds
 SVOC = Semi-volatile organic compounds
 TPH = Total petroleum hydrocarbons
 GRO = Gasoline range organics (C5-C10)
 DRO = Diesel range organics (>C10-C28)
 MRO = Motor oil range organics (>C28-C36)
 Total and dissolved metals will be analyzed



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

October 13, 2021

Brian McLoughlin

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL:
FAX

RE: Sanitary Lagoon Investigation Phase II

OrderNo.: 2109C60

Dear Brian McLoughlin:

Hall Environmental Analysis Laboratory received 7 sample(s) on 9/22/2021 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

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

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-BD-09222021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021

Lab ID: 2109C60-001

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: SB								
Diesel Range Organics (DRO)	ND	4.7	9.6		mg/Kg	1	9/24/2021 6:04:41 PM	62799
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	9/24/2021 6:04:41 PM	62799
Surr: DNOP	94.2	0	70-130		%Rec	1	9/24/2021 6:04:41 PM	62799
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: NSB								
Gasoline Range Organics (GRO)	470	9.0	14		mg/Kg	5	9/25/2021 5:28:08 AM	B8156C
Surr: BFB	222	0	70-130	S	%Rec	5	9/25/2021 5:28:08 AM	B8156C
EPA METHOD 300.0: ANIONS								
Analyst: VP								
Fluoride	4.7	1.5	1.5		mg/Kg	5	10/6/2021 10:17:17 PM	63078
Chloride	93	7.5	7.5		mg/Kg	5	10/6/2021 10:17:17 PM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/6/2021 10:17:17 PM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/6/2021 10:17:17 PM	63078
Sulfate	13	7.5	7.5		mg/Kg	5	10/6/2021 10:17:17 PM	63078
EPA METHOD 7471B: MERCURY								
Analyst: ags								
Mercury	0.0032	0.0025	0.031	J	mg/Kg	1	9/30/2021 9:55:53 AM	62905
EPA METHOD 6010B: SOIL METALS								
Analyst: JLF								
Antimony	ND	1.6	2.4		mg/Kg	1	9/27/2021 1:57:43 PM	62806
Arsenic	1.4	1.4	2.4	J	mg/Kg	1	9/27/2021 1:57:43 PM	62806
Barium	430	0.29	0.48		mg/Kg	5	9/27/2021 3:56:24 PM	62806
Beryllium	0.77	0.028	0.14		mg/Kg	1	9/27/2021 1:57:43 PM	62806
Cadmium	ND	0.048	0.096		mg/Kg	1	9/27/2021 1:57:43 PM	62806
Chromium	5.8	0.14	0.29		mg/Kg	1	9/27/2021 1:57:43 PM	62806
Cobalt	3.4	0.058	0.29		mg/Kg	1	9/27/2021 1:57:43 PM	62806
Iron	10000	240	240		mg/Kg	100	9/27/2021 3:58:30 PM	62806
Lead	3.0	0.26	0.29		mg/Kg	1	9/27/2021 1:57:43 PM	62806
Manganese	460	0.79	0.96		mg/Kg	5	9/27/2021 3:56:24 PM	62806
Nickel	6.9	0.19	0.48		mg/Kg	1	9/27/2021 6:47:50 PM	62806
Selenium	ND	2.1	2.4		mg/Kg	1	9/27/2021 1:57:43 PM	62806
Silver	ND	0.14	0.24		mg/Kg	1	9/27/2021 6:47:50 PM	62806
Vanadium	12	0.11	2.4		mg/Kg	1	9/27/2021 1:57:43 PM	62806
Zinc	10	1.3	2.4		mg/Kg	1	9/27/2021 1:57:43 PM	62806
EPA METHOD 8260B: VOLATILES								
Analyst: RAA								
Benzene	1.9	0.10	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Toluene	0.51	0.070	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Ethylbenzene	2.3	0.13	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Methyl tert-butyl ether (MTBE)	ND	0.31	0.43	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
1,2-Dichloroethane (EDC)	ND	0.12	0.54	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
1,2-Dibromoethane (EDB)	ND	0.21	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 1 of 22

Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-BD-09222021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021

Lab ID: 2109C60-001

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	ND	2.4	2.7	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Carbon disulfide	ND	0.22	2.7	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Chlorobenzene	ND	0.098	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Chloroform	ND	0.077	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
1,1-Dichloroethane	ND	0.16	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Styrene	ND	0.074	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Tetrachloroethene (PCE)	ND	0.15	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
1,1,1-Trichloroethane	ND	0.12	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Trichloroethene (TCE)	ND	0.11	0.22	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Xylenes, Total	6.4	0.29	0.43	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
1,4-Dioxane	ND	3.1	3.3	D	mg/Kg	20	9/24/2021 7:17:08 PM	S81575
Surr: Dibromofluoromethane	93.8		70-130	D	%Rec	20	9/24/2021 7:17:08 PM	S81575
Surr: 1,2-Dichloroethane-d4	89.6		70-130	D	%Rec	20	9/24/2021 7:17:08 PM	S81575
Surr: Toluene-d8	94.4		70-130	D	%Rec	20	9/24/2021 7:17:08 PM	S81575
Surr: 4-Bromofluorobenzene	103		70-130	D	%Rec	20	9/24/2021 7:17:08 PM	S81575

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

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

Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-EB-09222021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 10:00:00 AM

Lab ID: 2109C60-002

Matrix: AQUEOUS

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								Analyst: RAA
Benzene	ND	0.23	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
Toluene	ND	0.20	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
2-Butanone	ND	2.0	10		µg/L	1	9/23/2021 6:15:14 PM	V81541
Carbon disulfide	2.4	0.59	10	J	µg/L	1	9/23/2021 6:15:14 PM	V81541
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
Chloroform	ND	0.13	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
Styrene	ND	0.14	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/23/2021 6:15:14 PM	V81541
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/23/2021 6:15:14 PM	V81541
1,4-Dioxane	ND	7.0	10		µg/L	1	9/23/2021 6:15:14 PM	V81541
Surr: 1,2-Dichloroethane-d4	102	0	70-130		%Rec	1	9/23/2021 6:15:14 PM	V81541
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	9/23/2021 6:15:14 PM	V81541
Surr: Dibromofluoromethane	106	0	70-130		%Rec	1	9/23/2021 6:15:14 PM	V81541
Surr: Toluene-d8	99.1	0	70-130		%Rec	1	9/23/2021 6:15:14 PM	V81541

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

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

Page 3 of 22

Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-09

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 8:30:00 AM

Lab ID: 2109C60-003

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: SB								
Diesel Range Organics (DRO)	410	4.6	9.3		mg/Kg	1	9/27/2021 8:44:29 PM	62799
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	9/27/2021 8:44:29 PM	62799
Surr: DNOP	97.4	0	70-130		%Rec	1	9/27/2021 8:44:29 PM	62799
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: NSB								
Gasoline Range Organics (GRO)	890	38	57		mg/Kg	20	9/25/2021 5:51:29 AM	B8156C
Surr: BFB	183	0	70-130	S	%Rec	20	9/25/2021 5:51:29 AM	B8156C
EPA METHOD 300.0: ANIONS								
Analyst: VP								
Fluoride	4.0	1.5	1.5		mg/Kg	5	10/6/2021 10:42:07 PM	63078
Chloride	32	7.5	7.5		mg/Kg	5	10/6/2021 10:42:07 PM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/6/2021 10:42:07 PM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/6/2021 10:42:07 PM	63078
Sulfate	12	7.5	7.5		mg/Kg	5	10/6/2021 10:42:07 PM	63078
EPA METHOD 7471B: MERCURY								
Analyst: ags								
Mercury	ND	0.0025	0.031		mg/Kg	1	9/30/2021 9:58:03 AM	62905
EPA METHOD 6010B: SOIL METALS								
Analyst: JLF								
Antimony	ND	1.6	2.5		mg/Kg	1	9/27/2021 1:59:59 PM	62806
Arsenic	ND	1.4	2.5		mg/Kg	1	9/27/2021 1:59:59 PM	62806
Barium	390	0.29	0.49		mg/Kg	5	9/27/2021 4:00:34 PM	62806
Beryllium	0.81	0.029	0.15		mg/Kg	1	9/27/2021 1:59:59 PM	62806
Cadmium	ND	0.049	0.098		mg/Kg	1	9/27/2021 1:59:59 PM	62806
Chromium	5.9	0.15	0.29		mg/Kg	1	9/27/2021 1:59:59 PM	62806
Cobalt	3.3	0.059	0.29		mg/Kg	1	9/27/2021 1:59:59 PM	62806
Iron	12000	250	250		mg/Kg	100	9/27/2021 4:02:40 PM	62806
Lead	2.4	0.26	0.29		mg/Kg	1	9/27/2021 1:59:59 PM	62806
Manganese	310	0.81	0.98		mg/Kg	5	9/27/2021 4:00:34 PM	62806
Nickel	6.6	0.19	0.49		mg/Kg	1	9/27/2021 6:49:16 PM	62806
Selenium	ND	2.2	2.5		mg/Kg	1	9/27/2021 1:59:59 PM	62806
Silver	ND	0.14	0.25		mg/Kg	1	9/27/2021 6:49:16 PM	62806
Vanadium	12	0.11	2.5		mg/Kg	1	9/27/2021 1:59:59 PM	62806
Zinc	9.7	1.3	2.5		mg/Kg	1	9/27/2021 1:59:59 PM	62806
EPA METHOD 8260B: VOLATILES								
Analyst: RAA								
Benzene	6.9	0.11	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Toluene	17	0.073	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Ethylbenzene	22	0.14	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Methyl tert-butyl ether (MTBE)	ND	0.32	0.45	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
1,2-Dichloroethane (EDC)	ND	0.13	0.57	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
1,2-Dibromoethane (EDB)	ND	0.22	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

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Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-09

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 8:30:00 AM

Lab ID: 2109C60-003

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	ND	2.5	2.8	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Carbon disulfide	ND	0.23	2.8	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Chlorobenzene	ND	0.10	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Chloroform	ND	0.081	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
1,1-Dichloroethane	ND	0.17	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Styrene	ND	0.077	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Tetrachloroethene (PCE)	ND	0.16	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
1,1,1-Trichloroethane	ND	0.13	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Trichloroethene (TCE)	ND	0.11	0.23	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Xylenes, Total	59	0.30	0.45	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
1,4-Dioxane	ND	3.2	3.4	D	mg/Kg	20	9/24/2021 7:44:06 PM	S81575
Surr: Dibromofluoromethane	102		70-130	D	%Rec	20	9/24/2021 7:44:06 PM	S81575
Surr: 1,2-Dichloroethane-d4	95.7		70-130	D	%Rec	20	9/24/2021 7:44:06 PM	S81575
Surr: Toluene-d8	102		70-130	D	%Rec	20	9/24/2021 7:44:06 PM	S81575
Surr: 4-Bromofluorobenzene	110		70-130	D	%Rec	20	9/24/2021 7:44:06 PM	S81575

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

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

Analytical Report

Lab Order **2109C60**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-05

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 9:25:00 AM

Lab ID: 2109C60-004

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
							Analyst: SB	
Diesel Range Organics (DRO)	14	4.5	9.2		mg/Kg	1	9/27/2021 1:17:59 PM	62827
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	9/27/2021 1:17:59 PM	62827
Surr: DNOP	80.2	0	70-130		%Rec	1	9/27/2021 1:17:59 PM	62827
EPA METHOD 8015D: GASOLINE RANGE								
							Analyst: NSB	
Gasoline Range Organics (GRO)	65	8.6	13		mg/Kg	5	9/25/2021 6:15:03 AM	B81560
Surr: BFB	140	0	70-130	S	%Rec	5	9/25/2021 6:15:03 AM	B81560
EPA METHOD 300.0: ANIONS								
							Analyst: VP	
Fluoride	2.9	1.5	1.5		mg/Kg	5	10/6/2021 11:06:55 PM	63078
Chloride	94	7.5	7.5		mg/Kg	5	10/6/2021 11:06:55 PM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/6/2021 11:06:55 PM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/6/2021 11:06:55 PM	63078
Sulfate	ND	7.5	7.5		mg/Kg	5	10/6/2021 11:06:55 PM	63078
EPA METHOD 7471B: MERCURY								
							Analyst: ags	
Mercury	ND	0.0028	0.035		mg/Kg	1	9/30/2021 10:00:13 AM	62905
EPA METHOD 6010B: SOIL METALS								
							Analyst: JLF	
Antimony	ND	1.6	2.5		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Arsenic	ND	1.4	2.5		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Barium	220	0.059	0.098		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Beryllium	0.79	0.029	0.15		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Cadmium	ND	0.049	0.098		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Chromium	6.6	0.15	0.30		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Cobalt	3.7	0.059	0.30		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Iron	12000	250	250		mg/Kg	100	9/27/2021 4:06:50 PM	62806
Lead	3.0	0.26	0.30		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Manganese	300	0.82	0.98		mg/Kg	5	9/27/2021 4:04:44 PM	62806
Nickel	7.2	0.19	0.49		mg/Kg	1	9/27/2021 6:50:42 PM	62806
Selenium	ND	2.2	2.5		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Silver	ND	0.14	0.25		mg/Kg	1	9/27/2021 6:50:42 PM	62806
Vanadium	14	0.11	2.5		mg/Kg	1	9/27/2021 2:02:16 PM	62806
Zinc	11	1.3	2.5		mg/Kg	1	9/27/2021 2:02:16 PM	62806
EPA METHOD 8260B: VOLATILES								
							Analyst: RAA	
Benzene	0.46	0.099	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Toluene	ND	0.066	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Ethylbenzene	0.29	0.13	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Methyl tert-butyl ether (MTBE)	ND	0.29	0.41	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
1,2-Dichloroethane (EDC)	ND	0.12	0.51	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
1,2-Dibromoethane (EDB)	ND	0.20	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-05

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 9:25:00 AM

Lab ID: 2109C60-004

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	ND	2.2	2.6	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Carbon disulfide	ND	0.21	2.6	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Chlorobenzene	ND	0.093	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Chloroform	ND	0.073	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
1,1-Dichloroethane	ND	0.15	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Styrene	ND	0.070	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Tetrachloroethene (PCE)	ND	0.14	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
1,1,1-Trichloroethane	ND	0.11	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Trichloroethene (TCE)	ND	0.10	0.21	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Xylenes, Total	0.67	0.27	0.41	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
1,4-Dioxane	ND	2.9	3.1	D	mg/Kg	20	9/24/2021 8:11:01 PM	S81575
Surr: Dibromofluoromethane	99.0		70-130	D	%Rec	20	9/24/2021 8:11:01 PM	S81575
Surr: 1,2-Dichloroethane-d4	97.0		70-130	D	%Rec	20	9/24/2021 8:11:01 PM	S81575
Surr: Toluene-d8	100		70-130	D	%Rec	20	9/24/2021 8:11:01 PM	S81575
Surr: 4-Bromofluorobenzene	104		70-130	D	%Rec	20	9/24/2021 8:11:01 PM	S81575

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

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

Analytical Report

Lab Order **2109C60**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-06

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 10:00:00 AM

Lab ID: 2109C60-005

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: SB
Diesel Range Organics (DRO)	8.9	4.5	9.2	J	mg/Kg	1	9/27/2021 4:49:47 PM	62827
Motor Oil Range Organics (MRO)	ND	46	46		mg/Kg	1	9/27/2021 4:49:47 PM	62827
Surr: DNOP	88.6	0	70-130		%Rec	1	9/27/2021 4:49:47 PM	62827
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	150	7.4	11		mg/Kg	5	9/25/2021 6:38:26 AM	B81560
Surr: BFB	142	0	70-130	S	%Rec	5	9/25/2021 6:38:26 AM	B81560
EPA METHOD 300.0: ANIONS								Analyst: VP
Fluoride	4.4	1.5	1.5		mg/Kg	5	10/6/2021 11:56:34 PM	63078
Chloride	88	7.5	7.5		mg/Kg	5	10/6/2021 11:56:34 PM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/6/2021 11:56:34 PM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/6/2021 11:56:34 PM	63078
Sulfate	8.0	7.5	7.5		mg/Kg	5	10/6/2021 11:56:34 PM	63078
EPA METHOD 7471B: MERCURY								Analyst: ags
Mercury	0.0028	0.0028	0.035	J	mg/Kg	1	9/30/2021 10:02:20 AM	62905
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Antimony	ND	1.7	2.6		mg/Kg	1	9/27/2021 2:04:32 PM	62806
Arsenic	ND	1.5	2.6		mg/Kg	1	9/27/2021 2:04:32 PM	62806
Barium	420	0.31	0.52		mg/Kg	5	9/27/2021 4:08:55 PM	62806
Beryllium	0.80	0.030	0.16		mg/Kg	1	9/27/2021 2:04:32 PM	62806
Cadmium	ND	0.052	0.10		mg/Kg	1	9/27/2021 2:04:32 PM	62806
Chromium	7.8	0.16	0.31		mg/Kg	1	9/27/2021 2:04:32 PM	62806
Cobalt	3.8	0.062	0.31		mg/Kg	1	9/27/2021 2:04:32 PM	62806
Iron	13000	260	260		mg/Kg	100	9/27/2021 4:11:01 PM	62806
Lead	2.4	0.28	0.31		mg/Kg	1	9/27/2021 2:04:32 PM	62806
Manganese	510	0.86	1.0		mg/Kg	5	9/27/2021 4:08:55 PM	62806
Nickel	7.3	0.20	0.52		mg/Kg	1	9/27/2021 6:52:08 PM	62806
Selenium	ND	2.3	2.6		mg/Kg	1	9/27/2021 2:04:32 PM	62806
Silver	ND	0.15	0.26		mg/Kg	1	9/27/2021 6:52:08 PM	62806
Vanadium	16	0.12	2.6		mg/Kg	1	9/27/2021 2:04:32 PM	62806
Zinc	12	1.4	2.6		mg/Kg	1	9/27/2021 2:04:32 PM	62806
EPA METHOD 8260B: VOLATILES								Analyst: RAA
Benzene	1.2	0.086	0.22	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Toluene	0.22	0.057	0.44	JD	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Ethylbenzene	0.90	0.11	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Methyl tert-butyl ether (MTBE)	ND	0.25	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
1,2-Dichloroethane (EDC)	ND	0.10	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
1,2-Dibromoethane (EDB)	ND	0.18	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order **2109C60**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-06

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 10:00:00 AM

Lab ID: 2109C60-005

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	ND	1.9	4.4	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Carbon disulfide	ND	0.18	4.4	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Chlorobenzene	ND	0.080	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Chloroform	ND	0.063	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
1,1-Dichloroethane	ND	0.13	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Styrene	ND	0.061	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Tetrachloroethene (PCE)	ND	0.12	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
1,1,1-Trichloroethane	ND	0.098	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Trichloroethene (TCE)	ND	0.087	0.44	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Xylenes, Total	2.6	0.23	0.89	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
1,4-Dioxane	ND	2.5	4.4	D	mg/Kg	20	9/24/2021 8:37:55 PM	R81575
Surr: Dibromofluoromethane	104		70-130	D	%Rec	20	9/24/2021 8:37:55 PM	R81575
Surr: 1,2-Dichloroethane-d4	95.8		70-130	D	%Rec	20	9/24/2021 8:37:55 PM	R81575
Surr: Toluene-d8	94.0		70-130	D	%Rec	20	9/24/2021 8:37:55 PM	R81575
Surr: 4-Bromofluorobenzene	101		70-130	D	%Rec	20	9/24/2021 8:37:55 PM	R81575

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

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

Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-08

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 10:30:00 AM

Lab ID: 2109C60-006

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: JME								
Diesel Range Organics (DRO)	2000	22	45		mg/Kg	5	9/30/2021 12:13:37 PM	62827
Motor Oil Range Organics (MRO)	ND	230	230	D	mg/Kg	5	9/30/2021 12:13:37 PM	62827
Surr: DNOP	88.0	0	70-130		%Rec	5	9/30/2021 12:13:37 PM	62827
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: NSB								
Gasoline Range Organics (GRO)	1700	81	120		mg/Kg	50	9/25/2021 7:02:00 AM	B81560
Surr: BFB	145	0	70-130	S	%Rec	50	9/25/2021 7:02:00 AM	B81560
EPA METHOD 300.0: ANIONS								
Analyst: VP								
Fluoride	3.4	1.5	1.5		mg/Kg	5	10/7/2021 12:21:24 AM	63078
Chloride	49	7.5	7.5		mg/Kg	5	10/7/2021 12:21:24 AM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 12:21:24 AM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 12:21:24 AM	63078
Sulfate	ND	7.5	7.5		mg/Kg	5	10/7/2021 12:21:24 AM	63078
EPA METHOD 7471B: MERCURY								
Analyst: ags								
Mercury	ND	0.0027	0.034		mg/Kg	1	9/30/2021 10:04:27 AM	62905
EPA METHOD 6010B: SOIL METALS								
Analyst: JLF								
Antimony	ND	1.6	2.4		mg/Kg	1	9/27/2021 2:06:48 PM	62806
Arsenic	1.4	1.4	2.4	J	mg/Kg	1	9/27/2021 2:06:48 PM	62806
Barium	380	0.29	0.49		mg/Kg	5	9/27/2021 4:13:05 PM	62806
Beryllium	0.53	0.028	0.15		mg/Kg	1	9/27/2021 2:06:48 PM	62806
Cadmium	ND	0.049	0.097		mg/Kg	1	9/27/2021 2:06:48 PM	62806
Chromium	4.3	0.15	0.29		mg/Kg	1	9/27/2021 2:06:48 PM	62806
Cobalt	2.5	0.059	0.29		mg/Kg	1	9/27/2021 2:06:48 PM	62806
Iron	8500	240	240		mg/Kg	100	9/27/2021 4:25:38 PM	62806
Lead	3.6	0.26	0.29		mg/Kg	1	9/27/2021 2:06:48 PM	62806
Manganese	330	0.80	0.97		mg/Kg	5	9/27/2021 4:13:05 PM	62806
Nickel	4.6	0.19	0.49		mg/Kg	1	9/27/2021 6:53:33 PM	62806
Selenium	ND	2.1	2.4		mg/Kg	1	9/27/2021 2:06:48 PM	62806
Silver	ND	0.14	0.24		mg/Kg	1	9/27/2021 6:53:33 PM	62806
Vanadium	14	0.11	2.4		mg/Kg	1	9/27/2021 2:06:48 PM	62806
Zinc	7.9	1.3	2.4		mg/Kg	1	9/27/2021 2:06:48 PM	62806
EPA METHOD 8260B: VOLATILES								
Analyst: RAA								
Benzene	9.5	0.093	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Toluene	33	0.062	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Ethylbenzene	19	0.12	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Methyl tert-butyl ether (MTBE)	ND	0.27	0.39	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
1,2-Dichloroethane (EDC)	0.25	0.11	0.48	JD	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
1,2-Dibromoethane (EDB)	ND	0.19	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-08

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 10:30:00 AM

Lab ID: 2109C60-006

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	ND	2.1	2.4	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Carbon disulfide	ND	0.20	2.4	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Chlorobenzene	0.15	0.087	0.19	JD	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Chloroform	ND	0.069	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
1,1-Dichloroethane	ND	0.14	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Styrene	ND	0.066	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Tetrachloroethene (PCE)	ND	0.13	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
1,1,1-Trichloroethane	ND	0.11	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Trichloroethene (TCE)	ND	0.095	0.19	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Xylenes, Total	97	0.25	0.39	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
1,4-Dioxane	ND	2.8	2.9	D	mg/Kg	20	9/24/2021 9:04:54 PM	S81575
Surr: Dibromofluoromethane	93.2		70-130	D	%Rec	20	9/24/2021 9:04:54 PM	S81575
Surr: 1,2-Dichloroethane-d4	93.0		70-130	D	%Rec	20	9/24/2021 9:04:54 PM	S81575
Surr: Toluene-d8	100		70-130	D	%Rec	20	9/24/2021 9:04:54 PM	S81575
Surr: 4-Bromofluorobenzene	114		70-130	D	%Rec	20	9/24/2021 9:04:54 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-07

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 11:15:00 AM

Lab ID: 2109C60-007

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
							Analyst: SB	
Diesel Range Organics (DRO)	310	4.2	8.5		mg/Kg	1	9/27/2021 5:14:45 PM	62827
Motor Oil Range Organics (MRO)	ND	43	43		mg/Kg	1	9/27/2021 5:14:45 PM	62827
Surr: DNOP	92.1	0	70-130		%Rec	1	9/27/2021 5:14:45 PM	62827
EPA METHOD 8015D: GASOLINE RANGE								
							Analyst: NSB	
Gasoline Range Organics (GRO)	960	92	140		mg/Kg	50	9/25/2021 7:25:26 AM	B81560
Surr: BFB	130	0	70-130		%Rec	50	9/25/2021 7:25:26 AM	B81560
EPA METHOD 300.0: ANIONS								
							Analyst: VP	
Fluoride	4.0	1.5	1.5		mg/Kg	5	10/7/2021 12:46:15 AM	63078
Chloride	37	7.5	7.5		mg/Kg	5	10/7/2021 12:46:15 AM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 12:46:15 AM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 12:46:15 AM	63078
Sulfate	9.2	7.5	7.5		mg/Kg	5	10/7/2021 12:46:15 AM	63078
EPA METHOD 7471B: MERCURY								
							Analyst: ags	
Mercury	0.0035	0.0026	0.033	J	mg/Kg	1	9/30/2021 10:06:34 AM	62905
EPA METHOD 6010B: SOIL METALS								
							Analyst: JLF	
Antimony	ND	1.6	2.5		mg/Kg	1	9/27/2021 2:19:16 PM	62806
Arsenic	ND	1.4	2.5		mg/Kg	1	9/27/2021 2:19:16 PM	62806
Barium	410	0.30	0.49		mg/Kg	5	9/27/2021 4:28:11 PM	62806
Beryllium	0.66	0.029	0.15		mg/Kg	1	9/27/2021 2:19:16 PM	62806
Cadmium	ND	0.049	0.099		mg/Kg	1	9/27/2021 2:19:16 PM	62806
Chromium	6.4	0.15	0.30		mg/Kg	1	9/27/2021 2:19:16 PM	62806
Cobalt	3.3	0.060	0.30		mg/Kg	1	9/27/2021 2:19:16 PM	62806
Iron	11000	250	250		mg/Kg	100	9/27/2021 4:30:14 PM	62806
Lead	3.7	0.26	0.30		mg/Kg	1	9/27/2021 2:19:16 PM	62806
Manganese	490	0.82	0.99		mg/Kg	5	9/27/2021 4:28:11 PM	62806
Nickel	6.2	0.19	0.49		mg/Kg	1	9/27/2021 6:55:00 PM	62806
Selenium	ND	2.2	2.5		mg/Kg	1	9/27/2021 2:19:16 PM	62806
Silver	ND	0.14	0.25		mg/Kg	1	9/27/2021 6:55:00 PM	62806
Vanadium	16	0.11	2.5		mg/Kg	1	9/27/2021 2:19:16 PM	62806
Zinc	11	1.3	2.5		mg/Kg	1	9/27/2021 2:19:16 PM	62806
EPA METHOD 8260B: VOLATILES								
							Analyst: RAA	
Benzene	2.6	0.11	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Toluene	5.8	0.071	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Ethylbenzene	5.9	0.13	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Methyl tert-butyl ether (MTBE)	ND	0.31	0.44	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
1,2-Dichloroethane (EDC)	ND	0.13	0.55	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
1,2-Dibromoethane (EDB)	ND	0.22	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order 2109C60

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-07

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/22/2021 11:15:00 AM

Lab ID: 2109C60-007

Matrix: MEOH (SOIL)

Received Date: 9/22/2021 4:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	ND	2.4	2.8	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Carbon disulfide	ND	0.23	2.8	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Chlorobenzene	ND	0.099	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Chloroform	ND	0.078	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
1,1-Dichloroethane	ND	0.16	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Styrene	ND	0.075	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Tetrachloroethene (PCE)	ND	0.15	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
1,1,1-Trichloroethane	ND	0.12	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Trichloroethene (TCE)	ND	0.11	0.22	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Xylenes, Total	14	0.29	0.44	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
1,4-Dioxane	ND	3.2	3.3	D	mg/Kg	20	9/24/2021 9:31:47 PM	S81575
Surr: Dibromofluoromethane	96.4		70-130	D	%Rec	20	9/24/2021 9:31:47 PM	S81575
Surr: 1,2-Dichloroethane-d4	96.6		70-130	D	%Rec	20	9/24/2021 9:31:47 PM	S81575
Surr: Toluene-d8	101		70-130	D	%Rec	20	9/24/2021 9:31:47 PM	S81575
Surr: 4-Bromofluorobenzene	113		70-130	D	%Rec	20	9/24/2021 9:31:47 PM	S81575

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

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ANALYTICAL REPORT

October 13, 2021

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

Hall Environmental Analysis Laboratory

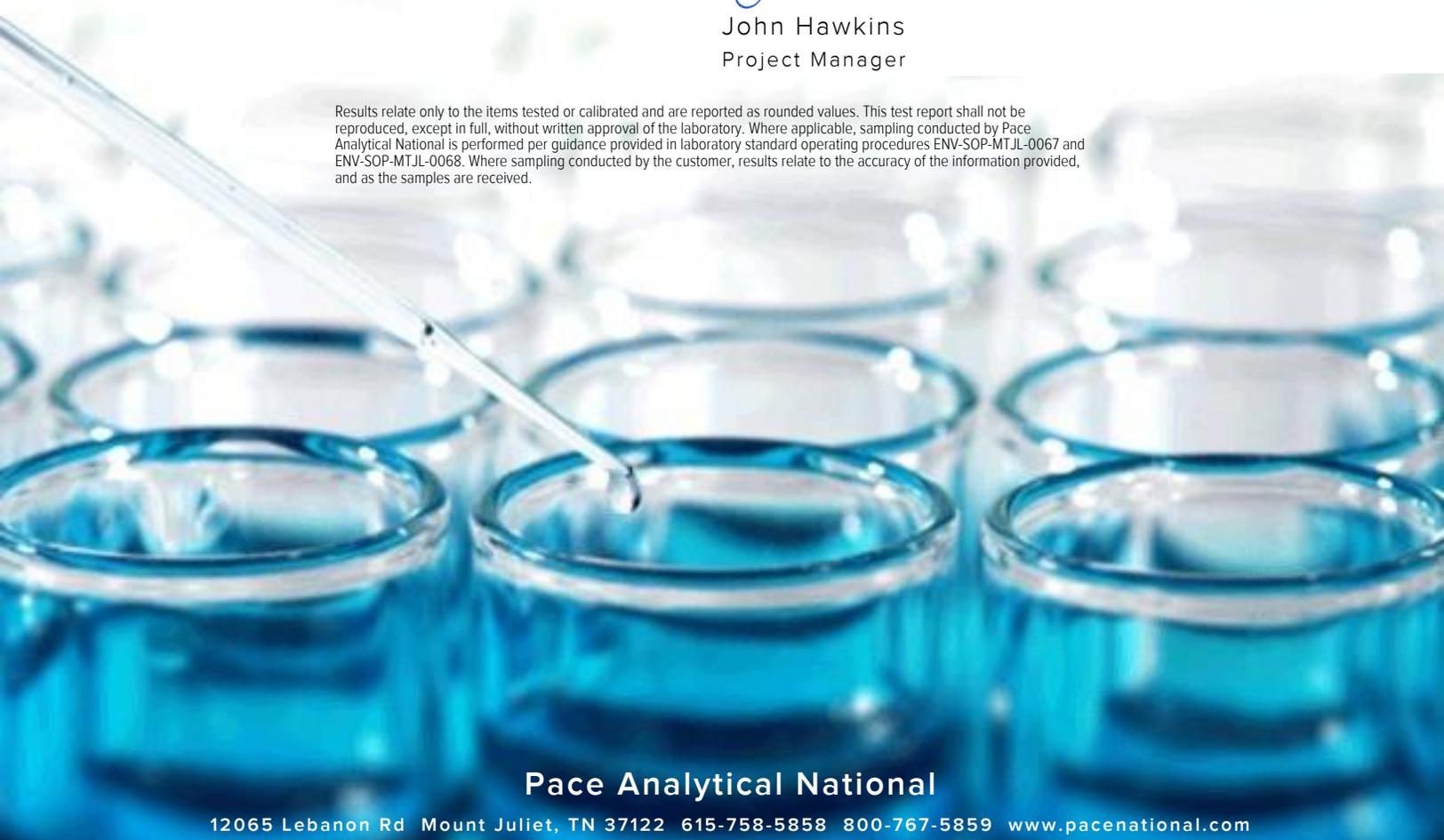
Sample Delivery Group: L1407688
 Samples Received: 09/23/2021
 Project Number:
 Description:

Report To: Andy Freeman
 4901 Hawkins NE
 Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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2109C60-001B SLP-BD-09222021 L1407688-01 Solid

Collected by
Collected date/time
Received date/time

09/22/21 00:00 09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1745591	1000	09/23/21 16:34	09/23/21 16:34	BGE	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

2109C60-001C SLP-BD-09222021 L1407688-02 Solid

Collected by
Collected date/time
Received date/time

09/22/21 00:00 09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:25	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749144	1	09/30/21 14:34	09/30/21 19:16	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1750662	1	10/04/21 05:02	10/04/21 14:51	ADF	Mt. Juliet, TN

4 Cn

5 Sr

6 Qc

2109C60-003B SLP-09 L1407688-03 Solid

Collected by
Collected date/time
Received date/time

09/22/21 08:30 09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1745591	1000	09/23/21 16:34	09/23/21 16:34	BGE	Mt. Juliet, TN

7 Gl

8 Al

9 Sc

2109C60-003C SLP-09 L1407688-04 Solid

Collected by
Collected date/time
Received date/time

09/22/21 08:30 09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:30	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749144	1	09/30/21 14:34	09/30/21 19:18	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1750662	1	10/04/21 05:02	10/04/21 15:53	ADF	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1750662	5	10/04/21 05:02	10/06/21 03:33	ADF	Mt. Juliet, TN

2109C60-004B SLP-05 L1407688-05 Solid

Collected by
Collected date/time
Received date/time

09/22/21 09:25 09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1745591	1000	09/23/21 16:34	09/23/21 16:34	BGE	Mt. Juliet, TN

2109C60-004C SLP-05 L1407688-06 Solid

Collected by
Collected date/time
Received date/time

09/22/21 09:25 09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:30	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749587	1	10/01/21 16:20	10/02/21 01:08	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1750662	1	10/04/21 05:02	10/04/21 13:09	ADF	Mt. Juliet, TN

2109C60-005B SLP-06 L1407688-07 Solid

Collected by
Collected date/time
Received date/time

09/22/21 10:00 09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1745591	1000	09/23/21 16:34	09/23/21 16:34	BGE	Mt. Juliet, TN

2109C60-005C SLP-06 L1407688-08 Solid

Collected by
Collected date/time
Received date/time

09/22/21 10:00
09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:30	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749587	1	10/01/21 16:20	10/02/21 01:09	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1750662	1	10/04/21 05:02	10/04/21 14:10	ADF	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn

2109C60-006B SLP-08 L1407688-09 Solid

Collected by
Collected date/time
Received date/time

09/22/21 10:30
09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1745591	1000	09/23/21 16:34	09/23/21 16:34	BGE	Mt. Juliet, TN

5 Sr
6 Qc

2109C60-006C SLP-08 L1407688-10 Solid

Collected by
Collected date/time
Received date/time

09/22/21 10:30
09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:31	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749587	1	10/01/21 16:20	10/02/21 01:10	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1750662	1	10/04/21 05:02	10/04/21 16:13	ADF	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1750662	5	10/04/21 05:02	10/06/21 03:12	ADF	Mt. Juliet, TN

7 Gl
8 Al
9 Sc

2109C60-007B SLP-07 L1407688-11 Solid

Collected by
Collected date/time
Received date/time

09/22/21 11:15
09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1745591	1000	09/23/21 16:34	09/23/21 16:34	BGE	Mt. Juliet, TN

2109C60-007C SLP-07 L1407688-12 Solid

Collected by
Collected date/time
Received date/time

09/22/21 11:15
09/23/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:31	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749587	1	10/01/21 16:20	10/02/21 01:11	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1750662	1	10/04/21 05:02	10/04/21 17:35	ADF	Mt. Juliet, TN

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

John Hawkins
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Collected date/time: 09/22/21 00:00

L1407688

Microbiology by Method 9223B-2004

Analyte	Result MPN/100ml	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	<1000	<u>T8</u>	1000	09/23/2021 16:34	WG1745591
Coliform,Total	1000	<u>T8</u>	1000	09/23/2021 16:34	WG1745591

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/22/21 00:00

L1407688

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chromium,Hexavalent	ND	J6 O1	2.00	1	09/30/2021 21:25	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	09/30/2021 19:16	WG1749144

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Acenaphthene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Acenaphthylene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Anthracene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Benzidine	ND		1.67	1	10/04/2021 14:51	WG1750662
Benzo(a)anthracene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Benzo(b)fluoranthene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Benzo(k)fluoranthene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Benzo(g,h,i)perylene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Benzo(a)pyrene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Bis(2-chlorethoxy)methane	ND		0.333	1	10/04/2021 14:51	WG1750662
Bis(2-chloroethyl)ether	ND		0.333	1	10/04/2021 14:51	WG1750662
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/04/2021 14:51	WG1750662
4-Bromophenyl-phenylether	ND		0.333	1	10/04/2021 14:51	WG1750662
2-Chloronaphthalene	ND		0.0333	1	10/04/2021 14:51	WG1750662
4-Chlorophenyl-phenylether	ND		0.333	1	10/04/2021 14:51	WG1750662
Chrysene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Dibenz(a,h)anthracene	ND		0.0333	1	10/04/2021 14:51	WG1750662
1,2-Dichlorobenzene	ND		0.333	1	10/04/2021 14:51	WG1750662
1,3-Dichlorobenzene	ND		0.333	1	10/04/2021 14:51	WG1750662
1,4-Dichlorobenzene	ND		0.333	1	10/04/2021 14:51	WG1750662
3,3-Dichlorobenzidine	ND		0.333	1	10/04/2021 14:51	WG1750662
2,4-Dinitrotoluene	ND		0.333	1	10/04/2021 14:51	WG1750662
2,6-Dinitrotoluene	ND		0.333	1	10/04/2021 14:51	WG1750662
Fluoranthene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Fluorene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Hexachlorobenzene	ND		0.333	1	10/04/2021 14:51	WG1750662
Hexachloro-1,3-butadiene	ND		0.333	1	10/04/2021 14:51	WG1750662
Hexachlorocyclopentadiene	ND		0.333	1	10/04/2021 14:51	WG1750662
Hexachloroethane	ND		0.333	1	10/04/2021 14:51	WG1750662
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Isophorone	ND		0.333	1	10/04/2021 14:51	WG1750662
Naphthalene	0.153		0.0333	1	10/04/2021 14:51	WG1750662
1-Methylnaphthalene	ND		0.333	1	10/04/2021 14:51	WG1750662
2-Methylnaphthalene	0.333		0.333	1	10/04/2021 14:51	WG1750662
Nitrobenzene	ND		0.333	1	10/04/2021 14:51	WG1750662
n-Nitrosodimethylamine	ND		0.333	1	10/04/2021 14:51	WG1750662
n-Nitrosodiphenylamine	ND		0.333	1	10/04/2021 14:51	WG1750662
n-Nitrosodi-n-propylamine	ND		0.333	1	10/04/2021 14:51	WG1750662
Phenanthrene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Benzylbutyl phthalate	ND		0.333	1	10/04/2021 14:51	WG1750662
Bis(2-ethylhexyl)phthalate	ND		0.333	1	10/04/2021 14:51	WG1750662
Di-n-butyl phthalate	ND		0.333	1	10/04/2021 14:51	WG1750662
Diethyl phthalate	ND		0.333	1	10/04/2021 14:51	WG1750662
Dimethyl phthalate	ND		0.333	1	10/04/2021 14:51	WG1750662
Di-n-octyl phthalate	ND		0.333	1	10/04/2021 14:51	WG1750662

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

Collected date/time: 09/22/21 00:00

L1407688

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	ND		0.0333	1	10/04/2021 14:51	WG1750662
Pyridine	ND		0.333	1	10/04/2021 14:51	WG1750662
1,2,4-Trichlorobenzene	ND		0.333	1	10/04/2021 14:51	WG1750662
Quinoline	ND		0.333	1	10/04/2021 14:51	WG1750662
2-Methylphenol	ND		0.333	1	10/04/2021 14:51	WG1750662
3&4-Methyl Phenol	ND		0.333	1	10/04/2021 14:51	WG1750662
4-Chloro-3-methylphenol	ND		0.333	1	10/04/2021 14:51	WG1750662
2-Chlorophenol	ND		0.333	1	10/04/2021 14:51	WG1750662
2,4-Dichlorophenol	ND		0.333	1	10/04/2021 14:51	WG1750662
2,4-Dimethylphenol	ND		0.333	1	10/04/2021 14:51	WG1750662
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/04/2021 14:51	WG1750662
2,4-Dinitrophenol	ND		0.333	1	10/04/2021 14:51	WG1750662
2-Nitrophenol	ND		0.333	1	10/04/2021 14:51	WG1750662
4-Nitrophenol	ND		0.333	1	10/04/2021 14:51	WG1750662
Pentachlorophenol	ND		0.333	1	10/04/2021 14:51	WG1750662
Phenol	ND		0.333	1	10/04/2021 14:51	WG1750662
2,4,6-Trichlorophenol	ND		0.333	1	10/04/2021 14:51	WG1750662
(S) 2-Fluorophenol	56.7		12.0-120		10/04/2021 14:51	WG1750662
(S) Phenol-d5	51.5		10.0-120		10/04/2021 14:51	WG1750662
(S) Nitrobenzene-d5	47.1		10.0-122		10/04/2021 14:51	WG1750662
(S) 2-Fluorobiphenyl	52.9		15.0-120		10/04/2021 14:51	WG1750662
(S) 2,4,6-Tribromophenol	74.6		10.0-127		10/04/2021 14:51	WG1750662
(S) p-Terphenyl-d14	66.4		10.0-120		10/04/2021 14:51	WG1750662

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

2109C00-003B SLP 09

Collected date/time: 09/22/21 08:30

L1407688

Microbiology by Method 9223B-2004

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	2000	T8	1000	09/23/2021 16:34	WG1745591
Coliform,Total	>2419600	T8	1000	09/23/2021 16:34	WG1745591

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/22/21 08:30

L1407688

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/30/2021 21:30	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND	J3 J6	0.250	1	09/30/2021 19:18	WG1749144

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acenaphthene	0.274		0.0333	1	10/04/2021 15:53	WG1750662
Acenaphthylene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Anthracene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Benzidine	ND		1.67	1	10/04/2021 15:53	WG1750662
Benzo(a)anthracene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Benzo(b)fluoranthene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Benzo(k)fluoranthene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Benzo(g,h,i)perylene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Benzo(a)pyrene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Bis(2-chloroethoxy)methane	ND		0.333	1	10/04/2021 15:53	WG1750662
Bis(2-chloroethyl)ether	ND		0.333	1	10/04/2021 15:53	WG1750662
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/04/2021 15:53	WG1750662
4-Bromophenyl-phenylether	ND		0.333	1	10/04/2021 15:53	WG1750662
2-Chloronaphthalene	ND		0.0333	1	10/04/2021 15:53	WG1750662
4-Chlorophenyl-phenylether	ND		0.333	1	10/04/2021 15:53	WG1750662
Chrysene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Dibenz(a,h)anthracene	ND		0.0333	1	10/04/2021 15:53	WG1750662
1,2-Dichlorobenzene	ND		0.333	1	10/04/2021 15:53	WG1750662
1,3-Dichlorobenzene	ND		0.333	1	10/04/2021 15:53	WG1750662
1,4-Dichlorobenzene	ND		0.333	1	10/04/2021 15:53	WG1750662
3,3-Dichlorobenzidine	ND		0.333	1	10/04/2021 15:53	WG1750662
2,4-Dinitrotoluene	ND		0.333	1	10/04/2021 15:53	WG1750662
2,6-Dinitrotoluene	ND		0.333	1	10/04/2021 15:53	WG1750662
Fluoranthene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Fluorene	0.469		0.0333	1	10/04/2021 15:53	WG1750662
Hexachlorobenzene	ND		0.333	1	10/04/2021 15:53	WG1750662
Hexachloro-1,3-butadiene	ND		0.333	1	10/04/2021 15:53	WG1750662
Hexachlorocyclopentadiene	ND		0.333	1	10/04/2021 15:53	WG1750662
Hexachloroethane	ND		0.333	1	10/04/2021 15:53	WG1750662
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/04/2021 15:53	WG1750662
Isophorone	ND		0.333	1	10/04/2021 15:53	WG1750662
Naphthalene	2.74		0.167	5	10/06/2021 03:33	WG1750662
1-Methylnaphthalene	3.30		1.67	5	10/06/2021 03:33	WG1750662
2-Methylnaphthalene	4.96		1.67	5	10/06/2021 03:33	WG1750662
Nitrobenzene	ND		0.333	1	10/04/2021 15:53	WG1750662
n-Nitrosodimethylamine	ND		0.333	1	10/04/2021 15:53	WG1750662
n-Nitrosodiphenylamine	ND		0.333	1	10/04/2021 15:53	WG1750662
n-Nitrosodi-n-propylamine	ND		0.333	1	10/04/2021 15:53	WG1750662
Phenanthrene	0.767		0.0333	1	10/04/2021 15:53	WG1750662
Benzylbutyl phthalate	ND		0.333	1	10/04/2021 15:53	WG1750662
Bis(2-ethylhexyl)phthalate	ND		0.333	1	10/04/2021 15:53	WG1750662
Di-n-butyl phthalate	ND		0.333	1	10/04/2021 15:53	WG1750662
Diethyl phthalate	ND		0.333	1	10/04/2021 15:53	WG1750662
Dimethyl phthalate	ND		0.333	1	10/04/2021 15:53	WG1750662
Di-n-octyl phthalate	ND		0.333	1	10/04/2021 15:53	WG1750662

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

Collected date/time: 09/22/21 08:30

L1407688

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	0.125		0.0333	1	10/04/2021 15:53	WG1750662
Pyridine	ND		0.333	1	10/04/2021 15:53	WG1750662
1,2,4-Trichlorobenzene	ND		0.333	1	10/04/2021 15:53	WG1750662
Quinoline	ND		0.333	1	10/04/2021 15:53	WG1750662
2-Methylphenol	ND		0.333	1	10/04/2021 15:53	WG1750662
3&4-Methyl Phenol	ND		0.333	1	10/04/2021 15:53	WG1750662
4-Chloro-3-methylphenol	ND		0.333	1	10/04/2021 15:53	WG1750662
2-Chlorophenol	ND		0.333	1	10/04/2021 15:53	WG1750662
2,4-Dichlorophenol	ND		0.333	1	10/04/2021 15:53	WG1750662
2,4-Dimethylphenol	ND		0.333	1	10/04/2021 15:53	WG1750662
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/04/2021 15:53	WG1750662
2,4-Dinitrophenol	ND		0.333	1	10/04/2021 15:53	WG1750662
2-Nitrophenol	ND		0.333	1	10/04/2021 15:53	WG1750662
4-Nitrophenol	ND		0.333	1	10/04/2021 15:53	WG1750662
Pentachlorophenol	ND		0.333	1	10/04/2021 15:53	WG1750662
Phenol	ND		0.333	1	10/04/2021 15:53	WG1750662
2,4,6-Trichlorophenol	ND		0.333	1	10/04/2021 15:53	WG1750662
(S) 2-Fluorophenol	51.4		12.0-120		10/06/2021 03:33	WG1750662
(S) 2-Fluorophenol	55.2		12.0-120		10/04/2021 15:53	WG1750662
(S) Phenol-d5	62.1		10.0-120		10/04/2021 15:53	WG1750662
(S) Phenol-d5	57.8		10.0-120		10/06/2021 03:33	WG1750662
(S) Nitrobenzene-d5	0.000	J2	10.0-122		10/04/2021 15:53	WG1750662
(S) Nitrobenzene-d5	149	J1	10.0-122		10/06/2021 03:33	WG1750662
(S) 2-Fluorobiphenyl	59.9		15.0-120		10/06/2021 03:33	WG1750662
(S) 2-Fluorobiphenyl	66.1		15.0-120		10/04/2021 15:53	WG1750662
(S) 2,4,6-Tribromophenol	89.7		10.0-127		10/04/2021 15:53	WG1750662
(S) 2,4,6-Tribromophenol	74.8		10.0-127		10/06/2021 03:33	WG1750662
(S) p-Terphenyl-d14	60.2		10.0-120		10/06/2021 03:33	WG1750662
(S) p-Terphenyl-d14	63.0		10.0-120		10/04/2021 15:53	WG1750662

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

Sample Narrative:

L1407688-04 WG1750662: Surrogate failure due to matrix interference

2109C00-004B SLP 05

Collected date/time: 09/22/21 09:25

L1407688

Microbiology by Method 9223B-2004

Analyte	Result MPN/100ml	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	<1000	<u>T8</u>	1000	09/23/2021 16:34	WG1745591
Coliform,Total	8400	<u>T8</u>	1000	09/23/2021 16:34	WG1745591

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/22/21 09:25

L1407688

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chromium,Hexavalent	ND		2.00	1	09/30/2021 21:30	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	10/02/2021 01:08	WG1749587

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Acenaphthene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Acenaphthylene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Anthracene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Benzidine	ND		1.67	1	10/04/2021 13:09	WG1750662
Benzo(a)anthracene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Benzo(b)fluoranthene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Benzo(k)fluoranthene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Benzo(g,h,i)perylene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Benzo(a)pyrene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Bis(2-chloroethoxy)methane	ND		0.333	1	10/04/2021 13:09	WG1750662
Bis(2-chloroethyl)ether	ND		0.333	1	10/04/2021 13:09	WG1750662
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/04/2021 13:09	WG1750662
4-Bromophenyl-phenylether	ND		0.333	1	10/04/2021 13:09	WG1750662
2-Chloronaphthalene	ND		0.0333	1	10/04/2021 13:09	WG1750662
4-Chlorophenyl-phenylether	ND		0.333	1	10/04/2021 13:09	WG1750662
Chrysene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Dibenz(a,h)anthracene	ND		0.0333	1	10/04/2021 13:09	WG1750662
1,2-Dichlorobenzene	ND		0.333	1	10/04/2021 13:09	WG1750662
1,3-Dichlorobenzene	ND		0.333	1	10/04/2021 13:09	WG1750662
1,4-Dichlorobenzene	ND		0.333	1	10/04/2021 13:09	WG1750662
3,3-Dichlorobenzidine	ND		0.333	1	10/04/2021 13:09	WG1750662
2,4-Dinitrotoluene	ND		0.333	1	10/04/2021 13:09	WG1750662
2,6-Dinitrotoluene	ND		0.333	1	10/04/2021 13:09	WG1750662
Fluoranthene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Fluorene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Hexachlorobenzene	ND		0.333	1	10/04/2021 13:09	WG1750662
Hexachloro-1,3-butadiene	ND		0.333	1	10/04/2021 13:09	WG1750662
Hexachlorocyclopentadiene	ND		0.333	1	10/04/2021 13:09	WG1750662
Hexachloroethane	ND		0.333	1	10/04/2021 13:09	WG1750662
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Isophorone	ND		0.333	1	10/04/2021 13:09	WG1750662
Naphthalene	ND		0.0333	1	10/04/2021 13:09	WG1750662
1-Methylnaphthalene	ND		0.333	1	10/04/2021 13:09	WG1750662
2-Methylnaphthalene	ND		0.333	1	10/04/2021 13:09	WG1750662
Nitrobenzene	ND		0.333	1	10/04/2021 13:09	WG1750662
n-Nitrosodimethylamine	ND		0.333	1	10/04/2021 13:09	WG1750662
n-Nitrosodiphenylamine	ND		0.333	1	10/04/2021 13:09	WG1750662
n-Nitrosodi-n-propylamine	ND		0.333	1	10/04/2021 13:09	WG1750662
Phenanthrene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Benzylbutyl phthalate	ND		0.333	1	10/04/2021 13:09	WG1750662
Bis(2-ethylhexyl)phthalate	ND		0.333	1	10/04/2021 13:09	WG1750662
Di-n-butyl phthalate	ND		0.333	1	10/04/2021 13:09	WG1750662
Diethyl phthalate	ND		0.333	1	10/04/2021 13:09	WG1750662
Dimethyl phthalate	ND		0.333	1	10/04/2021 13:09	WG1750662
Di-n-octyl phthalate	ND		0.333	1	10/04/2021 13:09	WG1750662

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/22/21 09:25

L1407688

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	ND		0.0333	1	10/04/2021 13:09	WG1750662
Pyridine	ND		0.333	1	10/04/2021 13:09	WG1750662
1,2,4-Trichlorobenzene	ND		0.333	1	10/04/2021 13:09	WG1750662
Quinoline	ND		0.333	1	10/04/2021 13:09	WG1750662
2-Methylphenol	ND		0.333	1	10/04/2021 13:09	WG1750662
3&4-Methyl Phenol	ND		0.333	1	10/04/2021 13:09	WG1750662
4-Chloro-3-methylphenol	ND		0.333	1	10/04/2021 13:09	WG1750662
2-Chlorophenol	ND		0.333	1	10/04/2021 13:09	WG1750662
2,4-Dichlorophenol	ND		0.333	1	10/04/2021 13:09	WG1750662
2,4-Dimethylphenol	ND		0.333	1	10/04/2021 13:09	WG1750662
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/04/2021 13:09	WG1750662
2,4-Dinitrophenol	ND		0.333	1	10/04/2021 13:09	WG1750662
2-Nitrophenol	ND		0.333	1	10/04/2021 13:09	WG1750662
4-Nitrophenol	ND		0.333	1	10/04/2021 13:09	WG1750662
Pentachlorophenol	ND		0.333	1	10/04/2021 13:09	WG1750662
Phenol	ND		0.333	1	10/04/2021 13:09	WG1750662
2,4,6-Trichlorophenol	ND		0.333	1	10/04/2021 13:09	WG1750662
(S) 2-Fluorophenol	51.5		12.0-120		10/04/2021 13:09	WG1750662
(S) Phenol-d5	48.3		10.0-120		10/04/2021 13:09	WG1750662
(S) Nitrobenzene-d5	38.9		10.0-122		10/04/2021 13:09	WG1750662
(S) 2-Fluorobiphenyl	46.4		15.0-120		10/04/2021 13:09	WG1750662
(S) 2,4,6-Tribromophenol	65.1		10.0-127		10/04/2021 13:09	WG1750662
(S) p-Terphenyl-d14	64.5		10.0-120		10/04/2021 13:09	WG1750662

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/22/21 10:00

L1407688

Microbiology by Method 9223B-2004

Analyte	Result MPN/100ml	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	<1000	<u>T8</u>	1000	09/23/2021 16:34	WG1745591
Coliform,Total	<1000	<u>T8</u>	1000	09/23/2021 16:34	WG1745591

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/22/21 10:00

L1407688

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/30/2021 21:30	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	10/02/2021 01:09	WG1749587

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Acenaphthylene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Anthracene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Benzidine	ND		1.67	1	10/04/2021 14:10	WG1750662
Benzo(a)anthracene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Benzo(b)fluoranthene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Benzo(k)fluoranthene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Benzo(g,h,i)perylene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Benzo(a)pyrene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Bis(2-chlorethoxy)methane	ND		0.333	1	10/04/2021 14:10	WG1750662
Bis(2-chloroethyl)ether	ND		0.333	1	10/04/2021 14:10	WG1750662
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/04/2021 14:10	WG1750662
4-Bromophenyl-phenylether	ND		0.333	1	10/04/2021 14:10	WG1750662
2-Chloronaphthalene	ND		0.0333	1	10/04/2021 14:10	WG1750662
4-Chlorophenyl-phenylether	ND		0.333	1	10/04/2021 14:10	WG1750662
Chrysene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Dibenz(a,h)anthracene	ND		0.0333	1	10/04/2021 14:10	WG1750662
1,2-Dichlorobenzene	ND		0.333	1	10/04/2021 14:10	WG1750662
1,3-Dichlorobenzene	ND		0.333	1	10/04/2021 14:10	WG1750662
1,4-Dichlorobenzene	ND		0.333	1	10/04/2021 14:10	WG1750662
3,3-Dichlorobenzidine	ND		0.333	1	10/04/2021 14:10	WG1750662
2,4-Dinitrotoluene	ND		0.333	1	10/04/2021 14:10	WG1750662
2,6-Dinitrotoluene	ND		0.333	1	10/04/2021 14:10	WG1750662
Fluoranthene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Fluorene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Hexachlorobenzene	ND		0.333	1	10/04/2021 14:10	WG1750662
Hexachloro-1,3-butadiene	ND		0.333	1	10/04/2021 14:10	WG1750662
Hexachlorocyclopentadiene	ND		0.333	1	10/04/2021 14:10	WG1750662
Hexachloroethane	ND		0.333	1	10/04/2021 14:10	WG1750662
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Isophorone	ND		0.333	1	10/04/2021 14:10	WG1750662
Naphthalene	0.0660		0.0333	1	10/04/2021 14:10	WG1750662
1-Methylnaphthalene	ND		0.333	1	10/04/2021 14:10	WG1750662
2-Methylnaphthalene	ND		0.333	1	10/04/2021 14:10	WG1750662
Nitrobenzene	ND		0.333	1	10/04/2021 14:10	WG1750662
n-Nitrosodimethylamine	ND		0.333	1	10/04/2021 14:10	WG1750662
n-Nitrosodiphenylamine	ND		0.333	1	10/04/2021 14:10	WG1750662
n-Nitrosodi-n-propylamine	ND		0.333	1	10/04/2021 14:10	WG1750662
Phenanthrene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Benzylbutyl phthalate	ND		0.333	1	10/04/2021 14:10	WG1750662
Bis(2-ethylhexyl)phthalate	ND		0.333	1	10/04/2021 14:10	WG1750662
Di-n-butyl phthalate	ND		0.333	1	10/04/2021 14:10	WG1750662
Diethyl phthalate	ND		0.333	1	10/04/2021 14:10	WG1750662
Dimethyl phthalate	ND		0.333	1	10/04/2021 14:10	WG1750662
Di-n-octyl phthalate	ND		0.333	1	10/04/2021 14:10	WG1750662

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

2109C00-005C SLP 08
 Collected date/time: 09/22/21 10:00

L1407688

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	ND		0.0333	1	10/04/2021 14:10	WG1750662
Pyridine	ND		0.333	1	10/04/2021 14:10	WG1750662
1,2,4-Trichlorobenzene	ND		0.333	1	10/04/2021 14:10	WG1750662
Quinoline	ND		0.333	1	10/04/2021 14:10	WG1750662
2-Methylphenol	ND		0.333	1	10/04/2021 14:10	WG1750662
3&4-Methyl Phenol	ND		0.333	1	10/04/2021 14:10	WG1750662
4-Chloro-3-methylphenol	ND		0.333	1	10/04/2021 14:10	WG1750662
2-Chlorophenol	ND		0.333	1	10/04/2021 14:10	WG1750662
2,4-Dichlorophenol	ND		0.333	1	10/04/2021 14:10	WG1750662
2,4-Dimethylphenol	ND		0.333	1	10/04/2021 14:10	WG1750662
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/04/2021 14:10	WG1750662
2,4-Dinitrophenol	ND		0.333	1	10/04/2021 14:10	WG1750662
2-Nitrophenol	ND		0.333	1	10/04/2021 14:10	WG1750662
4-Nitrophenol	ND		0.333	1	10/04/2021 14:10	WG1750662
Pentachlorophenol	ND		0.333	1	10/04/2021 14:10	WG1750662
Phenol	ND		0.333	1	10/04/2021 14:10	WG1750662
2,4,6-Trichlorophenol	ND		0.333	1	10/04/2021 14:10	WG1750662
(S) 2-Fluorophenol	38.0		12.0-120		10/04/2021 14:10	WG1750662
(S) Phenol-d5	37.2		10.0-120		10/04/2021 14:10	WG1750662
(S) Nitrobenzene-d5	28.9		10.0-122		10/04/2021 14:10	WG1750662
(S) 2-Fluorobiphenyl	35.4		15.0-120		10/04/2021 14:10	WG1750662
(S) 2,4,6-Tribromophenol	52.8		10.0-127		10/04/2021 14:10	WG1750662
(S) p-Terphenyl-d14	54.7		10.0-120		10/04/2021 14:10	WG1750662

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

Microbiology by Method 9223B-2004

Analyte	Result MPN/100ml	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	<1000	<u>T8</u>	1000	09/23/2021 16:34	WG1745591
Coliform,Total	79400	<u>T8</u>	1000	09/23/2021 16:34	WG1745591

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/22/21 10:30

L1407688

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/30/2021 21:31	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	10/02/2021 01:10	WG1749587

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Acenaphthylene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Anthracene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Benzidine	ND		1.67	1	10/04/2021 16:13	WG1750662
Benzo(a)anthracene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Benzo(b)fluoranthene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Benzo(k)fluoranthene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Benzo(g,h,i)perylene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Benzo(a)pyrene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Bis(2-chlorethoxy)methane	ND		0.333	1	10/04/2021 16:13	WG1750662
Bis(2-chloroethyl)ether	ND		0.333	1	10/04/2021 16:13	WG1750662
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/04/2021 16:13	WG1750662
4-Bromophenyl-phenylether	ND		0.333	1	10/04/2021 16:13	WG1750662
2-Chloronaphthalene	ND		0.0333	1	10/04/2021 16:13	WG1750662
4-Chlorophenyl-phenylether	ND		0.333	1	10/04/2021 16:13	WG1750662
Chrysene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Dibenz(a,h)anthracene	ND		0.0333	1	10/04/2021 16:13	WG1750662
1,2-Dichlorobenzene	ND		0.333	1	10/04/2021 16:13	WG1750662
1,3-Dichlorobenzene	ND		0.333	1	10/04/2021 16:13	WG1750662
1,4-Dichlorobenzene	ND		0.333	1	10/04/2021 16:13	WG1750662
3,3-Dichlorobenzidine	ND		0.333	1	10/04/2021 16:13	WG1750662
2,4-Dinitrotoluene	ND		0.333	1	10/04/2021 16:13	WG1750662
2,6-Dinitrotoluene	ND		0.333	1	10/04/2021 16:13	WG1750662
Fluoranthene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Fluorene	0.561		0.0333	1	10/04/2021 16:13	WG1750662
Hexachlorobenzene	ND		0.333	1	10/04/2021 16:13	WG1750662
Hexachloro-1,3-butadiene	ND		0.333	1	10/04/2021 16:13	WG1750662
Hexachlorocyclopentadiene	ND		0.333	1	10/04/2021 16:13	WG1750662
Hexachloroethane	ND		0.333	1	10/04/2021 16:13	WG1750662
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/04/2021 16:13	WG1750662
Isophorone	ND		0.333	1	10/04/2021 16:13	WG1750662
Naphthalene	5.93		0.167	5	10/06/2021 03:12	WG1750662
1-Methylnaphthalene	4.73		1.67	5	10/06/2021 03:12	WG1750662
2-Methylnaphthalene	8.05	E	1.67	5	10/06/2021 03:12	WG1750662
Nitrobenzene	ND		0.333	1	10/04/2021 16:13	WG1750662
n-Nitrosodimethylamine	ND		0.333	1	10/04/2021 16:13	WG1750662
n-Nitrosodiphenylamine	ND		0.333	1	10/04/2021 16:13	WG1750662
n-Nitrosodi-n-propylamine	ND		0.333	1	10/04/2021 16:13	WG1750662
Phenanthrene	0.794		0.0333	1	10/04/2021 16:13	WG1750662
Benzylbutyl phthalate	ND		0.333	1	10/04/2021 16:13	WG1750662
Bis(2-ethylhexyl)phthalate	ND		0.333	1	10/04/2021 16:13	WG1750662
Di-n-butyl phthalate	ND		0.333	1	10/04/2021 16:13	WG1750662
Diethyl phthalate	ND		0.333	1	10/04/2021 16:13	WG1750662
Dimethyl phthalate	ND		0.333	1	10/04/2021 16:13	WG1750662
Di-n-octyl phthalate	ND		0.333	1	10/04/2021 16:13	WG1750662

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

Collected date/time: 09/22/21 10:30

L1407688

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	0.223		0.0333	1	10/04/2021 16:13	WG1750662
Pyridine	ND		0.333	1	10/04/2021 16:13	WG1750662
1,2,4-Trichlorobenzene	ND		0.333	1	10/04/2021 16:13	WG1750662
Quinoline	ND		0.333	1	10/04/2021 16:13	WG1750662
2-Methylphenol	ND		0.333	1	10/04/2021 16:13	WG1750662
3&4-Methyl Phenol	ND		0.333	1	10/04/2021 16:13	WG1750662
4-Chloro-3-methylphenol	ND		0.333	1	10/04/2021 16:13	WG1750662
2-Chlorophenol	ND		0.333	1	10/04/2021 16:13	WG1750662
2,4-Dichlorophenol	ND		0.333	1	10/04/2021 16:13	WG1750662
2,4-Dimethylphenol	ND		0.333	1	10/04/2021 16:13	WG1750662
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/04/2021 16:13	WG1750662
2,4-Dinitrophenol	ND		0.333	1	10/04/2021 16:13	WG1750662
2-Nitrophenol	ND		0.333	1	10/04/2021 16:13	WG1750662
4-Nitrophenol	ND		0.333	1	10/04/2021 16:13	WG1750662
Pentachlorophenol	ND		0.333	1	10/04/2021 16:13	WG1750662
Phenol	ND		0.333	1	10/04/2021 16:13	WG1750662
2,4,6-Trichlorophenol	ND		0.333	1	10/04/2021 16:13	WG1750662
(S) 2-Fluorophenol	45.1		12.0-120		10/06/2021 03:12	WG1750662
(S) 2-Fluorophenol	0.000	J2	12.0-120		10/04/2021 16:13	WG1750662
(S) Phenol-d5	0.000	J2	10.0-120		10/06/2021 03:12	WG1750662
(S) Phenol-d5	0.000	J2	10.0-120		10/04/2021 16:13	WG1750662
(S) Nitrobenzene-d5	0.000	J2	10.0-122		10/04/2021 16:13	WG1750662
(S) Nitrobenzene-d5	229	J1	10.0-122		10/06/2021 03:12	WG1750662
(S) 2-Fluorobiphenyl	54.7		15.0-120		10/06/2021 03:12	WG1750662
(S) 2-Fluorobiphenyl	78.0		15.0-120		10/04/2021 16:13	WG1750662
(S) 2,4,6-Tribromophenol	74.7		10.0-127		10/06/2021 03:12	WG1750662
(S) 2,4,6-Tribromophenol	95.8		10.0-127		10/04/2021 16:13	WG1750662
(S) p-Terphenyl-d14	54.1		10.0-120		10/06/2021 03:12	WG1750662
(S) p-Terphenyl-d14	61.0		10.0-120		10/04/2021 16:13	WG1750662

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

Sample Narrative:

L1407688-10 WG1750662: Surrogate failure due to matrix interference

2109C00-007B-SLP-07
Collected date/time: 09/22/21 11:15

L1407688

Microbiology by Method 9223B-2004

Analyte	Result MPN/100ml	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	<1000	<u>T8</u>	1000	09/23/2021 16:34	WG1745591
Coliform,Total	<1986300	<u>T8</u>	1000	09/23/2021 16:34	WG1745591

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/22/21 11:15

L1407688

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/30/2021 21:31	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	10/02/2021 01:11	WG1749587

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Acenaphthylene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Anthracene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Benzidine	ND		1.67	1	10/04/2021 17:35	WG1750662
Benzo(a)anthracene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Benzo(b)fluoranthene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Benzo(k)fluoranthene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Benzo(g,h,i)perylene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Benzo(a)pyrene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Bis(2-chlorethoxy)methane	ND		0.333	1	10/04/2021 17:35	WG1750662
Bis(2-chloroethyl)ether	ND		0.333	1	10/04/2021 17:35	WG1750662
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/04/2021 17:35	WG1750662
4-Bromophenyl-phenylether	ND		0.333	1	10/04/2021 17:35	WG1750662
2-Chloronaphthalene	ND		0.0333	1	10/04/2021 17:35	WG1750662
4-Chlorophenyl-phenylether	ND		0.333	1	10/04/2021 17:35	WG1750662
Chrysene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Dibenz(a,h)anthracene	ND		0.0333	1	10/04/2021 17:35	WG1750662
1,2-Dichlorobenzene	ND		0.333	1	10/04/2021 17:35	WG1750662
1,3-Dichlorobenzene	ND		0.333	1	10/04/2021 17:35	WG1750662
1,4-Dichlorobenzene	ND		0.333	1	10/04/2021 17:35	WG1750662
3,3-Dichlorobenzidine	ND		0.333	1	10/04/2021 17:35	WG1750662
2,4-Dinitrotoluene	ND		0.333	1	10/04/2021 17:35	WG1750662
2,6-Dinitrotoluene	ND		0.333	1	10/04/2021 17:35	WG1750662
Fluoranthene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Fluorene	0.124		0.0333	1	10/04/2021 17:35	WG1750662
Hexachlorobenzene	ND		0.333	1	10/04/2021 17:35	WG1750662
Hexachloro-1,3-butadiene	ND		0.333	1	10/04/2021 17:35	WG1750662
Hexachlorocyclopentadiene	ND		0.333	1	10/04/2021 17:35	WG1750662
Hexachloroethane	ND		0.333	1	10/04/2021 17:35	WG1750662
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/04/2021 17:35	WG1750662
Isophorone	ND		0.333	1	10/04/2021 17:35	WG1750662
Naphthalene	1.31		0.0333	1	10/04/2021 17:35	WG1750662
1-Methylnaphthalene	2.15	IE	0.333	1	10/04/2021 17:35	WG1750662
2-Methylnaphthalene	3.52	IE	0.333	1	10/04/2021 17:35	WG1750662
Nitrobenzene	ND		0.333	1	10/04/2021 17:35	WG1750662
n-Nitrosodimethylamine	ND		0.333	1	10/04/2021 17:35	WG1750662
n-Nitrosodiphenylamine	ND		0.333	1	10/04/2021 17:35	WG1750662
n-Nitrosodi-n-propylamine	ND		0.333	1	10/04/2021 17:35	WG1750662
Phenanthrene	0.224		0.0333	1	10/04/2021 17:35	WG1750662
Benzylbutyl phthalate	ND		0.333	1	10/04/2021 17:35	WG1750662
Bis(2-ethylhexyl)phthalate	ND		0.333	1	10/04/2021 17:35	WG1750662
Di-n-butyl phthalate	ND		0.333	1	10/04/2021 17:35	WG1750662
Diethyl phthalate	ND		0.333	1	10/04/2021 17:35	WG1750662
Dimethyl phthalate	ND		0.333	1	10/04/2021 17:35	WG1750662
Di-n-octyl phthalate	ND		0.333	1	10/04/2021 17:35	WG1750662

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

Collected date/time: 09/22/21 11:15

L1407688

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	0.0571		0.0333	1	10/04/2021 17:35	WG1750662
Pyridine	ND		0.333	1	10/04/2021 17:35	WG1750662
1,2,4-Trichlorobenzene	ND		0.333	1	10/04/2021 17:35	WG1750662
Quinoline	ND		0.333	1	10/04/2021 17:35	WG1750662
2-Methylphenol	ND		0.333	1	10/04/2021 17:35	WG1750662
3&4-Methyl Phenol	ND		0.333	1	10/04/2021 17:35	WG1750662
4-Chloro-3-methylphenol	ND		0.333	1	10/04/2021 17:35	WG1750662
2-Chlorophenol	ND		0.333	1	10/04/2021 17:35	WG1750662
2,4-Dichlorophenol	ND		0.333	1	10/04/2021 17:35	WG1750662
2,4-Dimethylphenol	ND		0.333	1	10/04/2021 17:35	WG1750662
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/04/2021 17:35	WG1750662
2,4-Dinitrophenol	ND		0.333	1	10/04/2021 17:35	WG1750662
2-Nitrophenol	ND		0.333	1	10/04/2021 17:35	WG1750662
4-Nitrophenol	ND		0.333	1	10/04/2021 17:35	WG1750662
Pentachlorophenol	ND		0.333	1	10/04/2021 17:35	WG1750662
Phenol	ND		0.333	1	10/04/2021 17:35	WG1750662
2,4,6-Trichlorophenol	ND		0.333	1	10/04/2021 17:35	WG1750662
(S) 2-Fluorophenol	52.2		12.0-120		10/04/2021 17:35	WG1750662
(S) Phenol-d5	52.3		10.0-120		10/04/2021 17:35	WG1750662
(S) Nitrobenzene-d5	38.5		10.0-122		10/04/2021 17:35	WG1750662
(S) 2-Fluorobiphenyl	47.7		15.0-120		10/04/2021 17:35	WG1750662
(S) 2,4,6-Tribromophenol	83.5		10.0-127		10/04/2021 17:35	WG1750662
(S) p-Terphenyl-d14	64.3		10.0-120		10/04/2021 17:35	WG1750662

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

Wet Chemistry by Method 3060A/7196A

[L1407688-02,04,06,08,10,12](#)

Method Blank (MB)

(MB) R3711034-1 09/30/21 21:22

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Chromium,Hexavalent	U		0.640	2.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1402782-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1402782-01 09/30/21 21:23 • (DUP) R3711034-3 09/30/21 21:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chromium,Hexavalent	ND	ND	1	0.000		20

⁷Gl

⁸Al

⁹Sc

L1408624-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1408624-02 09/30/21 21:34 • (DUP) R3711034-8 09/30/21 21:34

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chromium,Hexavalent	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3711034-2 09/30/21 21:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Chromium,Hexavalent	24.0	24.3	101	80.0-120	

L1407688-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1407688-02 09/30/21 21:25 • (MS) R3711034-4 09/30/21 21:27 • (MSD) R3711034-5 09/30/21 21:27

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Chromium,Hexavalent	20.0	ND	ND	ND	8.72	8.24	1	75.0-125	<u>J6</u>	<u>J6</u>	5.71	20

L1407688-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1407688-02 09/30/21 21:25 • (MS) R3711034-6 09/30/21 21:28

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Chromium,Hexavalent	638	ND	613	96.0	50	75.0-125	

Wet Chemistry by Method 9012B

[L1407688-02.04](#)

Method Blank (MB)

(MB) R3711018-1 09/30/21 18:46

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Cyanide	U		0.0733	0.250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1407340-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1407340-02 09/30/21 19:10 • (DUP) R3711018-3 09/30/21 19:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Cyanide	ND	0.279	1	90.2	P1	20

L1407688-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1407688-02 09/30/21 19:16 • (DUP) R3711018-6 09/30/21 19:17

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3711018-2 09/30/21 18:47

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Cyanide	2.50	2.52	101	85.0-115	

L1407395-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1407395-02 09/30/21 19:12 • (MS) R3711018-4 09/30/21 19:13 • (MSD) R3711018-5 09/30/21 19:15

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	1.67	ND	0.622	0.582	37.3	34.9	1	75.0-125	J6	J6	6.56	20

L1407688-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1407688-04 09/30/21 19:18 • (MS) R3711018-7 09/30/21 19:19 • (MSD) R3711018-8 09/30/21 19:20

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	1.67	ND	0.451	0.555	27.1	33.3	1	75.0-125	J6	J3 J6	20.8	20

Wet Chemistry by Method 9012B

[L1407688-06,08,10,12](#)

Method Blank (MB)

(MB) R3711547-1 10/02/21 01:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Cyanide	U		0.0733	0.250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1408072-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1408072-01 10/02/21 01:14 • (DUP) R3711547-3 10/02/21 01:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Cyanide	ND	ND	1	0.000		20

L1408072-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1408072-02 10/02/21 01:16 • (DUP) R3711547-8 10/02/21 01:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3711547-2 10/02/21 01:03

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Cyanide	2.50	2.24	89.5	85.0-115	

L1408072-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408072-02 10/02/21 01:16 • (MS) R3711547-4 10/02/21 01:17 • (MSD) R3711547-5 10/02/21 01:18

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	1.67	ND	1.54	0.953	92.4	57.2	1	75.0-125		J3 J6	47.0	20

L1409050-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1409050-01 10/02/21 01:30 • (MS) R3711547-6 10/02/21 01:31 • (MSD) R3711547-7 10/02/21 01:32

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	1.67	ND	1.48	1.58	89.0	95.0	1	75.0-125			6.46	20

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

[L1407688-02.04.06.08.10.12](#)

Method Blank (MB)

(MB) R3712691-2 10/04/21 12:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00539	0.0333
Acenaphthylene	U		0.00469	0.0333
Anthracene	U		0.00593	0.0333
Benzidine	U		0.0626	1.67
Benzo(a)anthracene	U		0.00587	0.0333
Benzo(b)fluoranthene	U		0.00621	0.0333
Benzo(k)fluoranthene	U		0.00592	0.0333
Benzo(g,h,i)perylene	U		0.00609	0.0333
Benzo(a)pyrene	U		0.00619	0.0333
Bis(2-chlorethoxy)methane	U		0.0100	0.333
Bis(2-chloroethyl)ether	U		0.0110	0.333
2,2-oxybis(1-chloropropane)	U		0.0144	0.333
4-Bromophenyl-phenylether	U		0.0117	0.333
2-Chloronaphthalene	U		0.00585	0.0333
4-Chlorophenyl-phenylether	U		0.0116	0.333
Chrysene	U		0.00662	0.0333
Dibenz(a,h)anthracene	U		0.00923	0.0333
1,2-Dichlorobenzene	U		0.00987	0.333
1,3-Dichlorobenzene	U		0.0101	0.333
1,4-Dichlorobenzene	U		0.00991	0.333
3,3-Dichlorobenzidine	U		0.0123	0.333
2,4-Dinitrotoluene	U		0.00955	0.333
2,6-Dinitrotoluene	U		0.0109	0.333
Fluoranthene	U		0.00601	0.0333
Fluorene	U		0.00542	0.0333
Hexachlorobenzene	U		0.0118	0.333
Hexachloro-1,3-butadiene	U		0.0112	0.333
Hexachlorocyclopentadiene	U		0.0175	0.333
Hexachloroethane	U		0.0131	0.333
Indeno(1,2,3-cd)pyrene	U		0.00941	0.0333
Isophorone	U		0.0102	0.333
1-Methylnaphthalene	U		0.00426	0.333
2-Methylnaphthalene	U		0.00432	0.333
Naphthalene	U		0.00836	0.0333
Nitrobenzene	U		0.0116	0.333
n-Nitrosodimethylamine	U		0.0494	0.333
n-Nitrosodiphenylamine	U		0.0252	0.333
n-Nitrosodi-n-propylamine	U		0.0111	0.333
Phenanthrene	U		0.00661	0.0333
Benzylbutyl phthalate	U		0.0104	0.333

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

[L1407688-02.04.06.08.10.12](#)

Method Blank (MB)

(MB) R3712691-2 10/04/21 12:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Bis(2-ethylhexyl)phthalate	U		0.0422	0.333
Di-n-butyl phthalate	U		0.0114	0.333
Diethyl phthalate	U		0.0110	0.333
Dimethyl phthalate	U		0.0706	0.333
Di-n-octyl phthalate	U		0.0225	0.333
Pyrene	U		0.00648	0.0333
Pyridine	U		0.0220	0.333
1,2,4-Trichlorobenzene	U		0.0104	0.333
4-Chloro-3-methylphenol	U		0.0108	0.333
2-Chlorophenol	U		0.0110	0.333
2-Methylphenol	U		0.0100	0.333
3&4-Methyl Phenol	U		0.0104	0.333
2,4-Dichlorophenol	U		0.00970	0.333
2,4-Dimethylphenol	U		0.00870	0.333
4,6-Dinitro-2-methylphenol	U		0.0755	0.333
2,4-Dinitrophenol	U		0.0779	0.333
2-Nitrophenol	U		0.0119	0.333
4-Nitrophenol	U		0.0104	0.333
Pentachlorophenol	U		0.00896	0.333
Phenol	U		0.0134	0.333
2,4,6-Trichlorophenol	U		0.0107	0.333
Quinoline	U		0.00861	0.333
(S) Nitrobenzene-d5	51.1			10.0-122
(S) 2-Fluorobiphenyl	62.8			15.0-120
(S) p-Terphenyl-d14	73.6			10.0-120
(S) Phenol-d5	63.8			10.0-120
(S) 2-Fluorophenol	71.6			12.0-120
(S) 2,4,6-Tribromophenol	72.2			10.0-127

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3712691-1 10/04/21 12:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.666	0.370	55.6	38.0-120	
Acenaphthylene	0.666	0.380	57.1	40.0-120	
Anthracene	0.666	0.446	67.0	42.0-120	
Benzidine	1.33	0.346	26.0	10.0-120	
Benzo(a)anthracene	0.666	0.505	75.8	44.0-120	

Laboratory Control Sample (LCS)

(LCS) R3712691-1 10/04/21 12:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzo(b)fluoranthene	0.666	0.497	74.6	43.0-120	
Benzo(k)fluoranthene	0.666	0.498	74.8	44.0-120	
Benzo(g,h,i)perylene	0.666	0.500	75.1	43.0-120	
Benzo(a)pyrene	0.666	0.504	75.7	45.0-120	
Bis(2-chloroethoxy)methane	0.666	0.313	47.0	20.0-120	
Bis(2-chloroethyl)ether	0.666	0.293	44.0	16.0-120	
2,2-Oxybis(1-Chloropropane)	0.666	0.343	51.5	23.0-120	
4-Bromophenyl-phenylether	0.666	0.449	67.4	40.0-120	
2-Chloronaphthalene	0.666	0.366	55.0	35.0-120	
4-Chlorophenyl-phenylether	0.666	0.392	58.9	40.0-120	
Chrysene	0.666	0.478	71.8	43.0-120	
Dibenz(a,h)anthracene	0.666	0.506	76.0	44.0-120	
1,2-Dichlorobenzene	0.666	0.342	51.4	32.0-120	
1,3-Dichlorobenzene	0.666	0.338	50.8	30.0-120	
1,4-Dichlorobenzene	0.666	0.338	50.8	31.0-120	
3,3-Dichlorobenzidine	1.33	0.972	73.1	28.0-120	
2,4-Dinitrotoluene	0.666	0.442	66.4	45.0-120	
2,6-Dinitrotoluene	0.666	0.433	65.0	42.0-120	
Fluoranthene	0.666	0.472	70.9	44.0-120	
Fluorene	0.666	0.394	59.2	41.0-120	
Hexachlorobenzene	0.666	0.470	70.6	39.0-120	
Hexachloro-1,3-butadiene	0.666	0.294	44.1	15.0-120	
Hexachlorocyclopentadiene	0.666	0.350	52.6	15.0-120	
Hexachloroethane	0.666	0.351	52.7	17.0-120	
Indeno(1,2,3-cd)pyrene	0.666	0.512	76.9	45.0-120	
Isophorone	0.666	0.307	46.1	23.0-120	
1-Methylnaphthalene	0.666	0.325	48.8	34.0-120	
2-Methylnaphthalene	0.666	0.308	46.2	34.0-120	
Naphthalene	0.666	0.299	44.9	18.0-120	
Nitrobenzene	0.666	0.287	43.1	17.0-120	
n-Nitrosodimethylamine	0.666	0.354	53.2	10.0-125	
n-Nitrosodiphenylamine	0.666	0.425	63.8	40.0-120	
n-Nitrosodi-n-propylamine	0.666	0.347	52.1	26.0-120	
Phenanthrene	0.666	0.448	67.3	42.0-120	
Benzylbutyl phthalate	0.666	0.513	77.0	40.0-120	
Bis(2-ethylhexyl)phthalate	0.666	0.518	77.8	41.0-120	
Di-n-butyl phthalate	0.666	0.498	74.8	43.0-120	
Diethyl phthalate	0.666	0.433	65.0	43.0-120	
Dimethyl phthalate	0.666	0.419	62.9	43.0-120	
Di-n-octyl phthalate	0.666	0.505	75.8	40.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

[L1407688-02.04.06.08.10.12](#)

Laboratory Control Sample (LCS)

(LCS) R3712691-1 10/04/21 12:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Pyrene	0.666	0.484	72.7	41.0-120	
Pyridine	0.666	0.264	39.6	10.0-120	
1,2,4-Trichlorobenzene	0.666	0.305	45.8	17.0-120	
4-Chloro-3-methylphenol	0.666	0.339	50.9	28.0-120	
2-Chlorophenol	0.666	0.382	57.4	28.0-120	
2-Methylphenol	0.666	0.420	63.1	35.0-120	
3&4-Methyl Phenol	0.666	0.449	67.4	42.0-120	
2,4-Dichlorophenol	0.666	0.329	49.4	25.0-120	
2,4-Dimethylphenol	0.666	0.332	49.8	15.0-120	
4,6-Dinitro-2-methylphenol	0.666	0.497	74.6	16.0-120	
2,4-Dinitrophenol	0.666	0.353	53.0	10.0-120	
2-Nitrophenol	0.666	0.342	51.4	20.0-120	
4-Nitrophenol	0.666	0.448	67.3	27.0-120	
Pentachlorophenol	0.666	0.501	75.2	29.0-120	
Phenol	0.666	0.359	53.9	28.0-120	
2,4,6-Trichlorophenol	0.666	0.366	55.0	37.0-120	
Quinoline	0.666	0.426	64.0	30.0-120	
<i>(S) Nitrobenzene-d5</i>			47.1	10.0-122	
<i>(S) 2-Fluorobiphenyl</i>			55.9	15.0-120	
<i>(S) p-Terphenyl-d14</i>			70.3	10.0-120	
<i>(S) Phenol-d5</i>			56.2	10.0-120	
<i>(S) 2-Fluorophenol</i>			60.1	12.0-120	
<i>(S) 2,4,6-Tribromophenol</i>			79.6	10.0-127	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1408287-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408287-05 10/04/21 16:33 • (MS) R3712691-3 10/04/21 16:54 • (MSD) R3712691-4 10/04/21 17:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.652	ND	0.205	0.199	31.4	30.4	1	18.0-120			2.97	32
Acenaphthylene	0.652	ND	0.215	0.203	33.0	31.0	1	25.0-120			5.74	32
Anthracene	0.652	ND	0.278	0.284	42.6	43.4	1	22.0-120			2.14	29
Benzidine	1.30	ND	ND	ND	7.05	7.29	1	10.0-120	<u>J6</u>	<u>J6</u>	4.06	40
Benzo(a)anthracene	0.652	ND	0.322	0.329	49.4	50.3	1	25.0-120			2.15	29
Benzo(b)fluoranthene	0.652	ND	0.313	0.316	46.4	46.7	1	19.0-122			0.954	31
Benzo(k)fluoranthene	0.652	ND	0.307	0.315	47.1	48.2	1	23.0-120			2.57	30
Benzo(g,h,i)perylene	0.652	ND	0.311	0.314	46.3	46.6	1	10.0-120			0.960	33
Benzo(a)pyrene	0.652	ND	0.320	0.328	48.1	49.2	1	24.0-120			2.47	30
Bis(2-chlorethoxy)methane	0.652	ND	ND	ND	26.7	26.5	1	10.0-120			0.576	34

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

L1407688-02.04.06.08.10.12

L1408287-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408287-05 10/04/21 16:33 • (MS) R3712691-3 10/04/21 16:54 • (MSD) R3712691-4 10/04/21 17:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bis(2-chloroethyl)ether	0.652	ND	ND	ND	25.5	26.9	1	10.0-120			5.85	40
2,2-Oxybis(1-Chloropropane)	0.652	ND	ND	ND	26.8	26.5	1	10.0-120			1.15	40
4-Bromophenyl-phenylether	0.652	ND	ND	ND	42.2	42.0	1	27.0-120			0.000	30
2-Chloronaphthalene	0.652	ND	0.200	0.190	30.7	29.1	1	20.0-120			5.13	32
4-Chlorophenyl-phenylether	0.652	ND	ND	ND	36.5	35.3	1	24.0-120			2.99	29
Chrysene	0.652	ND	0.302	0.315	46.3	48.2	1	21.0-120			4.21	29
Dibenz(a,h)anthracene	0.652	ND	0.318	0.317	48.8	48.5	1	10.0-120			0.315	32
1,2-Dichlorobenzene	0.652	ND	ND	ND	27.1	27.1	1	10.0-120			0.000	38
1,3-Dichlorobenzene	0.652	ND	ND	ND	26.5	26.1	1	10.0-120			1.16	40
1,4-Dichlorobenzene	0.652	ND	ND	ND	26.2	25.2	1	10.0-120			3.57	39
3,3-Dichlorobenzidine	1.30	ND	0.469	0.493	36.1	37.6	1	10.0-120			4.99	34
2,4-Dinitrotoluene	0.652	ND	ND	ND	42.6	43.4	1	30.0-120			2.14	31
2,6-Dinitrotoluene	0.652	ND	ND	ND	40.5	40.2	1	25.0-120			0.380	31
Fluoranthene	0.652	ND	0.298	0.311	45.7	47.6	1	18.0-126			4.27	32
Fluorene	0.652	ND	0.236	0.232	36.2	35.5	1	25.0-120			1.71	30
Hexachlorobenzene	0.652	ND	ND	ND	42.9	44.5	1	27.0-120			3.85	28
Hexachloro-1,3-butadiene	0.652	ND	ND	ND	25.5	24.3	1	10.0-120			4.31	38
Hexachlorocyclopentadiene	0.652	ND	ND	ND	24.5	23.5	1	10.0-120			3.82	40
Hexachloroethane	0.652	ND	ND	ND	27.1	26.9	1	10.0-120			0.567	40
Indeno(1,2,3-cd)pyrene	0.652	ND	0.328	0.327	50.3	50.0	1	10.0-120			0.305	32
Isophorone	0.652	ND	ND	ND	27.0	25.7	1	13.0-120			4.65	34
1-Methylnaphthalene	0.652		ND	ND	27.6	26.5	1	10.0-120			3.81	36
2-Methylnaphthalene	0.652		ND	ND	25.5	23.6	1	10.0-120			6.98	37
Naphthalene	0.652	ND	0.167	0.161	24.0	23.0	1	10.0-120			3.66	35
Nitrobenzene	0.652	ND	ND	ND	24.4	23.5	1	10.0-120			3.19	36
n-Nitrosodimethylamine	0.652	ND	ND	ND	24.5	26.0	1	10.0-127			6.06	40
n-Nitrosodiphenylamine	0.652	ND	ND	ND	37.3	39.0	1	17.0-120			4.82	29
n-Nitrosodi-n-propylamine	0.652	ND	ND	ND	27.5	28.0	1	10.0-120			2.21	37
Phenanthrene	0.652	ND	0.280	0.289	42.9	44.2	1	17.0-120			3.16	31
Benzylbutyl phthalate	0.652	ND	0.354	0.359	54.3	54.9	1	23.0-120			1.40	30
Bis(2-ethylhexyl)phthalate	0.652	ND	0.343	0.354	52.6	54.1	1	17.0-126			3.16	30
Di-n-butyl phthalate	0.652	ND	ND	ND	42.6	43.6	1	30.0-120			2.14	29
Diethyl phthalate	0.652	ND	ND	ND	41.7	42.8	1	26.0-120			2.90	28
Dimethyl phthalate	0.652	ND	ND	ND	39.4	39.3	1	25.0-120			0.000	29
Di-n-octyl phthalate	0.652	ND	0.345	0.351	52.9	53.7	1	21.0-123			1.72	29
Pyrene	0.652	ND	0.314	0.322	48.2	49.2	1	16.0-121			2.52	32
Pyridine	0.652	ND	ND	ND	23.5	23.4	1	10.0-120			0.000	40
1,2,4-Trichlorobenzene	0.652	ND	ND	ND	25.9	25.2	1	12.0-120			2.40	37
4-Chloro-3-methylphenol	0.652	ND	ND	ND	34.4	32.7	1	15.0-120			4.57	30
2-Chlorophenol	0.652	ND	ND	ND	31.6	32.1	1	15.0-120			1.92	37

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

[L1407688-02,04,06,08,10,12](#)

L1408287-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408287-05 10/04/21 16:33 • (MS) R3712691-3 10/04/21 16:54 • (MSD) R3712691-4 10/04/21 17:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2-Methylphenol	0.652	ND	ND	ND	39.6	40.5	1	11.0-120			2.68	40
3&4-Methyl Phenol	0.652	ND	ND	ND	37.9	41.9	1	12.0-123			10.4	38
2,4-Dichlorophenol	0.652	ND	ND	ND	30.8	29.8	1	20.0-120			3.03	31
2,4-Dimethylphenol	0.652	ND	ND	ND	27.5	26.3	1	10.0-120			3.99	33
4,6-Dinitro-2-methylphenol	0.652	ND	0.335	0.350	51.4	53.5	1	10.0-120			4.38	39
2,4-Dinitrophenol	0.652	ND	ND	ND	39.6	40.2	1	10.0-121			1.92	40
2-Nitrophenol	0.652	ND	ND	ND	31.9	31.0	1	12.0-120			2.43	39
4-Nitrophenol	0.652	ND	ND	ND	47.1	47.7	1	10.0-137			1.62	32
Pentachlorophenol	0.652	ND	ND	ND	47.9	49.7	1	10.0-160			4.08	31
Phenol	0.652	ND	ND	ND	28.8	30.1	1	12.0-120			4.68	38
2,4,6-Trichlorophenol	0.652	ND	ND	ND	32.5	31.5	1	19.0-120			2.87	32
Quinoline	0.652		ND	ND	44.3	43.0	1	20.0-122			2.81	32
<i>(S) Nitrobenzene-d5</i>					26.9	25.5		10.0-122				
<i>(S) 2-Fluorobiphenyl</i>					31.0	29.7		15.0-120				
<i>(S) p-Terphenyl-d14</i>					46.0	46.8		10.0-120				
<i>(S) Phenol-d5</i>					31.3	33.6		10.0-120				
<i>(S) 2-Fluorophenol</i>					33.1	33.8		12.0-120				
<i>(S) 2,4,6-Tribromophenol</i>					50.8	51.1		10.0-127				

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Guide to Reading and Understanding Your Laboratory Report

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

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

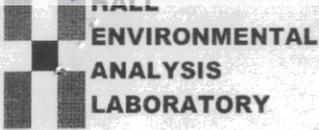
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.





CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Page 273 of 344
 Hall Environmental Analysis Laboratory
 4901 Hawkins NE
 Albuquerque, NM 87109
 TEL: 505-345-3975
 FAX: 505-345-4107
 Website: clients.hallenvironmental.com

J015

SUB CONTRACTOR: **Pace TN** COMPANY: **PACE TN** PHONE: **(800) 767-5859** FAX: **(615) 758-5859**
 ADDRESS: **12065 Lebanon Rd** ACCOUNT # EMAIL:
 CITY, STATE, ZIP: **Mt. Juliet, TN 37122**

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2109C60-001B	SLP-BD-09222021		MeOH (Soil)	9/22/2021	1	Total Coliform and E.Coli in soil- J and MDL L140768801
2	2109C60-001C	SLP-BD-09222021	4OZGU	MeOH (Soil)	9/22/2021	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 02
3	2109C60-003B	SLP-09		MeOH (Soil)	9/22/2021 8:30:00 AM	1	Total Coliform and E.Coli in soil- J and MDL 03
4	2109C60-003C	SLP-09	4OZGU	MeOH (Soil)	9/22/2021 8:30:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 04
5	2109C60-004B	SLP-05		MeOH (Soil)	9/22/2021 9:25:00 AM	1	Total Coliform and E.Coli in soil- J and MDL 05
6	2109C60-004C	SLP-05	4OZGU	MeOH (Soil)	9/22/2021 9:25:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 06
7	2109C60-005B	SLP-06		MeOH (Soil)	9/22/2021 10:00:00 AM	1	Total Coliform and E.Coli in soil- J and MDL 07
8	2109C60-005C	SLP-06	4OZGU	MeOH (Soil)	9/22/2021 10:00:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 08
9	2109C60-006B	SLP-08		MeOH (Soil)	9/22/2021 10:30:00 AM	1	Total Coliform and E.Coli in soil- J and MDL 09
10	2109C60-006C	SLP-08	4OZGU	MeOH (Soil)	9/22/2021 10:30:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 10
11	2109C60-007B	SLP-07		MeOH (Soil)	9/22/2021 11:15:00 AM	1	Total Coliform and E.Coli in soil- J and MDL 11
12	2109C60-007C	SLP-07	4OZGU	MeOH (Soil)	9/22/2021 11:15:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 12

cht=12 TB=0
 2.7-1=2.6 A6 60
 COCST

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 9/22/2021	Time: 5:04 PM	Received By: T. Robertson	Date: 9/23/21	Time: 9:45	REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE FOR LAB USE ONLY Temp of samples _____ °C Attempt to Cool? _____ Comments:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	

TAT: Standard RUSH Next BD 2nd BD 3rd BD

2840 5187 7995

8270 Skinner List

ATTACHMENT 1

Region 5 Waste Management Branch "Skinner List" Constituents of Concern for Wastes from Petroleum Processes

Inorganics	Cadmium	Lead	Chlor
Antimony	Chromium	Mercury	Vanadium
Asbestos	Cobalt	Nickel	Zinc
Beryllium	Cyanide	Selenium	
<u>Volatile Organics</u>			
Benzene	1,2-Dichloroethane	Ethylene-dibromide (EDB)	1,1,1-Trichloroethane
Carbon tetrachloride	1,1-Dichloroethane	Methyl-ethyl-ketone (MEK)	Tetrachloroethene
Chlorobenzene	1,4-Dioxane	Styrene	Tetramethylethylene
Chloroform	Ethylbenzene	Toluene	Xylenes (total)
<u>Semivolatile Organics</u>			
Acenaphthene	o-Cresol	Diethyl phthalate	Naphthalene
Anthracene	m-Cresol	2,4 Dimethylphenol	4-Nitrophenol
Benzo(a)anthracene	p-Cresol	Dimethyl phthalate	Phenanthrene
Benzo(b)fluoranthene	Dibenz(a,h)anthracene	2,4 Dinitrophenol	Phenol
Benzo(k)fluoranthene	Di-n-butyl phthalate	Fluoranthene	Pyrene
Benzo(a)pyrene	1,2-Dichlorobenzene*	Fluorene	Pyridine
Bis(2-ethylhexyl) phthalate	1,3-Dichlorobenzene*	Indeno(1,2,3-cd)pyrene	Quinoline
Chrysene	1,4-Dichlorobenzene*	Methyl-t-butyl-ethyl-ether (MTBE)	*- can be tested as a volatile
<u>Low Concentration Polynuclear Aromatic Hydrocarbons (Optional)</u>			
Benzo(a)anthracene	Benzo(k)fluoranthene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene
Benzo(b)fluoranthene	Benzo(a)pyrene	Chrysene*	
* added to this group to assist the chromatographic resolution of chrysene from Dibenz(a,h)anthracene in sample extracts			
<u>Optional Semivolatile Organics</u>	Toluene	Dibenz(a,h)anthracene no d	1-Methylnaphthalene*
*Note that 2-Methylnaphthalene is part of Appendix IX and is a CLP TCL organic. 1-Methylnaphthalene is not on these lists. **Benzenethiol can be detected in certain petroleum refinery wastes. Its measurement must compensate for its instability at neutral and acid pH values during sample preparation and its unstable instrument calibration standards			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109C60

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-63078	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 63078	RunNo: 81844								
Prep Date: 10/6/2021	Analysis Date: 10/6/2021	SeqNo: 2895447	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrite (As N)	ND	0.30								
Nitrogen, Nitrate (As N)	ND	0.30								
Sulfate	ND	1.5								

Sample ID: LCS-63078	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 63078	RunNo: 81844								
Prep Date: 10/6/2021	Analysis Date: 10/6/2021	SeqNo: 2895448	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.6	0.30	1.500	0	104	90	110			
Chloride	15	1.5	15.00	0	96.7	90	110			
Nitrogen, Nitrite (As N)	3.3	0.30	3.000	0	109	90	110			
Nitrogen, Nitrate (As N)	7.6	0.30	7.500	0	101	90	110			
Sulfate	30	1.5	30.00	0	100	90	110			

Sample ID: MB-63078	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 63078	RunNo: 81853								
Prep Date: 10/6/2021	Analysis Date: 10/6/2021	SeqNo: 2895794	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrite (As N)	ND	0.30								
Nitrogen, Nitrate (As N)	ND	0.30								
Sulfate	ND	1.5								

Sample ID: LCS-63078	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 63078	RunNo: 81853								
Prep Date: 10/6/2021	Analysis Date: 10/6/2021	SeqNo: 2895795	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.6	0.30	1.500	0	104	90	110			
Chloride	14	1.5	15.00	0	95.5	90	110			
Nitrogen, Nitrite (As N)	3.0	0.30	3.000	0	99.9	90	110			
Nitrogen, Nitrate (As N)	7.6	0.30	7.500	0	101	90	110			
Sulfate	30	1.5	30.00	0	99.5	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109C60

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: LCS-62799	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 62799	RunNo: 81579								
Prep Date: 9/23/2021	Analysis Date: 9/24/2021	SeqNo: 2883290	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	95.0	68.9	135			
Surr: DNOP	4.6		5.000		91.3	70	130			

Sample ID: MB-62799	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 62799	RunNo: 81579								
Prep Date: 9/23/2021	Analysis Date: 9/24/2021	SeqNo: 2883293	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		100	70	130			

Sample ID: MB-62827	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 62827	RunNo: 81612								
Prep Date: 9/24/2021	Analysis Date: 9/27/2021	SeqNo: 2884266	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.5		10.00		85.5	70	130			

Sample ID: LCS-62827	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 62827	RunNo: 81612								
Prep Date: 9/24/2021	Analysis Date: 9/27/2021	SeqNo: 2884267	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	84.9	68.9	135			
Surr: DNOP	4.1		5.000		81.5	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109C60

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: B81560		RunNo: 81560							
Prep Date:	Analysis Date: 9/24/2021		SeqNo: 2882065		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		104	70	130			

Sample ID: 2.5ug gro lcs	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: B81560		RunNo: 81560							
Prep Date:	Analysis Date: 9/24/2021		SeqNo: 2882066		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	78.6	131			
Surr: BFB	1200		1000		115	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109C60

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: Volatiles							
Client ID: LCSS	Batch ID: S81575		RunNo: 81575							
Prep Date:	Analysis Date: 9/24/2021		SeqNo: 2882825		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	93.2	70	130			
Toluene	0.82	0.050	1.000	0	82.1	70	130			
Chlorobenzene	0.85	0.050	1.000	0	84.9	70	130			
Trichloroethene (TCE)	0.86	0.050	1.000	0	85.6	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.4	70	130			
Surr: Toluene-d8	0.48		0.5000		96.9	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.8	70	130			

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8260B: Volatiles							
Client ID: PBS	Batch ID: S81575		RunNo: 81575							
Prep Date:	Analysis Date: 9/24/2021		SeqNo: 2882837		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Chlorobenzene	ND	0.050								
Chloroform	ND	0.050								
1,1-Dichloroethane	ND	0.050								
Styrene	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.49		0.5000		97.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		89.4	70	130			
Surr: Toluene-d8	0.52		0.5000		105	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		100	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109C60

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 100NG LCS	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: V81541	RunNo: 81541								
Prep Date:	Analysis Date: 9/23/2021	SeqNo: 2881300	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.9	70	130			
Toluene	18	1.0	20.00	0	91.4	70	130			
Chlorobenzene	17	1.0	20.00	0	86.7	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	92.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.3	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		94.6	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: V81541	RunNo: 81541								
Prep Date:	Analysis Date: 9/23/2021	SeqNo: 2881302	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.0	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.8	70	130			
Surr: Dibromofluoromethane	10		10.00		99.8	70	130			
Surr: Toluene-d8	9.8		10.00		98.4	70	130			

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: R81575	RunNo: 81575								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882818	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109C60

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: LCSW	Batch ID: R81575		RunNo: 81575							
Prep Date:	Analysis Date: 9/24/2021		SeqNo: 2882818		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.2	70	130			
Toluene	16	1.0	20.00	0	82.1	70	130			
Chlorobenzene	17	1.0	20.00	0	84.9	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	85.6	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.4	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.8	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.7		10.00		96.9	70	130			

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batch ID: R81575		RunNo: 81575							
Prep Date:	Analysis Date: 9/24/2021		SeqNo: 2882824		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.9		10.00		89.4	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.9	70	130			
Surr: Toluene-d8	10		10.00		105	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109C60

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-62905	SampType: MBLK	TestCode: EPA Method 7471B: Mercury								
Client ID: PBS	Batch ID: 62905	RunNo: 81691								
Prep Date: 9/29/2021	Analysis Date: 9/30/2021	SeqNo: 2887699	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: LLCS-62905	SampType: LCSLL	TestCode: EPA Method 7471B: Mercury								
Client ID: BatchQC	Batch ID: 62905	RunNo: 81691								
Prep Date: 9/29/2021	Analysis Date: 9/30/2021	SeqNo: 2887700	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0054	0.033	0.006660	0	80.4	70	130			J

Sample ID: LCS-62905	SampType: LCS	TestCode: EPA Method 7471B: Mercury								
Client ID: LCSS	Batch ID: 62905	RunNo: 81691								
Prep Date: 9/29/2021	Analysis Date: 9/30/2021	SeqNo: 2887701	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.14	0.033	0.1667	0	82.2	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109C60

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-62806	SampType: MBLK	TestCode: EPA Method 6010B: Soil Metals								
Client ID: PBS	Batch ID: 62806	RunNo: 81583								
Prep Date: 9/23/2021	Analysis Date: 9/27/2021	SeqNo: 2883026	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	ND	2.5								
Lead	ND	0.30								
Manganese	ND	0.20								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	ND	2.5								

Sample ID: LCS-62806	SampType: LCS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: LCSS	Batch ID: 62806	RunNo: 81583								
Prep Date: 9/23/2021	Analysis Date: 9/27/2021	SeqNo: 2883029	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	22	2.5	25.00	0	88.3	80	120			
Arsenic	22	2.5	25.00	0	88.5	80	120			
Barium	22	0.10	25.00	0	86.6	80	120			
Beryllium	23	0.15	25.00	0	91.6	80	120			
Cadmium	22	0.10	25.00	0	87.7	80	120			
Chromium	22	0.30	25.00	0	87.7	80	120			
Cobalt	22	0.30	25.00	0	86.6	80	120			
Iron	23	2.5	25.00	0	93.2	80	120			
Lead	22	0.30	25.00	0	88.4	80	120			
Manganese	22	0.20	25.00	0	86.8	80	120			
Selenium	20	2.5	25.00	0	80.2	80	120			
Silver	4.3	0.25	5.000	0	87.0	80	120			
Vanadium	22	2.5	25.00	0	88.3	80	120			
Zinc	21	2.5	25.00	0	84.8	80	120			

Sample ID: MB-62806	SampType: MBLK	TestCode: EPA Method 6010B: Soil Metals								
Client ID: PBS	Batch ID: 62806	RunNo: 81583								
Prep Date: 9/23/2021	Analysis Date: 9/27/2021	SeqNo: 2884034	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109C60

13-Oct-21

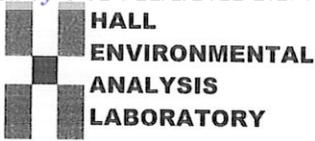
Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-62806	SampType: MBLK	TestCode: EPA Method 6010B: Soil Metals								
Client ID: PBS	Batch ID: 62806	RunNo: 81583								
Prep Date: 9/23/2021	Analysis Date: 9/27/2021	SeqNo: 2884034	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	ND	0.50								

Sample ID: LCS-62806	SampType: LCS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: LCSS	Batch ID: 62806	RunNo: 81583								
Prep Date: 9/23/2021	Analysis Date: 9/27/2021	SeqNo: 2884036	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	22	0.50	25.00	0	89.4	80	120			

Qualifiers:

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



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Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: Marathon Work Order Number: 2109C60 RcptNo: 1

Received By: Andy Freeman 9/22/2021 4:40:00 PM
Completed By: Desiree Dominguez 9/22/2021 4:43:11 PM
Reviewed By: SGC 9/22/21

Chain of Custody

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

Log In

- 3. Was an attempt made to cool the samples? Yes [checked] No [] NA []
4. Were all samples received at a temperature of >0° C to 6.0°C Yes [] No [checked] NA []
5. Sample(s) in proper container(s)? Yes [checked] No []
6. Sufficient sample volume for indicated test(s)? Yes [checked] No []
7. Are samples (except VOA and ONG) properly preserved? Yes [checked] No []
8. Was preservative added to bottles? Yes [] No [checked] NA []
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes [checked] No [] NA []
10. Were any sample containers received broken? Yes [] No [checked]
11. Does paperwork match bottle labels? Yes [checked] No []
12. Are matrices correctly identified on Chain of Custody? Yes [checked] No []
13. Is it clear what analyses were requested? Yes [checked] No []
14. Were all holding times able to be met? Yes [checked] No []

Samples were collected the same day and chilled.

of preserved bottles checked for pH:
(<2 or >12 unless noted)
Adjusted?
Checked by: KPG 9/22/21

Special Handling (if applicable)

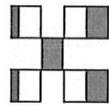
- 15. Was client notified of all discrepancies with this order? Yes [] No [] NA [checked]

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 7.0, Good, Yes, [], [], []



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

Client: Marathon Petroleum Company
 Mailing Address: 92 Giant Crossing Rd.
 Jamestown, 87343
 Phone #: 808-640-1823
 Email or Fax#: _____
 VQC Package: Level 4 (Full Validation)
 Standard Az Compliance Other
 NELAC
 EDD (Type) _____

X Standard Rush
 Project Name: Sanitary Lagoon Investigation
 Phase II
 Project #: 697-094-001
PO# 4500273020
 Project Manager:
 Jim Hageman / Brian McLoughlin
 Sampler:
 On Ice: Yes No
 # of Coolers: 1
 Cooler Temp (including CF): 7.3-0.3=7.0 C

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	Remarks
9/22/2021	-	soil	SLP-BD-09222021	6		2109C60	SEE ATTACHED LIST
9/22/2021	10:00	water	SLP-EB-09222021	2	HCl	-001	X
9/22/2021	8:30	soil	SLP-09	6		-002	X
9/22/2021	9:25	soil	SLP-05	6		-003	X
9/22/2021	10:00	soil	SLP-06	6		-004	X
9/22/2021	10:30	soil	SLP-08	6		-005	X
9/22/2021	11:15	soil	SLP-07	6		-006	X
						-007	X

Date: 9/22
 Time: 11:20
 Relinquished by: [Signature]
 Date: 9/22/21
 Time: 16:20
 Relinquished by: [Signature]

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

**TABLE 1. SOIL ANALYTE LIST
MARATHON PETROLEUM COMPANY
GALLUP REFINING DEVISION, GALLUP, NEW MEXICO**

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/3352 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020
Chloride	EPA Method 300
Fluoride	EPA Method 300
Nitrate	EPA Method 300
Nitrite	EPA Method 300.3
Sulfate	EPA Method 300.3
Total coliform	SM922SB
E. coli	SM92238
Skinner list VOC	SW-846 Method 8260
Skinner list SVOC	SW-846 Method 8270
TPH - GRO, DRO, and MRO	SW-846 Method 8015B

Notes:

EPA = Environmental Protection Agency

SW-846 = EPA Solid Waste Test Method

VOC = volatile organic compounds

SVOC = Semi-volatile organic compounds

TPH = Total petroleum hydrocarbons

GRO = Gasoline range organics (C5-C10)

DRO = Diesel range organics (>C10-C28)

MRO = Motor oil range organics (>C28-C36)

Total and dissolved metals will be analyzed



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

October 13, 2021

Brian McLoughlin

Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL:
FAX

RE: Sanitary Lagoon Investigation Phase II

OrderNo.: 2109D24

Dear Brian McLoughlin:

Hall Environmental Analysis Laboratory received 5 sample(s) on 9/23/2021 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

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

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2109D24**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-BD-09232021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/23/2021

Lab ID: 2109D24-001

Matrix: MEOH (SOIL)

Received Date: 9/23/2021 2:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
							Analyst: SB	
Diesel Range Organics (DRO)	5.6	4.9	10	J	mg/Kg	1	9/27/2021 6:04:22 PM	62827
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	9/27/2021 6:04:22 PM	62827
Surr: DNOP	90.6	0	70-130		%Rec	1	9/27/2021 6:04:22 PM	62827
EPA METHOD 8015D: GASOLINE RANGE								
							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.8	2.7		mg/Kg	1	9/25/2021 7:49:01 AM	B8156C
Surr: BFB	101	0	70-130		%Rec	1	9/25/2021 7:49:01 AM	B8156C
EPA METHOD 300.0: ANIONS								
							Analyst: VP	
Fluoride	3.8	1.5	1.5		mg/Kg	5	10/7/2021 1:11:04 AM	63078
Chloride	210	7.5	7.5		mg/Kg	5	10/7/2021 1:11:04 AM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 1:11:04 AM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 1:11:04 AM	63078
Sulfate	230	7.5	7.5		mg/Kg	5	10/7/2021 1:11:04 AM	63078
EPA METHOD 7471B: MERCURY								
							Analyst: ags	
Mercury	0.0089	0.0026	0.032	J	mg/Kg	1	9/30/2021 10:08:41 AM	62905
EPA METHOD 6010B: SOIL METALS								
							Analyst: JLF	
Antimony	ND	1.6	2.5		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Arsenic	ND	1.4	2.5		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Barium	140	0.059	0.098		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Beryllium	1.0	0.029	0.15		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Cadmium	ND	0.049	0.098		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Chromium	8.2	0.15	0.29		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Cobalt	4.6	0.059	0.29		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Iron	14000	250	250		mg/Kg	100	9/30/2021 1:47:00 PM	62888
Lead	3.5	0.26	0.29		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Manganese	460	1.6	2.0		mg/Kg	10	9/30/2021 1:45:01 PM	62888
Nickel	8.4	0.19	0.49		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Selenium	ND	2.2	2.5		mg/Kg	1	9/30/2021 1:42:46 PM	62888
Silver	ND	0.14	0.25		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Vanadium	14	0.11	2.5		mg/Kg	1	9/29/2021 4:31:44 PM	62888
Zinc	12	1.3	2.5		mg/Kg	1	9/29/2021 4:31:44 PM	62888
EPA METHOD 8260B: VOLATILES								
							Analyst: RAA	
Benzene	ND	0.0052	0.014		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Toluene	ND	0.0035	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Ethylbenzene	ND	0.0066	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Methyl tert-butyl ether (MTBE)	ND	0.015	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
1,2-Dichloroethane (EDC)	ND	0.0062	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
1,2-Dibromoethane (EDB)	ND	0.011	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order **2109D24**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-BD-09232021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/23/2021

Lab ID: 2109D24-001

Matrix: MEOH (SOIL)

Received Date: 9/23/2021 2:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	ND	0.12	0.27		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Carbon disulfide	ND	0.011	0.27		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Chlorobenzene	ND	0.0049	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Chloroform	ND	0.0038	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
1,1-Dichloroethane	ND	0.0079	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Styrene	ND	0.0037	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Tetrachloroethene (PCE)	ND	0.0074	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
1,1,1-Trichloroethane	ND	0.0060	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Trichloroethene (TCE)	ND	0.0053	0.027		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Xylenes, Total	ND	0.014	0.054		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
1,4-Dioxane	ND	0.15	0.27		mg/Kg	1	9/27/2021 4:13:51 PM	S81617
Surr: Dibromofluoromethane	112		70-130		%Rec	1	9/27/2021 4:13:51 PM	S81617
Surr: 1,2-Dichloroethane-d4	108		70-130		%Rec	1	9/27/2021 4:13:51 PM	S81617
Surr: Toluene-d8	97.6		70-130		%Rec	1	9/27/2021 4:13:51 PM	S81617
Surr: 4-Bromofluorobenzene	92.8		70-130		%Rec	1	9/27/2021 4:13:51 PM	S81617

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

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

Analytical Report

Lab Order 2109D24

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-EB-09232021

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/23/2021 10:00:00 AM

Lab ID: 2109D24-002

Matrix: AQUEOUS

Received Date: 9/23/2021 2:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								Analyst: RAA
Benzene	ND	0.23	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
Toluene	ND	0.20	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
Ethylbenzene	ND	0.21	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
Methyl tert-butyl ether (MTBE)	ND	0.39	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
1,2-Dichloroethane (EDC)	ND	0.25	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
1,2-Dibromoethane (EDB)	ND	0.30	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
2-Butanone	ND	2.0	10		µg/L	1	9/24/2021 9:58:43 PM	R81575
Carbon disulfide	ND	0.59	10		µg/L	1	9/24/2021 9:58:43 PM	R81575
Chlorobenzene	ND	0.16	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
Chloroform	ND	0.13	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
1,1-Dichloroethane	ND	0.27	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
Styrene	ND	0.14	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
Tetrachloroethene (PCE)	ND	0.36	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
1,1,1-Trichloroethane	ND	0.30	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
Trichloroethene (TCE)	ND	0.20	1.0		µg/L	1	9/24/2021 9:58:43 PM	R81575
Xylenes, Total	ND	0.37	1.5		µg/L	1	9/24/2021 9:58:43 PM	R81575
1,4-Dioxane	ND	7.0	10		µg/L	1	9/24/2021 9:58:43 PM	R81575
Surr: 1,2-Dichloroethane-d4	93.0	0	70-130		%Rec	1	9/24/2021 9:58:43 PM	R81575
Surr: 4-Bromofluorobenzene	99.2	0	70-130		%Rec	1	9/24/2021 9:58:43 PM	R81575
Surr: Dibromofluoromethane	103	0	70-130		%Rec	1	9/24/2021 9:58:43 PM	R81575
Surr: Toluene-d8	102	0	70-130		%Rec	1	9/24/2021 9:58:43 PM	R81575

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

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

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Analytical Report

Lab Order 2109D24

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-11

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/23/2021 9:00:00 AM

Lab ID: 2109D24-003

Matrix: MEOH (SOIL)

Received Date: 9/23/2021 2:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: SB
Diesel Range Organics (DRO)	250	4.0	8.0		mg/Kg	1	9/27/2021 6:16:44 PM	62827
Motor Oil Range Organics (MRO)	ND	40	40		mg/Kg	1	9/27/2021 6:16:44 PM	62827
Surr: DNOP	89.8	0	70-130		%Rec	1	9/27/2021 6:16:44 PM	62827
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	190	81	120		mg/Kg	50	9/25/2021 8:12:27 AM	B8156C
Surr: BFB	109	0	70-130		%Rec	50	9/25/2021 8:12:27 AM	B8156C
EPA METHOD 300.0: ANIONS								Analyst: VP
Fluoride	1.8	1.5	1.5		mg/Kg	5	10/7/2021 1:35:54 AM	63078
Chloride	26	7.5	7.5		mg/Kg	5	10/7/2021 1:35:54 AM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 1:35:54 AM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 1:35:54 AM	63078
Sulfate	ND	7.5	7.5		mg/Kg	5	10/7/2021 1:35:54 AM	63078
EPA METHOD 7471B: MERCURY								Analyst: ags
Mercury	0.015	0.0027	0.035	J	mg/Kg	1	9/30/2021 10:15:03 AM	62905
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Antimony	ND	8.5	13		mg/Kg	5	9/29/2021 6:03:56 PM	62888
Arsenic	ND	7.3	13		mg/Kg	5	9/29/2021 6:03:56 PM	62888
Barium	810	0.31	0.52		mg/Kg	5	9/30/2021 1:49:03 PM	62888
Beryllium	0.56	0.15	0.78	J	mg/Kg	5	9/29/2021 6:03:56 PM	62888
Cadmium	ND	0.26	0.52		mg/Kg	5	9/29/2021 6:03:56 PM	62888
Chromium	3.7	0.78	1.6		mg/Kg	5	9/30/2021 1:49:03 PM	62888
Cobalt	2.6	0.31	1.6		mg/Kg	5	9/29/2021 6:03:56 PM	62888
Iron	8000	130	130		mg/Kg	50	9/30/2021 1:51:02 PM	62888
Lead	4.4	1.4	1.6		mg/Kg	5	9/29/2021 6:03:56 PM	62888
Manganese	2400	8.6	10		mg/Kg	50	9/30/2021 1:51:02 PM	62888
Nickel	3.9	1.0	2.6		mg/Kg	5	9/30/2021 1:49:03 PM	62888
Selenium	ND	11	13		mg/Kg	5	9/30/2021 1:49:03 PM	62888
Silver	1.3	0.75	1.3		mg/Kg	5	10/4/2021 2:32:28 PM	62888
Vanadium	16	0.59	13		mg/Kg	5	9/30/2021 1:49:03 PM	62888
Zinc	8.5	7.0	13	J	mg/Kg	5	9/29/2021 6:03:56 PM	62888
EPA METHOD 8260B: VOLATILES								Analyst: RAA
Benzene	1.1	0.047	0.12		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Toluene	5.4	0.031	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Ethylbenzene	1.9	0.059	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Methyl tert-butyl ether (MTBE)	ND	0.14	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
1,2-Dichloroethane (EDC)	0.12	0.055	0.24	J	mg/Kg	10	9/27/2021 5:35:09 PM	S81617
1,2-Dibromoethane (EDB)	ND	0.095	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

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Analytical Report

Lab Order **2109D24**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-11

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/23/2021 9:00:00 AM

Lab ID: 2109D24-003

Matrix: MEOH (SOIL)

Received Date: 9/23/2021 2:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	ND	1.1	2.4		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Carbon disulfide	ND	0.10	2.4		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Chlorobenzene	0.056	0.044	0.24	J	mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Chloroform	ND	0.034	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
1,1-Dichloroethane	ND	0.071	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Styrene	ND	0.033	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Tetrachloroethene (PCE)	ND	0.067	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
1,1,1-Trichloroethane	ND	0.054	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Trichloroethene (TCE)	ND	0.048	0.24		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Xylenes, Total	9.0	0.13	0.49		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
1,4-Dioxane	ND	1.4	2.4		mg/Kg	10	9/27/2021 5:35:09 PM	S81617
Surr: Dibromofluoromethane	102		70-130		%Rec	10	9/27/2021 5:35:09 PM	S81617
Surr: 1,2-Dichloroethane-d4	99.9		70-130		%Rec	10	9/27/2021 5:35:09 PM	S81617
Surr: Toluene-d8	95.9		70-130		%Rec	10	9/27/2021 5:35:09 PM	S81617
Surr: 4-Bromofluorobenzene	108		70-130		%Rec	10	9/27/2021 5:35:09 PM	S81617

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

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

Analytical Report

Lab Order 2109D24

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-02

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/23/2021 9:30:00 AM

Lab ID: 2109D24-004

Matrix: MEOH (SOIL)

Received Date: 9/23/2021 2:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: SB
Diesel Range Organics (DRO)	ND	4.9	9.9		mg/Kg	1	9/27/2021 6:29:04 PM	62827
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	9/27/2021 6:29:04 PM	62827
Surr: DNOP	90.8	0	70-130		%Rec	1	9/27/2021 6:29:04 PM	62827
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.9	2.8		mg/Kg	1	9/26/2021 1:33:21 PM	G81561
Surr: BFB	100	0	70-130		%Rec	1	9/26/2021 1:33:21 PM	G81561
EPA METHOD 300.0: ANIONS								Analyst: VP
Fluoride	3.7	1.5	1.5		mg/Kg	5	10/7/2021 2:25:32 AM	63078
Chloride	260	7.5	7.5		mg/Kg	5	10/7/2021 2:25:32 AM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 2:25:32 AM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 2:25:32 AM	63078
Sulfate	480	7.5	7.5		mg/Kg	5	10/7/2021 2:25:32 AM	63078
EPA METHOD 7471B: MERCURY								Analyst: ags
Mercury	0.0038	0.0027	0.034	J	mg/Kg	1	9/30/2021 10:17:11 AM	62905
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Antimony	ND	1.7	2.6		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Arsenic	ND	1.5	2.6		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Barium	120	0.062	0.10		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Beryllium	1.2	0.030	0.16		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Cadmium	ND	0.052	0.10		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Chromium	12	0.16	0.31		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Cobalt	5.6	0.063	0.31		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Iron	19000	260	260		mg/Kg	100	10/4/2021 2:34:06 PM	62888
Lead	2.3	0.28	0.31		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Manganese	400	1.7	2.1		mg/Kg	10	9/30/2021 1:55:19 PM	62888
Nickel	11	0.20	0.52		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Selenium	ND	2.3	2.6		mg/Kg	1	9/30/2021 1:53:04 PM	62888
Silver	ND	0.15	0.26		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Vanadium	20	0.12	2.6		mg/Kg	1	9/29/2021 4:35:59 PM	62888
Zinc	15	1.4	2.6		mg/Kg	1	9/29/2021 4:35:59 PM	62888
EPA METHOD 8260B: VOLATILES								Analyst: RAA
Benzene	ND	0.0055	0.014		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Toluene	ND	0.0036	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Ethylbenzene	ND	0.0069	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Methyl tert-butyl ether (MTBE)	ND	0.016	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
1,2-Dichloroethane (EDC)	ND	0.0065	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
1,2-Dibromoethane (EDB)	ND	0.011	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

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Analytical Report

Lab Order 2109D24

Date Reported: 10/13/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-02

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/23/2021 9:30:00 AM

Lab ID: 2109D24-004

Matrix: MEOH (SOIL)

Received Date: 9/23/2021 2:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	ND	0.12	0.28		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Carbon disulfide	ND	0.012	0.28		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Chlorobenzene	ND	0.0051	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Chloroform	ND	0.0040	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
1,1-Dichloroethane	ND	0.0082	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Styrene	ND	0.0039	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Tetrachloroethene (PCE)	ND	0.0078	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
1,1,1-Trichloroethane	ND	0.0063	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Trichloroethene (TCE)	ND	0.0056	0.028		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Xylenes, Total	ND	0.015	0.057		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
1,4-Dioxane	ND	0.16	0.28		mg/Kg	1	9/27/2021 6:02:21 PM	S81617
Surr: Dibromofluoromethane	107		70-130		%Rec	1	9/27/2021 6:02:21 PM	S81617
Surr: 1,2-Dichloroethane-d4	96.5		70-130		%Rec	1	9/27/2021 6:02:21 PM	S81617
Surr: Toluene-d8	101		70-130		%Rec	1	9/27/2021 6:02:21 PM	S81617
Surr: 4-Bromofluorobenzene	96.3		70-130		%Rec	1	9/27/2021 6:02:21 PM	S81617

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

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Analytical Report

Lab Order **2109D24**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-04

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/23/2021 10:00:00 AM

Lab ID: 2109D24-005

Matrix: MEOH (SOIL)

Received Date: 9/23/2021 2:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
Analyst: SB								
Diesel Range Organics (DRO)	ND	4.9	9.9		mg/Kg	1	9/27/2021 6:41:17 PM	62827
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	9/27/2021 6:41:17 PM	62827
Surr: DNOP	89.8	0	70-130		%Rec	1	9/27/2021 6:41:17 PM	62827
EPA METHOD 8015D: GASOLINE RANGE								
Analyst: NSB								
Gasoline Range Organics (GRO)	3.1	1.9	2.8		mg/Kg	1	9/26/2021 2:44:22 PM	G81561
Surr: BFB	104	0	70-130		%Rec	1	9/26/2021 2:44:22 PM	G81561
EPA METHOD 300.0: ANIONS								
Analyst: VP								
Fluoride	9.0	1.5	1.5		mg/Kg	5	10/7/2021 2:50:22 AM	63078
Chloride	120	7.5	7.5		mg/Kg	5	10/7/2021 2:50:22 AM	63078
Nitrogen, Nitrite (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 2:50:22 AM	63078
Nitrogen, Nitrate (As N)	ND	1.5	1.5		mg/Kg	5	10/7/2021 2:50:22 AM	63078
Sulfate	11	7.5	7.5		mg/Kg	5	10/7/2021 2:50:22 AM	63078
EPA METHOD 7471B: MERCURY								
Analyst: ags								
Mercury	ND	0.0025	0.031		mg/Kg	1	9/30/2021 10:19:19 AM	62905
EPA METHOD 6010B: SOIL METALS								
Analyst: JLF								
Antimony	ND	1.6	2.4		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Arsenic	ND	1.4	2.4		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Barium	240	0.059	0.097		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Beryllium	0.76	0.028	0.15		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Cadmium	ND	0.049	0.097		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Chromium	8.0	0.15	0.29		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Cobalt	3.4	0.059	0.29		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Iron	13000	240	240		mg/Kg	100	10/4/2021 2:35:44 PM	62888
Lead	1.4	0.26	0.29		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Manganese	350	1.6	1.9		mg/Kg	10	9/30/2021 2:11:49 PM	62888
Nickel	6.7	0.19	0.49		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Selenium	ND	2.1	2.4		mg/Kg	1	9/30/2021 2:09:34 PM	62888
Silver	ND	0.14	0.24		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Vanadium	17	0.11	2.4		mg/Kg	1	9/29/2021 4:38:20 PM	62888
Zinc	11	1.3	2.4		mg/Kg	1	9/29/2021 4:38:20 PM	62888
EPA METHOD 8260B: VOLATILES								
Analyst: RAA								
Benzene	0.72	0.0054	0.014		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Toluene	0.0095	0.0036	0.028	J	mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Ethylbenzene	0.061	0.0068	0.028		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Methyl tert-butyl ether (MTBE)	0.021	0.016	0.028	J	mg/Kg	1	9/27/2021 6:29:28 PM	S81617
1,2-Dichloroethane (EDC)	ND	0.0064	0.028		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
1,2-Dibromoethane (EDB)	ND	0.011	0.028		mg/Kg	1	9/27/2021 6:29:28 PM	S81617

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

Qualifiers:

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

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order **2109D24**

Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SLP-04

Project: Sanitary Lagoon Investigation Phase II

Collection Date: 9/23/2021 10:00:00 AM

Lab ID: 2109D24-005

Matrix: MEOH (SOIL)

Received Date: 9/23/2021 2:40:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
2-Butanone	0.24	0.12	0.28	J	mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Carbon disulfide	ND	0.012	0.28		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Chlorobenzene	ND	0.0050	0.028		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Chloroform	ND	0.0040	0.028		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
1,1-Dichloroethane	0.014	0.0081	0.028	J	mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Styrene	ND	0.0038	0.028		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Tetrachloroethene (PCE)	ND	0.0077	0.028		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
1,1,1-Trichloroethane	ND	0.0062	0.028		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Trichloroethene (TCE)	ND	0.0055	0.028		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Xylenes, Total	ND	0.015	0.056		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
1,4-Dioxane	ND	0.16	0.28		mg/Kg	1	9/27/2021 6:29:28 PM	S81617
Surr: Dibromofluoromethane	109		70-130		%Rec	1	9/27/2021 6:29:28 PM	S81617
Surr: 1,2-Dichloroethane-d4	105		70-130		%Rec	1	9/27/2021 6:29:28 PM	S81617
Surr: Toluene-d8	101		70-130		%Rec	1	9/27/2021 6:29:28 PM	S81617
Surr: 4-Bromofluorobenzene	94.4		70-130		%Rec	1	9/27/2021 6:29:28 PM	S81617

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

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



ANALYTICAL REPORT

October 13, 2021

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

Hall Environmental Analysis Laboratory

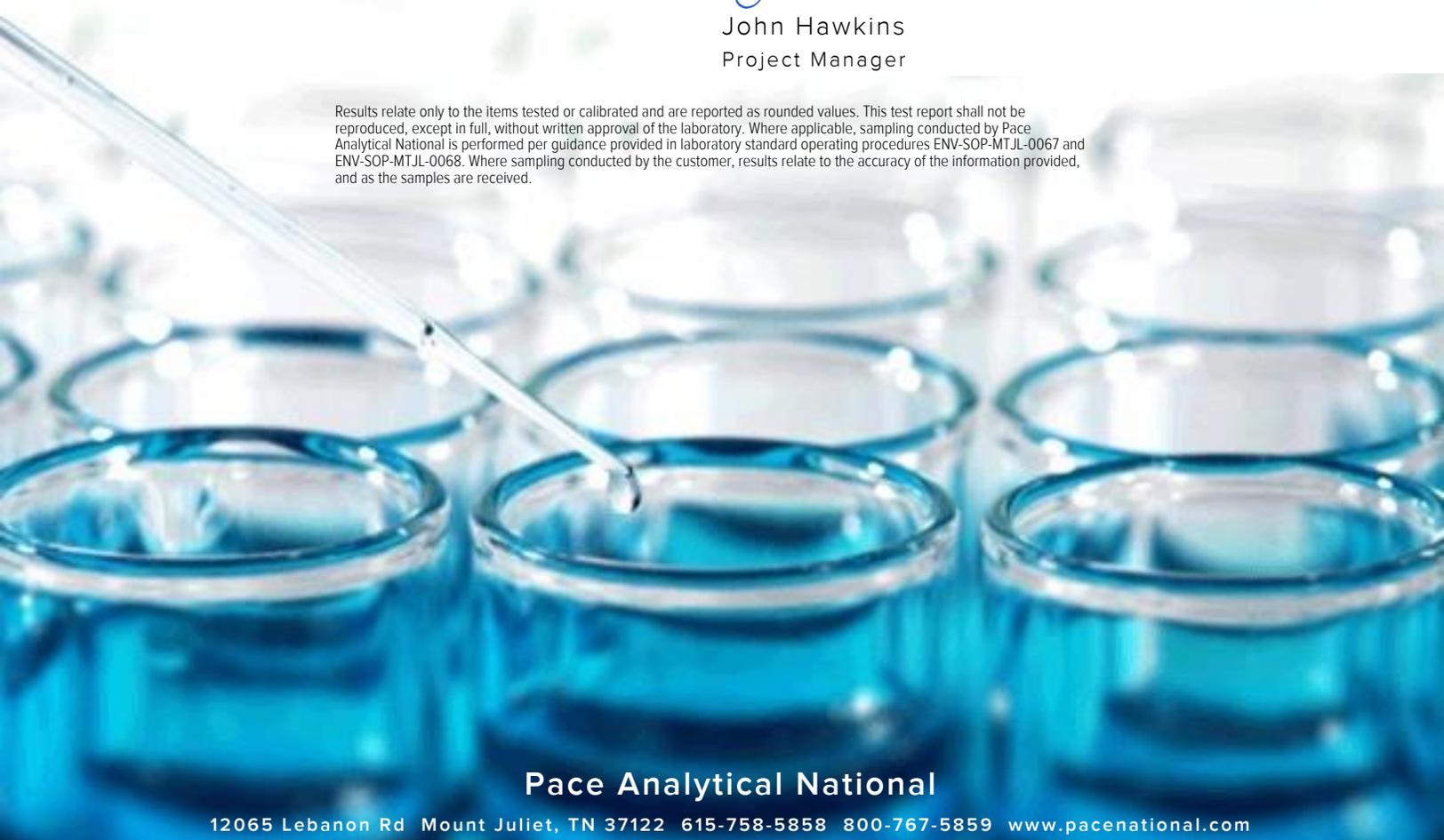
Sample Delivery Group: L1408624
 Samples Received: 09/24/2021
 Project Number:
 Description:

Report To: Andy Freeman
 4901 Hawkins NE
 Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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2109D24-001B SLP-BD-09232021 L1408624-01 Solid

Collected by
Collected date/time
Received date/time

09/23/21 00:00 09/24/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1747276	1000	09/27/21 14:29	09/27/21 14:29	BGE	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

2109D24-001C SLP-BD-09232021 L1408624-02 Solid

Collected by
Collected date/time
Received date/time

09/23/21 00:00 09/24/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:34	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749587	1	10/01/21 16:20	10/02/21 01:23	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1751574	1	10/07/21 08:06	10/07/21 22:16	JNJ	Mt. Juliet, TN

4 Cn

5 Sr

6 Qc

2109D24-003B SLP-11 L1408624-03 Solid

Collected by
Collected date/time
Received date/time

09/23/21 09:00 09/24/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1747276	1000	09/27/21 14:29	09/27/21 14:29	BGE	Mt. Juliet, TN

7 Gl

8 Al

9 Sc

2109D24-003C SLP-11 L1408624-04 Solid

Collected by
Collected date/time
Received date/time

09/23/21 09:00 09/24/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:35	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749587	1	10/01/21 16:20	10/02/21 01:26	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1751574	1	10/07/21 08:06	10/07/21 22:58	JNJ	Mt. Juliet, TN

2109D24-004B SLP-02 L1408624-05 Solid

Collected by
Collected date/time
Received date/time

09/23/21 09:30 09/24/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1747276	1000	09/27/21 14:29	09/27/21 14:29	BGE	Mt. Juliet, TN

2109D24-004C SLP-02 L1408624-06 Solid

Collected by
Collected date/time
Received date/time

09/23/21 09:30 09/24/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:35	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749587	1	10/01/21 16:20	10/02/21 01:27	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1751574	1	10/07/21 08:06	10/07/21 21:55	JNJ	Mt. Juliet, TN

2109D24-005B SLP-04 L1408624-07 Solid

Collected by
Collected date/time
Received date/time

09/23/21 10:00 09/24/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method 9223B-2004	WG1747276	1000	09/27/21 14:29	09/27/21 14:29	BGE	Mt. Juliet, TN

2109D24-005C SLP-04 L1408624-08 Solid

Collected by
Collected date/time
Received date/time
09/23/21 10:00 09/24/21 15:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3060A/7196A	WG1748884	1	09/29/21 18:00	09/30/21 21:35	MRM	Mt. Juliet, TN
Wet Chemistry by Method 9012B	WG1749587	1	10/01/21 16:20	10/02/21 01:28	SDL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1751574	1	10/07/21 08:06	10/07/21 22:37	JNJ	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

John Hawkins
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Collected date/time: 09/23/21 00:00

L1408624

Microbiology by Method 9223B-2004

Analyte	Result MPN/100ml	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	<1000	<u>T8</u>	1000	09/27/2021 14:29	WG1747276
Coliform,Total	<1000	<u>T8</u>	1000	09/27/2021 14:29	WG1747276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/23/21 00:00

L1408624

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chromium,Hexavalent	ND		2.00	1	09/30/2021 21:34	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	10/02/2021 01:23	WG1749587

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Acenaphthene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Acenaphthylene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Anthracene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Benzidine	ND		1.67	1	10/07/2021 22:16	WG1751574
Benzo(a)anthracene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Benzo(b)fluoranthene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Benzo(k)fluoranthene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Benzo(g,h,i)perylene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Benzo(a)pyrene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Bis(2-chloroethoxy)methane	ND		0.333	1	10/07/2021 22:16	WG1751574
Bis(2-chloroethyl)ether	ND		0.333	1	10/07/2021 22:16	WG1751574
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/07/2021 22:16	WG1751574
4-Bromophenyl-phenylether	ND		0.333	1	10/07/2021 22:16	WG1751574
2-Chloronaphthalene	ND		0.0333	1	10/07/2021 22:16	WG1751574
4-Chlorophenyl-phenylether	ND		0.333	1	10/07/2021 22:16	WG1751574
Chrysene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Dibenz(a,h)anthracene	ND		0.0333	1	10/07/2021 22:16	WG1751574
1,2-Dichlorobenzene	ND		0.333	1	10/07/2021 22:16	WG1751574
1,3-Dichlorobenzene	ND		0.333	1	10/07/2021 22:16	WG1751574
1,4-Dichlorobenzene	ND		0.333	1	10/07/2021 22:16	WG1751574
3,3-Dichlorobenzidine	ND		0.333	1	10/07/2021 22:16	WG1751574
2,4-Dinitrotoluene	ND		0.333	1	10/07/2021 22:16	WG1751574
2,6-Dinitrotoluene	ND		0.333	1	10/07/2021 22:16	WG1751574
Fluoranthene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Fluorene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Hexachlorobenzene	ND		0.333	1	10/07/2021 22:16	WG1751574
Hexachloro-1,3-butadiene	ND		0.333	1	10/07/2021 22:16	WG1751574
Hexachlorocyclopentadiene	ND		0.333	1	10/07/2021 22:16	WG1751574
Hexachloroethane	ND		0.333	1	10/07/2021 22:16	WG1751574
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Isophorone	ND		0.333	1	10/07/2021 22:16	WG1751574
Naphthalene	ND		0.0333	1	10/07/2021 22:16	WG1751574
1-Methylnaphthalene	ND		0.333	1	10/07/2021 22:16	WG1751574
2-Methylnaphthalene	ND		0.333	1	10/07/2021 22:16	WG1751574
Nitrobenzene	ND		0.333	1	10/07/2021 22:16	WG1751574
n-Nitrosodimethylamine	ND		0.333	1	10/07/2021 22:16	WG1751574
n-Nitrosodiphenylamine	ND		0.333	1	10/07/2021 22:16	WG1751574
n-Nitrosodi-n-propylamine	ND		0.333	1	10/07/2021 22:16	WG1751574
Phenanthrene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Benzylbutyl phthalate	ND		0.333	1	10/07/2021 22:16	WG1751574
Bis(2-ethylhexyl)phthalate	ND		0.333	1	10/07/2021 22:16	WG1751574
Di-n-butyl phthalate	ND		0.333	1	10/07/2021 22:16	WG1751574
Diethyl phthalate	ND		0.333	1	10/07/2021 22:16	WG1751574
Dimethyl phthalate	ND		0.333	1	10/07/2021 22:16	WG1751574
Di-n-octyl phthalate	ND		0.333	1	10/07/2021 22:16	WG1751574

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

Collected date/time: 09/23/21 00:00

L1408624

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	ND		0.0333	1	10/07/2021 22:16	WG1751574
Pyridine	ND		0.333	1	10/07/2021 22:16	WG1751574
1,2,4-Trichlorobenzene	ND		0.333	1	10/07/2021 22:16	WG1751574
Quinoline	ND		0.333	1	10/07/2021 22:16	WG1751574
2-Methylphenol	ND		0.333	1	10/07/2021 22:16	WG1751574
3&4-Methyl Phenol	ND		0.333	1	10/07/2021 22:16	WG1751574
4-Chloro-3-methylphenol	ND		0.333	1	10/07/2021 22:16	WG1751574
2-Chlorophenol	ND		0.333	1	10/07/2021 22:16	WG1751574
2,4-Dichlorophenol	ND		0.333	1	10/07/2021 22:16	WG1751574
2,4-Dimethylphenol	ND		0.333	1	10/07/2021 22:16	WG1751574
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/07/2021 22:16	WG1751574
2,4-Dinitrophenol	ND		0.333	1	10/07/2021 22:16	WG1751574
2-Nitrophenol	ND		0.333	1	10/07/2021 22:16	WG1751574
4-Nitrophenol	ND		0.333	1	10/07/2021 22:16	WG1751574
Pentachlorophenol	ND		0.333	1	10/07/2021 22:16	WG1751574
Phenol	ND		0.333	1	10/07/2021 22:16	WG1751574
2,4,6-Trichlorophenol	ND		0.333	1	10/07/2021 22:16	WG1751574
(S) 2-Fluorophenol	44.7		12.0-120		10/07/2021 22:16	WG1751574
(S) Phenol-d5	44.4		10.0-120		10/07/2021 22:16	WG1751574
(S) Nitrobenzene-d5	39.8		10.0-122		10/07/2021 22:16	WG1751574
(S) 2-Fluorobiphenyl	39.5		15.0-120		10/07/2021 22:16	WG1751574
(S) 2,4,6-Tribromophenol	49.8		10.0-127		10/07/2021 22:16	WG1751574
(S) p-Terphenyl-d14	51.7		10.0-120		10/07/2021 22:16	WG1751574

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

2109D24003B SLP 11

L1408624

Microbiology by Method 9223B-2004

Analyte	Result MPN/100ml	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	<1000	<u>T8</u>	1000	09/27/2021 14:29	WG1747276
Coliform,Total	<1000	<u>T8</u>	1000	09/27/2021 14:29	WG1747276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/23/21 09:00

L1408624

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chromium,Hexavalent	ND		2.00	1	09/30/2021 21:35	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	10/02/2021 01:26	WG1749587

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Acenaphthene	0.0950		0.0333	1	10/07/2021 22:58	WG1751574
Acenaphthylene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Anthracene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Benzidine	ND		1.67	1	10/07/2021 22:58	WG1751574
Benzo(a)anthracene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Benzo(b)fluoranthene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Benzo(k)fluoranthene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Benzo(g,h,i)perylene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Benzo(a)pyrene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Bis(2-chlorethoxy)methane	ND		0.333	1	10/07/2021 22:58	WG1751574
Bis(2-chloroethyl)ether	ND		0.333	1	10/07/2021 22:58	WG1751574
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/07/2021 22:58	WG1751574
4-Bromophenyl-phenylether	ND		0.333	1	10/07/2021 22:58	WG1751574
2-Chloronaphthalene	ND		0.0333	1	10/07/2021 22:58	WG1751574
4-Chlorophenyl-phenylether	ND		0.333	1	10/07/2021 22:58	WG1751574
Chrysene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Dibenz(a,h)anthracene	ND		0.0333	1	10/07/2021 22:58	WG1751574
1,2-Dichlorobenzene	ND		0.333	1	10/07/2021 22:58	WG1751574
1,3-Dichlorobenzene	ND		0.333	1	10/07/2021 22:58	WG1751574
1,4-Dichlorobenzene	ND		0.333	1	10/07/2021 22:58	WG1751574
3,3-Dichlorobenzidine	ND		0.333	1	10/07/2021 22:58	WG1751574
2,4-Dinitrotoluene	ND		0.333	1	10/07/2021 22:58	WG1751574
2,6-Dinitrotoluene	ND		0.333	1	10/07/2021 22:58	WG1751574
Fluoranthene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Fluorene	0.109		0.0333	1	10/07/2021 22:58	WG1751574
Hexachlorobenzene	ND		0.333	1	10/07/2021 22:58	WG1751574
Hexachloro-1,3-butadiene	ND		0.333	1	10/07/2021 22:58	WG1751574
Hexachlorocyclopentadiene	ND		0.333	1	10/07/2021 22:58	WG1751574
Hexachloroethane	ND		0.333	1	10/07/2021 22:58	WG1751574
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Isophorone	ND		0.333	1	10/07/2021 22:58	WG1751574
Naphthalene	0.419		0.0333	1	10/07/2021 22:58	WG1751574
1-Methylnaphthalene	0.832		0.333	1	10/07/2021 22:58	WG1751574
2-Methylnaphthalene	1.17		0.333	1	10/07/2021 22:58	WG1751574
Nitrobenzene	ND		0.333	1	10/07/2021 22:58	WG1751574
n-Nitrosodimethylamine	ND		0.333	1	10/07/2021 22:58	WG1751574
n-Nitrosodiphenylamine	ND		0.333	1	10/07/2021 22:58	WG1751574
n-Nitrosodi-n-propylamine	ND		0.333	1	10/07/2021 22:58	WG1751574
Phenanthrene	0.220		0.0333	1	10/07/2021 22:58	WG1751574
Benzylbutyl phtalate	ND		0.333	1	10/07/2021 22:58	WG1751574
Bis(2-ethylhexyl)phtalate	ND		0.333	1	10/07/2021 22:58	WG1751574
Di-n-butyl phtalate	ND		0.333	1	10/07/2021 22:58	WG1751574
Diethyl phtalate	ND		0.333	1	10/07/2021 22:58	WG1751574
Dimethyl phtalate	ND		0.333	1	10/07/2021 22:58	WG1751574
Di-n-octyl phtalate	ND		0.333	1	10/07/2021 22:58	WG1751574

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

2109D24003C SLT 11
 Collected date/time: 09/23/21 09:00

L1408624

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	ND		0.0333	1	10/07/2021 22:58	WG1751574
Pyridine	ND		0.333	1	10/07/2021 22:58	WG1751574
1,2,4-Trichlorobenzene	ND		0.333	1	10/07/2021 22:58	WG1751574
Quinoline	ND		0.333	1	10/07/2021 22:58	WG1751574
2-Methylphenol	ND		0.333	1	10/07/2021 22:58	WG1751574
3&4-Methyl Phenol	ND		0.333	1	10/07/2021 22:58	WG1751574
4-Chloro-3-methylphenol	ND		0.333	1	10/07/2021 22:58	WG1751574
2-Chlorophenol	ND		0.333	1	10/07/2021 22:58	WG1751574
2,4-Dichlorophenol	ND		0.333	1	10/07/2021 22:58	WG1751574
2,4-Dimethylphenol	ND		0.333	1	10/07/2021 22:58	WG1751574
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/07/2021 22:58	WG1751574
2,4-Dinitrophenol	ND		0.333	1	10/07/2021 22:58	WG1751574
2-Nitrophenol	ND		0.333	1	10/07/2021 22:58	WG1751574
4-Nitrophenol	ND		0.333	1	10/07/2021 22:58	WG1751574
Pentachlorophenol	ND		0.333	1	10/07/2021 22:58	WG1751574
Phenol	ND		0.333	1	10/07/2021 22:58	WG1751574
2,4,6-Trichlorophenol	ND		0.333	1	10/07/2021 22:58	WG1751574
(S) 2-Fluorophenol	62.6		12.0-120		10/07/2021 22:58	WG1751574
(S) Phenol-d5	60.3		10.0-120		10/07/2021 22:58	WG1751574
(S) Nitrobenzene-d5	60.6		10.0-122		10/07/2021 22:58	WG1751574
(S) 2-Fluorobiphenyl	53.3		15.0-120		10/07/2021 22:58	WG1751574
(S) 2,4,6-Tribromophenol	65.2		10.0-127		10/07/2021 22:58	WG1751574
(S) p-Terphenyl-d14	57.0		10.0-120		10/07/2021 22:58	WG1751574

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

Collected date/time: 09/23/21 09:30

L1408624

Microbiology by Method 9223B-2004

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	<1000	<u>T8</u>	1000	09/27/2021 14:29	WG1747276
Coliform,Total	<1000	<u>T8</u>	1000	09/27/2021 14:29	WG1747276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/23/21 09:30

L1408624

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chromium,Hexavalent	ND		2.00	1	09/30/2021 21:35	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	10/02/2021 01:27	WG1749587

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Acenaphthene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Acenaphthylene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Anthracene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Benzidine	ND		1.67	1	10/07/2021 21:55	WG1751574
Benzo(a)anthracene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Benzo(b)fluoranthene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Benzo(k)fluoranthene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Benzo(g,h,i)perylene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Benzo(a)pyrene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Bis(2-chloroethoxy)methane	ND		0.333	1	10/07/2021 21:55	WG1751574
Bis(2-chloroethyl)ether	ND		0.333	1	10/07/2021 21:55	WG1751574
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/07/2021 21:55	WG1751574
4-Bromophenyl-phenylether	ND		0.333	1	10/07/2021 21:55	WG1751574
2-Chloronaphthalene	ND		0.0333	1	10/07/2021 21:55	WG1751574
4-Chlorophenyl-phenylether	ND		0.333	1	10/07/2021 21:55	WG1751574
Chrysene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Dibenz(a,h)anthracene	ND		0.0333	1	10/07/2021 21:55	WG1751574
1,2-Dichlorobenzene	ND		0.333	1	10/07/2021 21:55	WG1751574
1,3-Dichlorobenzene	ND		0.333	1	10/07/2021 21:55	WG1751574
1,4-Dichlorobenzene	ND		0.333	1	10/07/2021 21:55	WG1751574
3,3-Dichlorobenzidine	ND		0.333	1	10/07/2021 21:55	WG1751574
2,4-Dinitrotoluene	ND		0.333	1	10/07/2021 21:55	WG1751574
2,6-Dinitrotoluene	ND		0.333	1	10/07/2021 21:55	WG1751574
Fluoranthene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Fluorene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Hexachlorobenzene	ND		0.333	1	10/07/2021 21:55	WG1751574
Hexachloro-1,3-butadiene	ND		0.333	1	10/07/2021 21:55	WG1751574
Hexachlorocyclopentadiene	ND		0.333	1	10/07/2021 21:55	WG1751574
Hexachloroethane	ND		0.333	1	10/07/2021 21:55	WG1751574
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Isophorone	ND		0.333	1	10/07/2021 21:55	WG1751574
Naphthalene	ND		0.0333	1	10/07/2021 21:55	WG1751574
1-Methylnaphthalene	ND		0.333	1	10/07/2021 21:55	WG1751574
2-Methylnaphthalene	ND		0.333	1	10/07/2021 21:55	WG1751574
Nitrobenzene	ND		0.333	1	10/07/2021 21:55	WG1751574
n-Nitrosodimethylamine	ND		0.333	1	10/07/2021 21:55	WG1751574
n-Nitrosodiphenylamine	ND		0.333	1	10/07/2021 21:55	WG1751574
n-Nitrosodi-n-propylamine	ND		0.333	1	10/07/2021 21:55	WG1751574
Phenanthrene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Benzylbutyl phthalate	ND		0.333	1	10/07/2021 21:55	WG1751574
Bis(2-ethylhexyl)phthalate	ND		0.333	1	10/07/2021 21:55	WG1751574
Di-n-butyl phthalate	ND		0.333	1	10/07/2021 21:55	WG1751574
Diethyl phthalate	ND		0.333	1	10/07/2021 21:55	WG1751574
Dimethyl phthalate	ND		0.333	1	10/07/2021 21:55	WG1751574
Di-n-octyl phthalate	ND		0.333	1	10/07/2021 21:55	WG1751574

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

2109D 24-004C SLT 02
 Collected date/time: 09/23/21 09:30

L1408624

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	ND		0.0333	1	10/07/2021 21:55	WG1751574
Pyridine	ND		0.333	1	10/07/2021 21:55	WG1751574
1,2,4-Trichlorobenzene	ND		0.333	1	10/07/2021 21:55	WG1751574
Quinoline	ND		0.333	1	10/07/2021 21:55	WG1751574
2-Methylphenol	ND		0.333	1	10/07/2021 21:55	WG1751574
3&4-Methyl Phenol	ND		0.333	1	10/07/2021 21:55	WG1751574
4-Chloro-3-methylphenol	ND		0.333	1	10/07/2021 21:55	WG1751574
2-Chlorophenol	ND		0.333	1	10/07/2021 21:55	WG1751574
2,4-Dichlorophenol	ND		0.333	1	10/07/2021 21:55	WG1751574
2,4-Dimethylphenol	ND		0.333	1	10/07/2021 21:55	WG1751574
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/07/2021 21:55	WG1751574
2,4-Dinitrophenol	ND		0.333	1	10/07/2021 21:55	WG1751574
2-Nitrophenol	ND		0.333	1	10/07/2021 21:55	WG1751574
4-Nitrophenol	ND		0.333	1	10/07/2021 21:55	WG1751574
Pentachlorophenol	ND		0.333	1	10/07/2021 21:55	WG1751574
Phenol	ND		0.333	1	10/07/2021 21:55	WG1751574
2,4,6-Trichlorophenol	ND		0.333	1	10/07/2021 21:55	WG1751574
(S) 2-Fluorophenol	62.9		12.0-120		10/07/2021 21:55	WG1751574
(S) Phenol-d5	57.1		10.0-120		10/07/2021 21:55	WG1751574
(S) Nitrobenzene-d5	54.5		10.0-122		10/07/2021 21:55	WG1751574
(S) 2-Fluorobiphenyl	52.7		15.0-120		10/07/2021 21:55	WG1751574
(S) 2,4,6-Tribromophenol	53.4		10.0-127		10/07/2021 21:55	WG1751574
(S) p-Terphenyl-d14	55.2		10.0-120		10/07/2021 21:55	WG1751574

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

Collected date/time: 09/23/21 10:00

L1408624

Microbiology by Method 9223B-2004

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
E.Coli	<1000	<u>T8</u>	1000	09/27/2021 14:29	WG1747276
Coliform, Total	<1000	<u>T8</u>	1000	09/27/2021 14:29	WG1747276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Collected date/time: 09/23/21 10:00

L1408624

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chromium,Hexavalent	ND		2.00	1	09/30/2021 21:35	WG1748884

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	10/02/2021 01:28	WG1749587

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Acenaphthene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Acenaphthylene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Anthracene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Benzidine	ND		1.67	1	10/07/2021 22:37	WG1751574
Benzo(a)anthracene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Benzo(b)fluoranthene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Benzo(k)fluoranthene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Benzo(g,h,i)perylene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Benzo(a)pyrene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Bis(2-chloroethoxy)methane	ND		0.333	1	10/07/2021 22:37	WG1751574
Bis(2-chloroethyl)ether	ND		0.333	1	10/07/2021 22:37	WG1751574
2,2-Oxybis(1-Chloropropane)	ND		0.333	1	10/07/2021 22:37	WG1751574
4-Bromophenyl-phenylether	ND		0.333	1	10/07/2021 22:37	WG1751574
2-Chloronaphthalene	ND		0.0333	1	10/07/2021 22:37	WG1751574
4-Chlorophenyl-phenylether	ND		0.333	1	10/07/2021 22:37	WG1751574
Chrysene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Dibenz(a,h)anthracene	ND		0.0333	1	10/07/2021 22:37	WG1751574
1,2-Dichlorobenzene	ND		0.333	1	10/07/2021 22:37	WG1751574
1,3-Dichlorobenzene	ND		0.333	1	10/07/2021 22:37	WG1751574
1,4-Dichlorobenzene	ND		0.333	1	10/07/2021 22:37	WG1751574
3,3-Dichlorobenzidine	ND		0.333	1	10/07/2021 22:37	WG1751574
2,4-Dinitrotoluene	ND		0.333	1	10/07/2021 22:37	WG1751574
2,6-Dinitrotoluene	ND		0.333	1	10/07/2021 22:37	WG1751574
Fluoranthene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Fluorene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Hexachlorobenzene	ND		0.333	1	10/07/2021 22:37	WG1751574
Hexachloro-1,3-butadiene	ND		0.333	1	10/07/2021 22:37	WG1751574
Hexachlorocyclopentadiene	ND		0.333	1	10/07/2021 22:37	WG1751574
Hexachloroethane	ND		0.333	1	10/07/2021 22:37	WG1751574
Indeno(1,2,3-cd)pyrene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Isophorone	ND		0.333	1	10/07/2021 22:37	WG1751574
Naphthalene	ND		0.0333	1	10/07/2021 22:37	WG1751574
1-Methylnaphthalene	ND		0.333	1	10/07/2021 22:37	WG1751574
2-Methylnaphthalene	ND		0.333	1	10/07/2021 22:37	WG1751574
Nitrobenzene	ND		0.333	1	10/07/2021 22:37	WG1751574
n-Nitrosodimethylamine	ND		0.333	1	10/07/2021 22:37	WG1751574
n-Nitrosodiphenylamine	ND		0.333	1	10/07/2021 22:37	WG1751574
n-Nitrosodi-n-propylamine	ND		0.333	1	10/07/2021 22:37	WG1751574
Phenanthrene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Benzylbutyl phthalate	ND		0.333	1	10/07/2021 22:37	WG1751574
Bis(2-ethylhexyl)phthalate	ND		0.333	1	10/07/2021 22:37	WG1751574
Di-n-butyl phthalate	ND		0.333	1	10/07/2021 22:37	WG1751574
Diethyl phthalate	ND		0.333	1	10/07/2021 22:37	WG1751574
Dimethyl phthalate	ND		0.333	1	10/07/2021 22:37	WG1751574
Di-n-octyl phthalate	ND		0.333	1	10/07/2021 22:37	WG1751574

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

2109D24005C SLP 04
 Collected date/time: 09/23/21 10:00

L1408624

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pyrene	ND		0.0333	1	10/07/2021 22:37	WG1751574
Pyridine	ND		0.333	1	10/07/2021 22:37	WG1751574
1,2,4-Trichlorobenzene	ND		0.333	1	10/07/2021 22:37	WG1751574
Quinoline	ND		0.333	1	10/07/2021 22:37	WG1751574
2-Methylphenol	ND		0.333	1	10/07/2021 22:37	WG1751574
3&4-Methyl Phenol	ND		0.333	1	10/07/2021 22:37	WG1751574
4-Chloro-3-methylphenol	ND		0.333	1	10/07/2021 22:37	WG1751574
2-Chlorophenol	ND		0.333	1	10/07/2021 22:37	WG1751574
2,4-Dichlorophenol	ND		0.333	1	10/07/2021 22:37	WG1751574
2,4-Dimethylphenol	ND		0.333	1	10/07/2021 22:37	WG1751574
4,6-Dinitro-2-methylphenol	ND		0.333	1	10/07/2021 22:37	WG1751574
2,4-Dinitrophenol	ND		0.333	1	10/07/2021 22:37	WG1751574
2-Nitrophenol	ND		0.333	1	10/07/2021 22:37	WG1751574
4-Nitrophenol	ND		0.333	1	10/07/2021 22:37	WG1751574
Pentachlorophenol	ND		0.333	1	10/07/2021 22:37	WG1751574
Phenol	ND		0.333	1	10/07/2021 22:37	WG1751574
2,4,6-Trichlorophenol	ND		0.333	1	10/07/2021 22:37	WG1751574
(S) 2-Fluorophenol	61.6		12.0-120		10/07/2021 22:37	WG1751574
(S) Phenol-d5	56.8		10.0-120		10/07/2021 22:37	WG1751574
(S) Nitrobenzene-d5	58.0		10.0-122		10/07/2021 22:37	WG1751574
(S) 2-Fluorobiphenyl	52.3		15.0-120		10/07/2021 22:37	WG1751574
(S) 2,4,6-Tribromophenol	58.6		10.0-127		10/07/2021 22:37	WG1751574
(S) p-Terphenyl-d14	52.3		10.0-120		10/07/2021 22:37	WG1751574

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

Method Blank (MB)

(MB) R3711034-1 09/30/21 21:22

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Chromium,Hexavalent	U		0.640	2.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1402782-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1402782-01 09/30/21 21:23 • (DUP) R3711034-3 09/30/21 21:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chromium,Hexavalent	ND	ND	1	0.000		20

L1408624-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1408624-02 09/30/21 21:34 • (DUP) R3711034-8 09/30/21 21:34

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chromium,Hexavalent	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3711034-2 09/30/21 21:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Chromium,Hexavalent	24.0	24.3	101	80.0-120	

L1407688-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1407688-02 09/30/21 21:25 • (MS) R3711034-4 09/30/21 21:27 • (MSD) R3711034-5 09/30/21 21:27

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Chromium,Hexavalent	20.0	ND	ND	ND	8.72	8.24	1	75.0-125	J6	J6	5.71	20

L1407688-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1407688-02 09/30/21 21:25 • (MS) R3711034-6 09/30/21 21:28

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Chromium,Hexavalent	638	ND	613	96.0	50	75.0-125	

Wet Chemistry by Method 9012B

L1408624-02.04.06.08

Method Blank (MB)

(MB) R3711547-1 10/02/21 01:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Cyanide	U		0.0733	0.250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1408072-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1408072-01 10/02/21 01:14 • (DUP) R3711547-3 10/02/21 01:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Cyanide	ND	ND	1	0.000		20

L1408072-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1408072-02 10/02/21 01:16 • (DUP) R3711547-8 10/02/21 01:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3711547-2 10/02/21 01:03

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Cyanide	2.50	2.24	89.5	85.0-115	

L1408072-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408072-02 10/02/21 01:16 • (MS) R3711547-4 10/02/21 01:17 • (MSD) R3711547-5 10/02/21 01:18

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	1.67	ND	1.54	0.953	92.4	57.2	1	75.0-125		J3 J6	47.0	20

L1409050-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1409050-01 10/02/21 01:30 • (MS) R3711547-6 10/02/21 01:31 • (MSD) R3711547-7 10/02/21 01:32

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	1.67	ND	1.48	1.58	89.0	95.0	1	75.0-125			6.46	20

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

L1408624-02,04,06,08

Method Blank (MB)

(MB) R3714512-2 10/07/21 21:34

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00539	0.0333
Acenaphthylene	U		0.00469	0.0333
Anthracene	U		0.00593	0.0333
Benzidine	U		0.0626	1.67
Benzo(a)anthracene	U		0.00587	0.0333
Benzo(b)fluoranthene	U		0.00621	0.0333
Benzo(k)fluoranthene	U		0.00592	0.0333
Benzo(g,h,i)perylene	U		0.00609	0.0333
Benzo(a)pyrene	U		0.00619	0.0333
Bis(2-chlorethoxy)methane	U		0.0100	0.333
Bis(2-chloroethyl)ether	U		0.0110	0.333
2,2-oxybis(1-chloropropane)	U		0.0144	0.333
4-Bromophenyl-phenylether	U		0.0117	0.333
2-Chloronaphthalene	U		0.00585	0.0333
4-Chlorophenyl-phenylether	U		0.0116	0.333
Chrysene	U		0.00662	0.0333
Dibenz(a,h)anthracene	U		0.00923	0.0333
1,2-Dichlorobenzene	U		0.00987	0.333
1,3-Dichlorobenzene	U		0.0101	0.333
1,4-Dichlorobenzene	U		0.00991	0.333
3,3-Dichlorobenzidine	U		0.0123	0.333
2,4-Dinitrotoluene	U		0.00955	0.333
2,6-Dinitrotoluene	U		0.0109	0.333
Fluoranthene	U		0.00601	0.0333
Fluorene	U		0.00542	0.0333
Hexachlorobenzene	U		0.0118	0.333
Hexachloro-1,3-butadiene	U		0.0112	0.333
Hexachlorocyclopentadiene	U		0.0175	0.333
Hexachloroethane	U		0.0131	0.333
Indeno(1,2,3-cd)pyrene	U		0.00941	0.0333
Isophorone	U		0.0102	0.333
1-Methylnaphthalene	U		0.00426	0.333
2-Methylnaphthalene	U		0.00432	0.333
Naphthalene	U		0.00836	0.0333
Nitrobenzene	U		0.0116	0.333
n-Nitrosodimethylamine	U		0.0494	0.333
n-Nitrosodiphenylamine	U		0.0252	0.333
n-Nitrosodi-n-propylamine	U		0.0111	0.333
Phenanthrene	U		0.00661	0.0333
Benzylbutyl phthalate	U		0.0104	0.333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

[L1408624-02,04,06,08](#)

Method Blank (MB)

(MB) R3714512-2 10/07/21 21:34

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Bis(2-ethylhexyl)phthalate	U		0.0422	0.333
Di-n-butyl phthalate	U		0.0114	0.333
Diethyl phthalate	U		0.0110	0.333
Dimethyl phthalate	U		0.0706	0.333
Di-n-octyl phthalate	U		0.0225	0.333
Pyrene	U		0.00648	0.0333
Pyridine	U		0.0220	0.333
1,2,4-Trichlorobenzene	U		0.0104	0.333
4-Chloro-3-methylphenol	U		0.0108	0.333
2-Chlorophenol	U		0.0110	0.333
2-Methylphenol	U		0.0100	0.333
3&4-Methyl Phenol	U		0.0104	0.333
2,4-Dichlorophenol	U		0.00970	0.333
2,4-Dimethylphenol	U		0.00870	0.333
4,6-Dinitro-2-methylphenol	U		0.0755	0.333
2,4-Dinitrophenol	U		0.0779	0.333
2-Nitrophenol	U		0.0119	0.333
4-Nitrophenol	U		0.0104	0.333
Pentachlorophenol	U		0.00896	0.333
Phenol	U		0.0134	0.333
2,4,6-Trichlorophenol	U		0.0107	0.333
Quinoline	U		0.00861	0.333
(S) Nitrobenzene-d5	54.1			10.0-122
(S) 2-Fluorobiphenyl	51.7			15.0-120
(S) p-Terphenyl-d14	64.0			10.0-120
(S) Phenol-d5	53.5			10.0-120
(S) 2-Fluorophenol	58.9			12.0-120
(S) 2,4,6-Tribromophenol	57.2			10.0-127

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3714512-1 10/07/21 21:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.666	0.401	60.2	38.0-120	
Acenaphthylene	0.666	0.447	67.1	40.0-120	
Anthracene	0.666	0.401	60.2	42.0-120	
Benzidine	1.33	0.337	25.3	10.0-120	
Benzo(a)anthracene	0.666	0.462	69.4	44.0-120	

Laboratory Control Sample (LCS)

(LCS) R3714512-1 10/07/21 21:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzo(b)fluoranthene	0.666	0.403	60.5	43.0-120	
Benzo(k)fluoranthene	0.666	0.403	60.5	44.0-120	
Benzo(g,h,i)perylene	0.666	0.387	58.1	43.0-120	
Benzo(a)pyrene	0.666	0.406	61.0	45.0-120	
Bis(2-chlorethoxy)methane	0.666	0.329	49.4	20.0-120	
Bis(2-chloroethyl)ether	0.666	0.527	79.1	16.0-120	
2,2-Oxybis(1-Chloropropane)	0.666	0.371	55.7	23.0-120	
4-Bromophenyl-phenylether	0.666	0.405	60.8	40.0-120	
2-Chloronaphthalene	0.666	0.385	57.8	35.0-120	
4-Chlorophenyl-phenylether	0.666	0.413	62.0	40.0-120	
Chrysene	0.666	0.411	61.7	43.0-120	
Dibenz(a,h)anthracene	0.666	0.396	59.5	44.0-120	
1,2-Dichlorobenzene	0.666	0.360	54.1	32.0-120	
1,3-Dichlorobenzene	0.666	0.351	52.7	30.0-120	
1,4-Dichlorobenzene	0.666	0.363	54.5	31.0-120	
3,3-Dichlorobenzidine	1.33	0.806	60.6	28.0-120	
2,4-Dinitrotoluene	0.666	0.479	71.9	45.0-120	
2,6-Dinitrotoluene	0.666	0.431	64.7	42.0-120	
Fluoranthene	0.666	0.436	65.5	44.0-120	
Fluorene	0.666	0.398	59.8	41.0-120	
Hexachlorobenzene	0.666	0.382	57.4	39.0-120	
Hexachloro-1,3-butadiene	0.666	0.337	50.6	15.0-120	
Hexachlorocyclopentadiene	0.666	0.510	76.6	15.0-120	
Hexachloroethane	0.666	0.413	62.0	17.0-120	
Indeno(1,2,3-cd)pyrene	0.666	0.424	63.7	45.0-120	
Isophorone	0.666	0.405	60.8	23.0-120	
1-Methylnaphthalene	0.666	0.328	49.2	34.0-120	
2-Methylnaphthalene	0.666	0.317	47.6	34.0-120	
Naphthalene	0.666	0.321	48.2	18.0-120	
Nitrobenzene	0.666	0.396	59.5	17.0-120	
n-Nitrosodimethylamine	0.666	0.364	54.7	10.0-125	
n-Nitrosodiphenylamine	0.666	0.385	57.8	40.0-120	
n-Nitrosodi-n-propylamine	0.666	0.468	70.3	26.0-120	
Phenanthrene	0.666	0.393	59.0	42.0-120	
Benzylbutyl phthalate	0.666	0.513	77.0	40.0-120	
Bis(2-ethylhexyl)phthalate	0.666	0.542	81.4	41.0-120	
Di-n-butyl phthalate	0.666	0.482	72.4	43.0-120	
Diethyl phthalate	0.666	0.485	72.8	43.0-120	
Dimethyl phthalate	0.666	0.446	67.0	43.0-120	
Di-n-octyl phthalate	0.666	0.510	76.6	40.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

L1408624-02,04,06,08

Laboratory Control Sample (LCS)

(LCS) R3714512-1 10/07/21 21:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Pyrene	0.666	0.439	65.9	41.0-120	
Pyridine	0.666	0.271	40.7	10.0-120	
1,2,4-Trichlorobenzene	0.666	0.315	47.3	17.0-120	
4-Chloro-3-methylphenol	0.666	0.419	62.9	28.0-120	
2-Chlorophenol	0.666	0.408	61.3	28.0-120	
2-Methylphenol	0.666	0.408	61.3	35.0-120	
3&4-Methyl Phenol	0.666	0.488	73.3	42.0-120	
2,4-Dichlorophenol	0.666	0.365	54.8	25.0-120	
2,4-Dimethylphenol	0.666	0.452	67.9	15.0-120	
4,6-Dinitro-2-methylphenol	0.666	0.510	76.6	16.0-120	
2,4-Dinitrophenol	0.666	0.471	70.7	10.0-120	
2-Nitrophenol	0.666	0.385	57.8	20.0-120	
4-Nitrophenol	0.666	0.464	69.7	27.0-120	
Pentachlorophenol	0.666	0.564	84.7	29.0-120	
Phenol	0.666	0.427	64.1	28.0-120	
2,4,6-Trichlorophenol	0.666	0.461	69.2	37.0-120	
Quinoline	0.666	0.471	70.7	30.0-120	
(S) Nitrobenzene-d5			55.6	10.0-122	
(S) 2-Fluorobiphenyl			61.6	15.0-120	
(S) p-Terphenyl-d14			58.9	10.0-120	
(S) Phenol-d5			65.2	10.0-120	
(S) 2-Fluorophenol			70.6	12.0-120	
(S) 2,4,6-Tribromophenol			65.9	10.0-127	

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

L1408656-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408656-01 10/08/21 02:08 • (MS) R3714512-3 10/08/21 02:29 • (MSD) R3714512-4 10/08/21 02:51

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.654	ND	0.277	0.307	42.4	47.2	1	18.0-120			10.3	32
Acenaphthylene	0.654	ND	0.339	0.378	49.3	55.6	1	25.0-120			10.9	32
Anthracene	0.654	ND	0.340	0.373	51.1	56.5	1	22.0-120			9.26	29
Benzidine	1.31	ND	ND	ND	6.89	8.08	1	10.0-120	J6	J6	15.2	40
Benzo(a)anthracene	0.654	ND	0.424	0.451	61.5	66.0	1	25.0-120			6.17	29
Benzo(b)fluoranthene	0.654	0.0682	0.464	0.515	60.5	68.7	1	19.0-122			10.4	31
Benzo(k)fluoranthene	0.654	ND	0.357	0.400	51.4	58.3	1	23.0-120			11.4	30
Benzo(g,h,i)perylene	0.654	0.0492	0.404	0.434	54.3	59.2	1	10.0-120			7.16	33
Benzo(a)pyrene	0.654	0.0444	0.436	0.501	59.9	70.2	1	24.0-120			13.9	30
Bis(2-chlorethoxy)methane	0.654	ND	ND	ND	33.3	38.9	1	10.0-120			14.9	34

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

L1408624-02,04,06,08

L1408656-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408656-01 10/08/21 02:08 • (MS) R3714512-3 10/08/21 02:29 • (MSD) R3714512-4 10/08/21 02:51

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bis(2-chloroethyl)ether	0.654	ND	ND	0.335	45.7	51.5	1	10.0-120			11.4	40
2,2-Oxybis(1-Chloropropane)	0.654	ND	ND	ND	30.3	37.1	1	10.0-120			19.6	40
4-Bromophenyl-phenylether	0.654	ND	ND	0.350	47.2	53.8	1	27.0-120			12.4	30
2-Chloronaphthalene	0.654	ND	0.253	0.295	38.7	45.4	1	20.0-120			15.3	32
4-Chlorophenyl-phenylether	0.654	ND	ND	ND	44.0	48.3	1	24.0-120			8.64	29
Chrysene	0.654	ND	0.404	0.423	58.0	61.2	1	21.0-120			4.59	29
Dibenz(a,h)anthracene	0.654	ND	0.321	0.345	47.5	51.5	1	10.0-120			7.21	32
1,2-Dichlorobenzene	0.654	ND	ND	ND	29.1	35.5	1	10.0-120			19.5	38
1,3-Dichlorobenzene	0.654	ND	ND	ND	27.8	33.2	1	10.0-120			17.1	40
1,4-Dichlorobenzene	0.654	ND	ND	ND	28.4	34.3	1	10.0-120			18.1	39
3,3-Dichlorobenzidine	1.31	ND	0.508	0.550	38.8	42.3	1	10.0-120			7.94	34
2,4-Dinitrotoluene	0.654	ND	0.376	0.411	57.5	63.2	1	30.0-120			8.89	31
2,6-Dinitrotoluene	0.654	ND	ND	0.352	47.9	54.2	1	25.0-120			11.7	31
Fluoranthene	0.654	ND	0.422	0.442	59.5	62.9	1	18.0-126			4.63	32
Fluorene	0.654	ND	0.293	0.327	44.8	50.3	1	25.0-120			11.0	30
Hexachlorobenzene	0.654	ND	ND	ND	45.0	50.9	1	27.0-120			11.8	28
Hexachloro-1,3-butadiene	0.654	ND	ND	ND	32.3	35.8	1	10.0-120			9.91	38
Hexachlorocyclopentadiene	0.654	ND	ND	ND	13.5	17.1	1	10.0-120			22.4	40
Hexachloroethane	0.654	ND	ND	ND	28.6	36.6	1	10.0-120			24.0	40
Indeno(1,2,3-cd)pyrene	0.654	0.0532	0.448	0.478	60.4	65.4	1	10.0-120			6.48	32
Isophorone	0.654	ND	ND	ND	41.0	47.5	1	13.0-120			14.2	34
1-Methylnaphthalene	0.654	ND	ND	ND	34.7	39.4	1	10.0-120			12.0	36
2-Methylnaphthalene	0.654	ND	ND	ND	33.2	37.1	1	10.0-120			10.5	37
Naphthalene	0.654	ND	0.218	0.249	33.3	38.3	1	10.0-120			13.3	35
Nitrobenzene	0.654	ND	ND	ND	37.9	44.2	1	10.0-120			14.6	36
n-Nitrosodimethylamine	0.654	ND	ND	ND	32.0	35.7	1	10.0-127			10.4	40
n-Nitrosodiphenylamine	0.654	ND	ND	ND	43.3	48.2	1	17.0-120			10.1	29
n-Nitrosodi-n-propylamine	0.654	ND	ND	0.337	43.3	51.8	1	10.0-120			17.4	37
Phenanthrene	0.654	ND	0.336	0.367	49.8	54.8	1	17.0-120			8.82	31
Benzylbutyl phthalate	0.654	ND	0.482	0.504	73.7	77.5	1	23.0-120			4.46	30
Bis(2-ethylhexyl)phthalate	0.654	ND	0.481	0.509	73.5	78.3	1	17.0-126			5.66	30
Di-n-butyl phthalate	0.654	ND	0.394	0.434	60.2	66.8	1	30.0-120			9.66	29
Diethyl phthalate	0.654	ND	0.341	0.380	52.1	58.5	1	26.0-120			10.8	28
Dimethyl phthalate	0.654	ND	ND	0.352	48.0	54.2	1	25.0-120			11.4	29
Di-n-octyl phthalate	0.654	ND	0.488	0.520	74.6	80.0	1	21.0-123			6.35	29
Pyrene	0.654	ND	0.414	0.432	58.7	61.8	1	16.0-121			4.26	32
Pyridine	0.654	ND	ND	ND	33.5	38.3	1	10.0-120			12.8	40
1,2,4-Trichlorobenzene	0.654	ND	ND	ND	29.2	33.7	1	12.0-120			13.7	37
4-Chloro-3-methylphenol	0.654	ND	ND	0.352	50.6	54.2	1	15.0-120			6.15	30
2-Chlorophenol	0.654	ND	ND	ND	37.2	43.5	1	15.0-120			15.2	37

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

L1408624-02,04,06,08

L1408656-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408656-01 10/08/21 02:08 • (MS) R3714512-3 10/08/21 02:29 • (MSD) R3714512-4 10/08/21 02:51

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2-Methylphenol	0.654	ND	ND	0.361	47.9	55.5	1	11.0-120			14.2	40
3&4-Methyl Phenol	0.654	ND	ND	0.383	46.6	58.9	1	12.0-123			22.7	38
2,4-Dichlorophenol	0.654	ND	ND	ND	39.6	44.5	1	20.0-120			10.9	31
2,4-Dimethylphenol	0.654	ND	ND	ND	41.6	45.1	1	10.0-120			7.43	33
4,6-Dinitro-2-methylphenol	0.654	ND	0.362	0.396	55.4	60.9	1	10.0-120			8.97	39
2,4-Dinitrophenol	0.654	ND	0.347	0.356	53.1	54.8	1	10.0-121			2.56	40
2-Nitrophenol	0.654	ND	ND	ND	44.5	48.8	1	12.0-120			8.55	39
4-Nitrophenol	0.654	ND	0.395	0.409	60.4	62.9	1	10.0-137			3.48	32
Pentachlorophenol	0.654	ND	0.504	0.516	77.1	79.4	1	10.0-160			2.35	31
Phenol	0.654	ND	ND	ND	39.9	47.1	1	12.0-120			15.9	38
2,4,6-Trichlorophenol	0.654	ND	ND	0.361	50.5	55.5	1	19.0-120			8.97	32
Quinoline	0.654	ND	0.347	0.384	53.1	59.1	1	20.0-122			10.1	32
(S) Nitrobenzene-d5					38.8	41.8		10.0-122				
(S) 2-Fluorobiphenyl					40.4	48.9		15.0-120				
(S) p-Terphenyl-d14					50.5	54.8		10.0-120				
(S) Phenol-d5					41.9	50.2		10.0-120				
(S) 2-Fluorophenol					43.6	51.4		12.0-120				
(S) 2,4,6-Tribromophenol					58.1	66.6		10.0-127				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Guide to Reading and Understanding Your Laboratory Report

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

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Qualifier Description

J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp

² Tc

³ Ss

⁴ Cn

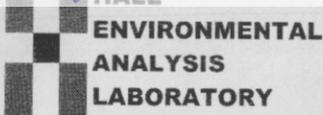
⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

D073

SUB CONTRACTOR: **Pace TN** COMPANY: **PACE TN** PHONE: **(800) 767-5859** FAX: **(615) 758-5859**
 ADDRESS: **12065 Lebanon Rd** ACCOUNT #: _____ EMAIL: _____
 CITY, STATE, ZIP: **Mt. Juliet, TN 37122**

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2109D24-001B	SLP-BD-09232021		MeOH (Soil)	9/23/2021	1	Total Coliform and E.Coli in soil- J and MDL 61
2	2109D24-001C	SLP-BD-09232021	4OZGU	MeOH (Soil)	9/23/2021	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 02
3	2109D24-003B	SLP-11		MeOH (Soil)	9/23/2021 9:00:00 AM	1	Total Coliform and E.Coli in soil- J and MDL 03
4	2109D24-003C	SLP-11	4OZGU	MeOH (Soil)	9/23/2021 9:00:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 04
5	2109D24-004B	SLP-02		MeOH (Soil)	9/23/2021 9:30:00 AM	1	Total Coliform and E.Coli in soil- J and MDL 05
6	2109D24-004C	SLP-02	4OZGU	MeOH (Soil)	9/23/2021 9:30:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 06
7	2109D24-005B	SLP-04		MeOH (Soil)	9/23/2021 10:00:00 AM	1	Total Coliform and E.Coli in soil- J and MDL 07
8	2109D24-005C	SLP-04	4OZGU	MeOH (Soil)	9/23/2021 10:00:00 AM	1	Skinner List SVOC,Cr6, Total Cyanide in soil- J and MDL 08

Handwritten: 14 D073

Sample Receipt Checklist
 COC Seal Present/Intact: Y N If Applicable
 COC Signed/Accurate: Y N VOA Zero Headspace: Y N
 Bottles arrive intact: Y N Pres. Correct/Check: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 RAD Screen <0.5 mR/hr: Y N

SPECIAL INSTRUCTIONS / COMMENTS:
 Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: <i>[Signature]</i>	Date: 9/23/2021	Time: 3:47 PM	Received By: <i>[Signature]</i>	Date: 9/24/21	Time: 15:45
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

REPORT TRANSMITTAL DESIRED:
 HARDCOPY (extra cost) FAX EMAIL ONLINE

FOR LAB USE ONLY
 Temp of samples **3.0 - 1 = 2.9** Attempt to Cool? _____
 Comments: _____

TAT: Standard RUSH Next BD 2nd BD 3rd BD

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-63078	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 63078	RunNo: 81844								
Prep Date: 10/6/2021	Analysis Date: 10/6/2021	SeqNo: 2895447	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrite (As N)	ND	0.30								
Nitrogen, Nitrate (As N)	ND	0.30								
Sulfate	ND	1.5								

Sample ID: LCS-63078	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 63078	RunNo: 81844								
Prep Date: 10/6/2021	Analysis Date: 10/6/2021	SeqNo: 2895448	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.6	0.30	1.500	0	104	90	110			
Chloride	15	1.5	15.00	0	96.7	90	110			
Nitrogen, Nitrite (As N)	3.3	0.30	3.000	0	109	90	110			
Nitrogen, Nitrate (As N)	7.6	0.30	7.500	0	101	90	110			
Sulfate	30	1.5	30.00	0	100	90	110			

Sample ID: 2109D24-005AMS	SampType: MS	TestCode: EPA Method 300.0: Anions								
Client ID: SLP-04	Batch ID: 63078	RunNo: 81844								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2895472	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	3.0	1.5	3.000	0	99.0	85.9	104			
Nitrogen, Nitrate (As N)	6.4	1.5	7.500	0	85.1	64.4	122			
Sulfate	34	7.5	30.00	10.85	77.5	42.2	138			

Sample ID: 2109D24-005AMSD	SampType: MSD	TestCode: EPA Method 300.0: Anions								
Client ID: SLP-04	Batch ID: 63078	RunNo: 81844								
Prep Date: 10/6/2021	Analysis Date: 10/7/2021	SeqNo: 2895473	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	3.1	1.5	3.000	0	102	85.9	104	3.28	20	
Nitrogen, Nitrate (As N)	6.6	1.5	7.500	0	87.9	64.4	122	3.20	20	
Sulfate	32	7.5	30.00	10.85	69.1	42.2	138	7.68	20	

Sample ID: MB-63078	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 63078	RunNo: 81853								
Prep Date: 10/6/2021	Analysis Date: 10/6/2021	SeqNo: 2895794	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-63078	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 63078	RunNo: 81853								
Prep Date: 10/6/2021	Analysis Date: 10/6/2021	SeqNo: 2895794	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrite (As N)	ND	0.30								
Nitrogen, Nitrate (As N)	ND	0.30								
Sulfate	ND	1.5								

Sample ID: LCS-63078	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 63078	RunNo: 81853								
Prep Date: 10/6/2021	Analysis Date: 10/6/2021	SeqNo: 2895795	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.6	0.30	1.500	0	104	90	110			
Chloride	14	1.5	15.00	0	95.5	90	110			
Nitrogen, Nitrite (As N)	3.0	0.30	3.000	0	99.9	90	110			
Nitrogen, Nitrate (As N)	7.6	0.30	7.500	0	101	90	110			
Sulfate	30	1.5	30.00	0	99.5	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-62827	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 62827	RunNo: 81612								
Prep Date: 9/24/2021	Analysis Date: 9/27/2021	SeqNo: 2884266	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.5		10.00		85.5	70	130			

Sample ID: LCS-62827	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 62827	RunNo: 81612								
Prep Date: 9/24/2021	Analysis Date: 9/27/2021	SeqNo: 2884267	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	84.9	68.9	135			
Surr: DNOP	4.1		5.000		81.5	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: B81560	RunNo: 81560								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882065			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		104	70	130			

Sample ID: 2.5ug gro lcs	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: B81560	RunNo: 81560								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882066			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	78.6	131			
Surr: BFB	1200		1000		115	70	130			

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: G81561	RunNo: 81561								
Prep Date:	Analysis Date: 9/26/2021	SeqNo: 2882163			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		107	70	130			

Sample ID: 2.5ug gro lcs	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: G81561	RunNo: 81561								
Prep Date:	Analysis Date: 9/26/2021	SeqNo: 2882164			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.5	78.6	131			
Surr: BFB	1200		1000		118	70	130			

Sample ID: 2109D24-004AMS	SampType: MS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: SLP-02	Batch ID: G81561	RunNo: 81561								
Prep Date:	Analysis Date: 9/26/2021	SeqNo: 2882169			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	15	2.8	14.16	0	105	61.3	114			
Surr: BFB	690		566.6		122	70	130			

Sample ID: 2109d24-004amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: SLP-02	Batch ID: G81561	RunNo: 81596								
Prep Date:	Analysis Date: 9/27/2021	SeqNo: 2883387			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 2109d24-004amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: SLP-02	Batch ID: G81561	RunNo: 81596								
Prep Date:	Analysis Date: 9/27/2021	SeqNo: 2883387			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	15	2.8	14.16	0	105	61.3	114	0.191	20	
Surr: BFB	700		566.6		123	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 100ng lcs2	SampType: LCS		TestCode: EPA Method 8260B: Volatiles							
Client ID: LCSS	Batch ID: S81617		RunNo: 81617							
Prep Date:	Analysis Date: 9/27/2021		SeqNo: 2884356		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	102	70	130			
Toluene	0.91	0.050	1.000	0	90.6	70	130			
Chlorobenzene	0.90	0.050	1.000	0	89.9	70	130			
Trichloroethene (TCE)	0.95	0.050	1.000	0	95.4	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		100	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.5	70	130			
Surr: Toluene-d8	0.48		0.5000		95.7	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.3	70	130			

Sample ID: 2109d24-001a ms	SampType: MS		TestCode: EPA Method 8260B: Volatiles							
Client ID: SLP-BD-09232021	Batch ID: S81617		RunNo: 81617							
Prep Date:	Analysis Date: 9/27/2021		SeqNo: 2884358		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.55	0.014	0.5414	0	101	70	130			
Toluene	0.51	0.027	0.5414	0	94.6	70	130			
Chlorobenzene	0.50	0.027	0.5414	0	92.2	70	130			
Trichloroethene (TCE)	0.55	0.027	0.5414	0	101	52.9	126			
Surr: Dibromofluoromethane	0.31		0.2707		114	70	130			
Surr: 1,2-Dichloroethane-d4	0.29		0.2707		105	70	130			
Surr: Toluene-d8	0.27		0.2707		101	70	130			
Surr: 4-Bromofluorobenzene	0.26		0.2707		94.8	70	130			

Sample ID: 2109d24-001a msd	SampType: MSD		TestCode: EPA Method 8260B: Volatiles							
Client ID: SLP-BD-09232021	Batch ID: S81617		RunNo: 81617							
Prep Date:	Analysis Date: 9/27/2021		SeqNo: 2884359		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.54	0.014	0.5414	0	100	70	130	0.494	20	
Toluene	0.49	0.027	0.5414	0	91.3	70	130	3.58	20	
Chlorobenzene	0.48	0.027	0.5414	0	89.1	70	130	3.48	20	
Trichloroethene (TCE)	0.55	0.027	0.5414	0	101	52.9	126	0.235	20	
Surr: Dibromofluoromethane	0.30		0.2707		112	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.28		0.2707		103	70	130	0	0	
Surr: Toluene-d8	0.27		0.2707		99.8	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.25		0.2707		93.2	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: Volatiles								
Client ID: PBS	Batch ID: S81617	RunNo: 81617								
Prep Date:	Analysis Date: 9/27/2021	SeqNo: 2884365 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Chlorobenzene	ND	0.050								
Chloroform	ND	0.050								
1,1-Dichloroethane	ND	0.050								
Styrene	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.52		0.5000		104	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.1	70	130			
Surr: Toluene-d8	0.49		0.5000		98.9	70	130			
Surr: 4-Bromofluorobenzene	0.53		0.5000		106	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: R81575	RunNo: 81575								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882818	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.2	70	130			
Toluene	16	1.0	20.00	0	82.1	70	130			
Chlorobenzene	17	1.0	20.00	0	84.9	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	85.6	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.4	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.8	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.7		10.00		96.9	70	130			

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R81575	RunNo: 81575								
Prep Date:	Analysis Date: 9/24/2021	SeqNo: 2882824	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Chlorobenzene	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
Styrene	ND	1.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.9		10.00		89.4	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.9	70	130			
Surr: Toluene-d8	10		10.00		105	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-62905	SampType: MBLK	TestCode: EPA Method 7471B: Mercury								
Client ID: PBS	Batch ID: 62905	RunNo: 81691								
Prep Date: 9/29/2021	Analysis Date: 9/30/2021	SeqNo: 2887699	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID: LLCS-62905	SampType: LCSLL	TestCode: EPA Method 7471B: Mercury								
Client ID: BatchQC	Batch ID: 62905	RunNo: 81691								
Prep Date: 9/29/2021	Analysis Date: 9/30/2021	SeqNo: 2887700	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0054	0.033	0.006660	0	80.4	70	130			J

Sample ID: LCS-62905	SampType: LCS	TestCode: EPA Method 7471B: Mercury								
Client ID: LCSS	Batch ID: 62905	RunNo: 81691								
Prep Date: 9/29/2021	Analysis Date: 9/30/2021	SeqNo: 2887701	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.14	0.033	0.1667	0	82.2	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-62888	SampType: MBLK	TestCode: EPA Method 6010B: Soil Metals								
Client ID: PBS	Batch ID: 62888	RunNo: 81687								
Prep Date: 9/28/2021	Analysis Date: 9/29/2021	SeqNo: 2887627	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	0.050	0.10								J
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	ND	2.5								
Lead	ND	0.30								
Manganese	ND	0.20								
Nickel	ND	0.50								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	ND	2.5								

Sample ID: LCS-62888	SampType: LCS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: LCSS	Batch ID: 62888	RunNo: 81687								
Prep Date: 9/28/2021	Analysis Date: 9/29/2021	SeqNo: 2887629	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	23	2.5	25.00	0	91.6	80	120			
Arsenic	22	2.5	25.00	0	86.7	80	120			
Barium	23	0.10	25.00	0	92.8	80	120			
Beryllium	24	0.15	25.00	0	94.1	80	120			
Cadmium	23	0.10	25.00	0	91.4	80	120			
Chromium	23	0.30	25.00	0	92.8	80	120			
Cobalt	23	0.30	25.00	0	90.0	80	120			
Iron	24	2.5	25.00	0	94.5	80	120			
Lead	23	0.30	25.00	0	90.4	80	120			
Manganese	23	0.20	25.00	0	93.3	80	120			
Nickel	23	0.50	25.00	0	90.6	80	120			
Silver	4.7	0.25	5.000	0	94.2	80	120			
Vanadium	24	2.5	25.00	0	94.1	80	120			
Zinc	21	2.5	25.00	0	85.8	80	120			

Sample ID: MB-62888	SampType: MBLK	TestCode: EPA Method 6010B: Soil Metals								
Client ID: PBS	Batch ID: 62888	RunNo: 81708								
Prep Date: 9/28/2021	Analysis Date: 9/30/2021	SeqNo: 2888314	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2109D24

13-Oct-21

Client: Marathon
Project: Sanitary Lagoon Investigation Phase II

Sample ID: MB-62888	SampType: MBLK	TestCode: EPA Method 6010B: Soil Metals								
Client ID: PBS	Batch ID: 62888	RunNo: 81708								
Prep Date: 9/28/2021	Analysis Date: 9/30/2021	SeqNo: 2888314	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	2.5								

Sample ID: LCS-62888	SampType: LCS	TestCode: EPA Method 6010B: Soil Metals								
Client ID: LCSS	Batch ID: 62888	RunNo: 81708								
Prep Date: 9/28/2021	Analysis Date: 9/30/2021	SeqNo: 2888316	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	20	2.5	25.00	0	80.7	80	120			

Qualifiers:

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



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

Sample Log-In Check List

Client Name: Marathon Work Order Number: 2109D24 RcptNo: 1

Received By: Juan Rojas 9/23/2021 2:40:00 PM
Completed By: Desiree Dominguez 9/23/2021 2:52:33 PM
Reviewed By: [Signature] 9/23/21

Chain of Custody

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

Log In

- 3. Was an attempt made to cool the samples? Yes [checked] No [] NA []
4. Were all samples received at a temperature of >0° C to 6.0°C Yes [checked] No [] NA []
5. Sample(s) in proper container(s)? Yes [checked] No []
6. Sufficient sample volume for indicated test(s)? Yes [checked] No []
7. Are samples (except VOA and ONG) properly preserved? Yes [checked] No []
8. Was preservative added to bottles? Yes [] No [checked] NA []
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes [checked] No [] NA []
10. Were any sample containers received broken? Yes [] No [checked]
11. Does paperwork match bottle labels? Yes [checked] No []
12. Are matrices correctly identified on Chain of Custody? Yes [checked] No []
13. Is it clear what analyses were requested? Yes [checked] No []
14. Were all holding times able to be met? Yes [checked] No []

of preserved bottles checked for pH:
(<2 or >12 unless noted)
Adjusted?
Checked by: [Signature] 9/23/21

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 3.3, Good, Yes, [], [], []

**TABLE 1. SOIL ANALYTE LIST
MARATHON PETROLEUM COMPANY
GALLUP REFINING DEVISION, GALLUP, NEW MEXICO**

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/3352 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020
Chloride	EPA Method 300
Fluoride	EPA Method 300
Nitrate	EPA Method 300
Nitrite	EPA Method 300.3
Sulfate	EPA Method 300.3
Total coliform	SM922SB
E. coli	SM92238
Skinner list VOC	SW-846 Method 8260
Skinner list SVOC	SW-846 Method 8270
TPH - GRO, DRO, and MRO	SW-846 Method 8015B

Notes:

EPA = Environmental Protection Agency

SW-846 = EPA Solid Waste Test Method

VOC = volatile organic compounds

SVOC = Semi-volatile organic compounds

TPH = Total petroleum hydrocarbons

GRO = Gasoline range organics (C5-C10)

DRO = Diesel range organics (>C10-C28)

MRO = Motor oil range organics (>C28-C36)

Total and dissolved metals will be analyzed



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

December 23, 2021

Brian McLoughlin
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: Sanitary Lagoon Investigation

OrderNo.: 2112B72

Dear Brian McLoughlin:

Hall Environmental Analysis Laboratory received 1 sample(s) on 12/18/2021 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

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

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2112B72**

Date Reported: 12/23/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SL-05a

Project: Sanitary Lagoon Investigation

Collection Date: 12/17/2021 2:45:00 PM

Lab ID: 2112B72-001

Matrix: SOIL

Received Date: 12/18/2021 10:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM	
Diesel Range Organics (DRO)	150	4.9	10		mg/Kg	1	12/22/2021 11:35:08 A	64634
Motor Oil Range Organics (MRO)	120	50	50		mg/Kg	1	12/22/2021 11:35:08 A	64634
Surr: DNOP	90.8	0	70-130		%Rec	1	12/22/2021 11:35:08 A	64634

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112B72

23-Dec-21

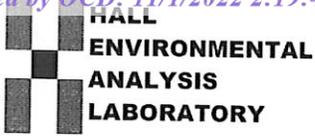
Client: Marathon
Project: Sanitary Lagoon Investigation

Sample ID: MB-64634	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 64634	RunNo: 84684								
Prep Date: 12/20/2021	Analysis Date: 12/21/2021	SeqNo: 2977779	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	70	130			

Sample ID: LCS-64634	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 64634	RunNo: 84684								
Prep Date: 12/20/2021	Analysis Date: 12/21/2021	SeqNo: 2977780	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	68.9	135			
Surr: DNOP	4.3		5.000		86.0	70	130			

Qualifiers:

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



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Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: Marathon Work Order Number: 2112B72 RcptNo: 1

Received By: Isaiah Ortiz 12/18/2021 10:00:00 AM I-OX
Completed By: Isaiah Ortiz 12/20/2021 8:59:04 AM I-OX
Reviewed By: JR 12/20/21

Chain of Custody

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

Log In

- 3. Was an attempt made to cool the samples? Yes [checked] No [] NA []
4. Were all samples received at a temperature of >0° C to 6.0°C Yes [checked] No [] NA []
5. Sample(s) in proper container(s)? Yes [checked] No []
6. Sufficient sample volume for indicated test(s)? Yes [checked] No []
7. Are samples (except VOA and ONG) properly preserved? Yes [checked] No []
8. Was preservative added to bottles? Yes [] No [checked] NA []
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes [] No [] NA [checked]
10. Were any sample containers received broken? Yes [] No [checked]
11. Does paperwork match bottle labels? Yes [checked] No []
12. Are matrices correctly identified on Chain of Custody? Yes [checked] No []
13. Is it clear what analyses were requested? Yes [checked] No []
14. Were all holding times able to be met? Yes [checked] No []

of preserved bottles checked for pH: 10
12/20/21
(<2 or >12 unless noted)
Adjusted?
Checked by:

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 3.8, Good, Not Present, , ,

District I
 1625 N. French Dr., Hobbs, NM 88240
 Phone:(575) 393-6161 Fax:(575) 393-0720

District II
 811 S. First St., Artesia, NM 88210
 Phone:(575) 748-1283 Fax:(575) 748-9720

District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
 1220 S. St Francis Dr., Santa Fe, NM 87505
 Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 155352

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 155352
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
scwells	Accepted for Record Retention Purposes-Only	11/23/2022