FINAL

Soil Management Plan Addendum No. 4

Former Philadelphia Energy Solutions Refinery

3144 West Passyunk Avenue, Philadelphia, PA

Prepared for

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Acronyms and Abbreviations

1,2-DCA	dichloroethane
1,2,4-TMB	1,2,4-trimethylbenzene
1,3,5-TMB	1,3,5-trimethylbenzene
Act 2	Land Recycling and Environmental Remediation Standards Act
AST	aboveground storage tank
Evergreen	Evergreen Resources Group LLC
ft	feet or foot
mg/kg	milligram per kilogram
MSC	Medium Specific Concentrations
PADEP	Pennsylvania Department of Environmental Protection
PESRM	Philadelphia Energy Solutions Refining and Marketing LLC
Plan	*Soil Management Plan*
Plan Addendum	*Soil Management Plan Addendum No. 4*
Site	3144 West Passyunk Avenue, Philadelphia, PA
SHS	Statewide Health Standard
SMP	Soil Management Plan
SSS	Site-specific standard
SVOC	semivolatile organic compound(s)
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound(s)
yd^3	cubic yards

1 Introduction

This *Soil Management Plan Addendum No. 4* (*Plan Addendum*) has been prepared on behalf of Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) for the Pennsylvania Department of Environmental Protection (PADEP). This *Plan Addendum* presents the results of soil sampling performed as part of the planned redevelopment of the former Philadelphia Energy Solutions Refinery located at 3144 West Passyunk Avenue, Philadelphia, PA (Site; **Figures 1.1 and 1.2**). Areas sampled since the submittal of the last Soil Management Plan (SMP) Addendum (SMP Addendum No. 3; Terraphase 2022b) are shown on **Figure 1.2** and are located in the central portion of the Site south of Passyunk Avenue between the Schuylkill River and South 26th Street. The sampling was performed in accordance with the June 15, 2020 *Soil Management Plan* (*Plan*) prepared by Hilco Redevelopment Partners, Philadelphia Holdings, LLC and approved by PADEP.

This *Plan Addendum* presents the results of soil sampling conducted to establish where soil can be placed at the Site as part of the bulk movement of soil during redevelopment. It is being shared with Evergreen Resources Group LLC (Evergreen)[1] and PADEP. The soil sampling previously completed at the Site is documented in *Soil Management Plan Addendum No. 1* (Terraphase 2021b), *Soil Management Plan Addendum No. 2* (Terraphase 2022a) and *Soil Management Plan Addendum No. 3* (Terraphase 2022b). The conclusions of the prior SMP Addenda are incorporated into this Plan Addendum to provide a comprehensive summary of soil management requirements for soil that has been sampled to date. Additional SMP Addenda will be prepared as soil sampling is completed in additional areas of the Site in anticipation of development. Each Addendum will provide a cumulative summary of soil management requirements in addition to providing details describing the results of the most recent soil sampling.

This Plan Addendum summarizes additional sampling performed to account for changes in cut and fill volumes based on a February 2023 revision to the mass grading plan for the Site.

Additional phases of sampling will be conducted from other areas of the Site as redevelopment planning and preparations proceed. At least 30 days prior to the start of soil disturbance, excavation or grading in a given area, PESRM will submit to Evergreen and PADEP a Plan Addendum that includes the results of pre-excavation characterization sampling and soil management requirements for that area consistent with the approach described in the 2020 *Plan*.

1.1 Purpose and Objective

A key element of the redevelopment plan involves raising the ground surface elevations on the portion of the Site east of the Schuylkill River above base flood elevations. Some of the ground surface elevations at the Site are currently below base flood elevations while other areas are above base flood

[1] Evergreen Resources Management Operations, a series of Evergreen Resources Group, LLC, is managing the legacy remedial work for Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC (Evergreen) and Sunoco (R&M), LLC. For clarity, Sunoco, Inc. n/k/a ETC Sunoco Holdings LLC, Sunoco, Inc. (R&M) f/k/a Sunoco (R&M), LLC n/k/a Energy Transfer (R&M), LLC effective 4/19/2021 and Evergreen shall be referred to collectively as Evergreen in this document.

elevations. As such, PESRM intends to move soil from locations with higher ground surface elevations to areas with lower ground surface elevations so that the final grades for areas of the Site east of the Schuylkill River achieve the design standard of being above the base flood elevation as established by the Federal Emergency Management Agency.

None of the soil that is moved as part of the regrading process will be placed in areas below the groundwater table. Key objectives of the SMP are:

1. To retain all soil that is excavated or disturbed by PESRM at the Site to balance grades and achieve elevations necessary for redevelopment.
2. To facilitate movement of soil during mass grading and construction.
3. To establish requirements for PESRM's sample collection and analysis for determining the way excavated soil will be placed and reused on-site while ensuring that sufficient data for future work under the Land Recycling and Environmental Remediation Standards Act (Act 2) is available to substantially limit the need for additional sampling by Evergreen (e.g., for site characterization, risk assessment(s), cleanup plan(s)).

Decommissioning, demolition, soil grading, and redevelopment will occur in phases across the Site. This *Plan Addendum* presents the results of soil sampling performed and the associated categorization of soil to be cut in the central portion of the former refinery (**Figure 1.2**). Section 4 of this Plan Addendum includes soil categorizations and associated volumes for all areas sampled to date. The soil categorizations will be used to support decisions regarding how soil that will be cut during grading activities is managed and reused on-site. Samples were collected from soil that will be cut and re-located as part of grading activities during development. This *Plan Addendum* does not include an investigation of the underlying soil. PESRM intends to characterize the top 2 feet (ft) of underlying soil (as required by the SMP) after grading activities have commenced and the cut soil has been relocated.

1.2 Background

PESRM is performing pre-excavation characterization, soil grading, and soil reuse activities during redevelopment of the Site. The Site, which is shown on **Figure 1.1**, contains approximately 1,300 acres of land that is being redeveloped into a state-of-the-art, multimodal industrial park and life sciences campus with ancillary rail infrastructure, energy infrastructure, marine capabilities, and commercial uses. The recently sampled areas described in this SMP Addendum include approximately 22 acres (**Figure 1.2**). As explained in the 2020 *Plan*, soil on-site is being sampled prior to grading, relocation, and disturbance. The 2020 *Plan* detailed how sampling would be performed and how decisions will be made as to where such soil can be placed at the Site as part of the bulk movement of soil during redevelopment activities. While more details are provided in the 2020 *Plan*, the following sections provide a summary of the approach and objectives of the SMP.

1.2.1 Coordination with Evergreen's Remedial Activities

The soil sampling and evaluation of the results obtained from the sampling being conducted under the SMP take into consideration Evergreen's site-wide remediation activities. PESRM understands that Evergreen intends to use a combination of the Statewide health standards (SHS) and Site-specific

standards (SSS) under Act 2 to demonstrate that chemical concentrations remaining at the Site do not pose an unacceptable risk to human health or the environment.

In developing the master plan for redevelopment, PESRM is aware of the known soil and groundwater impacts at the Site that are associated with the Site's historical use for petroleum refining. As noted above, the anticipated use of the Site is non-residential, and use restrictions will be documented in one or more environmental covenants. Many of the anticipated development components (e.g., building slabs, drive aisles, parking lots, new roadways, and other paved areas described in cleanup plans to be submitted to PADEP by Evergreen) will serve as barriers to exposure and infiltration, and can be used to achieve the SHS or SSS under Act 2 for soil at the Site. **Table 1.1** lists examples of anticipated development components and the functions that they will serve to achieve the SHS or SSS under Act 2 for soil at the Site.

1.2.2 Redevelopment Elements and Soil Reuse Decisions

PESRM understands that Evergreen's anticipated cleanup approach for the Site may rely on the assumption that certain impacted soil would remain at depths where it would not be accessible to current or future receptors and/or would be subject to different cleanup standards under Act 2 (i.e., soil at depths of greater than 2-ft below ground surface). To ensure that the SMP aligns with Evergreen's anticipated cleanup approach, if such impacted soil is relocated to achieve necessary redevelopment elevations, the soil will be placed in accordance with the reuse options specified in **Table 1.2**.

Based on the planned redevelopment, most soil at the Site will ultimately be located beneath a development element that will serve as an exposure barrier (e.g., placed under building pads, drive aisles, parking lots, roadways or other features that will function as exposure barriers). Accessible surface soil will only be in limited areas of the Site (e.g., landscape areas). Surface soil in these accessible areas will consist of either (1) imported material or (2) soil from the Site that has been identified as appropriate for this use in accordance with the reuse options noted in **Table 1.2**. Imported soil used as surface soil will be either clean fill or regulated fill under PADEP's *Management of Fill Policy* (PADEP 2021), as appropriate, and soil from the Site will only be considered appropriate for use as surface soil if it meets applicable SHS or a risk assessment demonstrates attainment of the SSS. To the extent that soil is transported off-site for disposal, such soil will be managed in accordance with applicable legal requirements. Finally, PESRM's anticipated cut and fill plan will be designed to leave a minimum 2-ft buffer between the bottom of cut areas and the top of known light-non-aqueous phase liquid plumes.

1.2.3 Site-Specific List of Substances and Applicable Screening Levels

As part of Evergreen's work under Act 2 and the One Cleanup Program, Evergreen, United States Environmental Protection Agency (USEPA) and PADEP have developed a specific target list of regulated substances that is being used during characterization and will be considered during remedial decision-making. **Table 1.3** provides the list of these site-specific substances. Soil sampled under the SMP was characterized for these substances. This table also provides the applicable screening levels used to evaluate and categorize soil that will be managed under the SMP in accordance with the categories detailed in Section 1.2.4.

1.2.4 Soil Management Categories

The pre-excavation (i.e., before grading) characterization data generated via the SMP is used to divide soil into categories based on how the material can be reused during the cut and fill activities. The specific categories to which soil is designated depend upon a comparison of the measured chemical-specific soil concentrations to the applicable screening levels. These categories are presented on **Table 1.2**.

1.3 Plan Addendum Organization

Section 1 provides a brief introduction and provides background on the SMP, its purpose, and objectives. Section 2 describes the samples that have been collected and analyzed most recently in support of the SMP in the areas shown on **Figure 1.2**. Section 3 presents the results of the sampling performed, a comparison of the results to applicable screening levels, and the resulting categories assigned to different soil volumes based on the SMP. Section 4 summarizes the soil management categories assigned to the volumes of soil sampled to date. Section 5 describes how soil management will be observed and documented during earthwork. Finally, Section 6 provides the references considered in the development of this *Plan Addendum*.

2 Sample Collection and Analysis

This section discusses the methods used to identify, collect, and analyze soil samples from the anticipated cut areas identified on **Figure 1.2**. Section 2.1 explains how the cut volume was discretized and how sampling locations were determined. Section 2.2 details the sample collection methods used during the field activity. Finally, Section 2.3 explains the analytical methods used.

2.1 Soil Volumes and Sample Locations

As described in the 2020 *Plan*, a significant volume of soil will be moved from higher portions of the Site (cut areas) to raise elevations in lower portions of the Site (fill areas) above floodplain elevations. The objective of the sampling program is to characterize soil from cut areas to determine where and how the soil can be placed in planned fill areas such that it will not pose an unacceptable risk to human health or the environment. The current development plan includes multiple phases to be completed over the next several years with each phase representing a different portion of the Site. Soil sampling is anticipated to be conducted for each phase as the development plans are finalized and as the areas become accessible after demolition of existing infrastructure.

Soil sampling was conducted to characterize the cut material from the areas identified as Area 1 and Area 2 on **Figure 1.2**. Sampling in Area 1 was conducted between May 20, 2022 and

November 11, 2022[2]. The anticipated cut volume for this area is 198,200 cubic yards (yd^3). From March 28, 2023 to March 31, 2023, soil sampling was conducted in Area 2 to characterize the concentrations of site-specific substances in soil that is now part of the anticipated cut from this area based on a February 2023 revision to the grading plan. The revised grading plan includes a deeper cut in this area than the previous version of the grading plan resulting in an additional anticipated cut volume of 9,900 yd^3. Shallower soil from this area was characterized previously, so the samples collected in March 2023 were targeted to the new, deeper cut intervals.

Soil to be cut from Area 1 and Area 2 was divided into cells with one composite[3] sample to be collected from each cell layer. As described in the 2020 *Plan*, the intent of the program was to collect samples at a frequency of approximately one sample per 2,000 yd^3 and have these samples analyzed for the site-specific list of substances.

Overall, Area 1 was discretized into 28 two-dimensional cell areas. Depending on the depth of the planned cut at each cell, the cell was vertically divided into one or more layers each corresponding to an approximate volume of cut of 2,000 yd^3. Each layer was assigned the suffix "C1" to "C5" (where C1 corresponds to the shallowest layer). Given the planned total cut volume in Area 1 - 198,200 yd^3 - this resulted in 106 cells (~1,900 yd^3 per cell on average). Overall, 106 soil samples were proposed within Area 1. Of those proposed soil samples, 86 soil samples have been collected. The remaining 20 were not collected due to the presence of a large underground natural gas pipeline that runs through the facility. The general area of the natural gas line and locations of the cells that were not sampled are shown on **Figure 1.2**.

PESRM plans to work with the gas utility to relocate a portion of the gas line as part of the redevelopment. Soil excavated from the cells around the existing gas line as part of the relocation work will be temporarily stockpiled at a designated on-site location for characterization prior to their being relocated as part of mass grading. The stockpiles will be placed on and covered with polyethylene sheeting and surrounded by erosion and sediment controls. Composite and grab soil samples will be collected from the stockpiles at a frequency of one sample per 2,000 cubic yards in accordance with the SMP. Based on the sampling results, the stockpiled soils will be assigned to one of the categories in **Table 1.2**. The results will be documented in a future SMP Addendum prior to the final placement of the stockpiled soils.

The additional deeper cut Area 2 was discretized into nine two-dimensional cell areas. As these cells characterize deeper cut than what has been previously characterized, the additional layer was assigned the suffix "D1". Given the planned additional cut volume - 9,900 yd^3 - this resulted in nine cells (~1,100 yd^3 per cell on average). Overall, nine soil samples were proposed within the additional cut in Area 2.

[2] Approximately 34,500 yd^3 of soil in Area 1 could not be safely sampled during the May – November 2022 sampling event due to underground utilities. This soil will be sampled at a later date and will be summarized in a Plan Addendum.

[3] Samples for analysis of metals and SVOCs were collected as composite samples. Samples for analysis of VOCs were collected as discrete samples.

Four soil borings were completed in each cell to generate the soil for each composite soil sample. As shown on **Figure 2.1**, 92 soil borings[4] were installed across Area 1[5]. A total of 36 soil borings were installed across the area of additional cut in Area 2. Each boring was assigned a target depth interval for sampling based on the depth of cut at that location. The cells which were used to discretize the development area were identified by region number (e.g., 302) and cell letter/number (e.g., AC01). The two-dimensional cell boundaries for the cut soil samples are shown on **Figures 2.2a** through **2.2c**.

2.2 Sample Collection Methods

Ransom Consulting was retained by PESRM to collect the soil samples. Using a direct push drill rig, four soil borings (designated -a, -b, -c, and -d)[6] were advanced in each cell to a depth specific to the approximate depth of cut at each boring.

To characterize the chemical concentrations in each 2,000 yd^3 volume, a discrete, grab sample was collected for volatile organic compound (VOC) analysis from the soil boring (boring a, b, c, or d) where field observations (e.g., field screening) indicated the greatest evidence of potential VOC contamination. A four-point composite sample (composed of soil from all four borings) was collected for semivolatile organic compounds (SVOCs) and lead analyses.

2.3 Sample Analyses

Samples collected were submitted to Alpha Analytical of Westborough, Massachusetts, a Pennsylvania-certified laboratory. The soil samples collected during the field activities were placed directly into laboratory-provided glassware and stored on ice in a cooler under appropriate chain-of-custody protocol. Laboratory deliverables are provided in **Appendix A**. As noted on **Table 1.3**, VOCs were analyzed via USEPA Method 8260, SVOCs via USEPA Method 8270[7], and lead via USEPA Method 6010/6020.

[4] 112 soil borings were proposed but only 92 borings were installed due to underground utilities.

[5] One composite soil sample and one discrete soil sample was collected for each set of four soil borings in a cell resulting in a lower number of samples than the total number of borings. Additionally, in areas with deep cuts, the same set of soil borings was used to characterize multiple cells by collecting separate composites from different depth intervals. Thus, the total number of proposed samples (106) is less than the total number of proposed borings (112) but greater than one fourth of the total number of proposed borings (112 / 4 = 28).

[6] To characterize the deeper cut in Area 2 based on the February 2023 revision to the grading plan, either the original soil boring locations (designated -a, -b, -c, and -d) were advanced to the deeper depth where they overlapped with the deeper cut, or additional borings were advanced, designated as -e and -f.

[7] Naphthalene was analyzed via USEPA Method 8270 in accordance with Table 1 of the 2020 *Plan*.

3 Sampling Results

This section presents and discusses the results of the soil sampling and how chemical concentrations in soil within the cut soil zones compare to the Act 2 soil cleanup standards identified in the approved 2020 *Plan*.

3.1 Results and Soil Categorization

The analytical results for samples collected from the areas depicted on **Figure 1.2** are presented in **Tables 3.1a**, **3.1b**, **3.2a**, and **3.2b** and discussed below.

3.1.1 Analytical Results

The results of the discrete (VOC) and composite (SVOC and lead) soil samples are presented on **Tables 3.1a** through **3.1b** and **3.2a** through **3.2b**, respectively.

Area 1

Overall, 86 discrete and 86 composite soil samples were collected from the cut cells in Area 1 and analyzed for VOCs and SVOCs/lead, respectively. Benzene and lead were detected at concentrations above the Non-Residential Direct Contact Medium Specific Concentrations (MSC) for soil in these cut samples.

- Benzene was detected in 39 of the 86 samples at concentrations ranging from 0.00017 to 2,800 milligram per kilogram (mg/kg). The average detected concentration was 80 mg/kg. Of the 39 detected concentrations of benzene, as shown on **Table 3.1a**, one exhibited a concentration greater than the Non-Residential Direct Contact MSC of 280 mg/kg.
- Lead was detected in 86 of the 86 samples at concentrations ranging from 1.9 to 1,400 mg/kg. The average detected concentration was 53 mg/kg. Of the 86 samples with detected concentrations of lead, as shown on **Table 3.2a**, one exhibited a concentration greater than the Non-Residential Direct Contact MSC of 1,000 mg/kg.
- Overall, two samples (2 percent) exhibited concentrations greater than the Non-Residential Direct Contact MSCs.

Within these cut cells, three VOCs (i.e., benzene, 1,2-dichloroethane [1,2-DCA], toluene) and lead were detected at concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC. No SVOCs were greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC.

- Of the 39 detected concentrations of benzene, as shown on **Table 3.1a**, seven exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 0.5 mg/kg.
- Toluene was detected in eight of the 86 samples at concentrations ranging from 0.0022 to 2000 mg/kg. The average detected concentration was 270 mg/kg. Of the eight samples with detected concentrations, as shown on **Table 3.1a**, two exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 100 mg/kg.

- 1,2-DCA was detected in three of the 86 samples at concentrations ranging from 0.00062 to 2.3 mg/kg. The average detected concentration was 0.77 mg/kg. Of the three samples with detected concentrations, as shown on **Table 3.1a**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 0.5 mg/kg.
- Of the 86 samples with detected concentrations of lead, as shown on **Table 3.2a**, two exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 450 mg/kg.
- Overall, 12 samples (14 percent) exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSCs.

Area 2

Overall, nine discrete and nine composite soil samples were collected from the additional cut cells in Area 2 and analyzed for VOCs and SVOCs/lead, respectively. Lead was detected at concentrations above the Non-Residential Direct Contact MSC for soil in these cut samples.

- Lead was detected in nine of the nine samples at concentrations ranging from 7.5 to 2,500 mg/kg. The average detected concentration was 490 mg/kg. Of the nine samples with detected concentrations of lead, as shown on **Table 3.2b**, two exhibited a concentration greater than the Non-Residential Direct Contact MSC of 1,000 mg/kg.
- Overall, two samples (22 percent) exhibited concentrations greater than the Non-Residential Direct Contact MSCs.

Within these cut cells, seven VOCs (i.e., benzene, 1,2-DCA, ethyl benzene, toluene, 1,2,4-trimethylbenzene [1,2,4-TMB], 1,3,5-trimethylbenzene [1,3,5-TMB], xylenes [total]) and lead were detected at concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC. One SVOC (i.e., naphthalene) was greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC.

- Benzene was detected in eight of the nine samples at concentrations ranging from 0.0008 to 200 mg/kg. The average detected concentration was 28 mg/kg. Of the eight detected concentrations, as shown on **Table 3.1b**, seven exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 0.5 mg/kg.
- 1,2-DCA was detected in one of the nine samples at a concentration of 6 mg/kg. As shown on **Table 3.1b**, the detected concentration was greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 0.5 mg/kg.
- Ethyl benzene was detected in eight of the nine samples at concentrations ranging from 0.0018 to 420 mg/kg. The average detected concentration was 58 mg/kg. Of the eight detected concentrations, as shown on **Table 3.1b**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 70 mg/kg.
- Toluene was detected in eight of the nine samples at concentrations ranging from 0.0016 to 2000 mg/kg. The average detected concentration was 250 mg/kg. Of the eight samples with detected concentrations, as shown on **Table 3.1b**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 100 mg/kg.

- 1,2,4-TMB was detected in eight of the nine samples at concentrations ranging from 0.023 to 610 mg/kg. The average detected concentration was 87 mg/kg. Of the eight samples with detected concentrations, as shown on **Table 3.1b**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 300 mg/kg.
- 1,3,5-TMB was detected in eight of the nine samples at concentrations ranging from 0.0099 to 210 mg/kg. The average detected concentration was 30 mg/kg. Of the eight detected concentrations, as shown on **Table 3.1b**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 93 mg/kg.
- Xylenes (total) was detected in eight of the nine samples at concentrations ranging from 0.0094 to 2500 mg/kg. The average detected concentration was 340 mg/kg. Of the eight detected concentrations of benzene, as shown on **Table 3.1b**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 1000 mg/kg.
- Naphthalene was detected in nine of the nine samples at concentrations ranging from 0.049 to 29 mg/kg. The average detected concentration was 4.1 mg/kg. Of the nine detected concentrations of naphthalene, as shown on **Table 3.1b**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 25 mg/kg.
- Of the nine samples with detected concentrations of lead, as shown on **Table 3.2b**, two exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 450 mg/kg.

Overall, eight samples (89 percent) exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSCs.

3.1.2 Consideration for Historical Sampling Results

In addition to considering the soil sampling results summarized above, historical soil sampling results from the target analyte list (**Table 1.3**) reported by Evergreen, aboveground storage tank (AST) site assessment and site characterization soil sampling results[8], and soil sampling results related to investigation of releases managed separately by PESRM under Act 2 were also considered in determining soil re-use categories. A figure presenting the spatial distribution of chemicals identified in **Table 1.3** with concentrations in soil samples reported by Evergreen that were greater than the Non-Residential Used Aquifer Soil-to-Groundwater or Non-Residential Direct Contact MSCs is included in **Appendix B**. Sampling results for the tank groups within Area 1 and Area 2, Tank Groups 02, 03, and 05, were also reviewed. A figure presenting the spatial distribution of locations with chemicals identified in **Table 1.3** with concentrations exceeding the Non-Residential Used Aquifer Soil-to-Groundwater or Non-

[8] AST site assessment and site characterization sampling is being conducted by PESRM in accordance with the requirements of the PADEP Storage Tank Cleanup Program and the Above Ground Storage Tank Closure Work Plan (Terraphase 2021a). The sampling results and conclusions related to closure of historical tank releases will be documented in separate submittals to PADEP as part of the Corrective Action Process. The results from the AST samples are being used in the context of this SMP Addendum as additional data that can be used to inform soil management decision-making. Unless specifically stated in a tank program report, soil management is not being used to address releases from the ASTs under the Corrective Action Process.

Residential Direct Contact MSCs in soil samples collected in support of AST closure is included in **Appendix B**.

As shown in **Table 3.3**, the concentrations for each target analyte from the historical, AST, and Act 2 samples were summarized and averaged for each cell. These averages were compared against the non-residential screening levels used to support this program (Section 1.2.3). Within the development area that is planned for soil regrading in Area 1, benzene was detected in historical, AST, or Act 2 soil samples at concentrations greater than the non-residential screening levels. As summarized in **Table 3.3**, benzene was identified at concentrations greater than non-residential screening levels in historical, AST, or Act 2 samples within one cut cell, 302-AL01.

Within the additional cut in Area 2, benzene, methyl tert-butyl ether, and toluene were detected in historical, AST, or Act 2 soil samples at concentrations greater than the non-residential screening levels. Benzene was identified at concentrations greater than non-residential screening levels in historical, AST, or Act 2 samples within five cut cells (201-A01, 301-D01, 301-E02, 301-G01, 301-H01), methyl tert-butyl ether was identified at concentrations greater than non-residential screening levels within two cut cells (201-A01, 301-D01), and toluene was identified at concentrations greater than non-residential screening levels within one cut cells (301-E02).

These historical, AST, and Act 2 sampling results were considered in assigning soil categories to each cell. Aside from 302-AL01, which will be characterized at a later time due to underground utilities, none of the cells were recategorized based on these results.

3.1.3 Categorization of Soil to be Relocated During Mass Grading

As discussed in Section 1.2.4, the pre-soil grading characterization data generated via the SMP is used to divide soil that will be relocated during mass grading into categories that determine how the material will be managed during the cut and fill activities. The specific categories to which soil is assigned depend upon a comparison of the measured chemical-specific soil concentrations to the applicable screening levels. These categories are presented in **Table 1.2**. Concentrations from historical soil samples (discussed in Section 3.1.2) were also considered. The two-dimensional cell boundaries for the cut soil samples (**Figures 2.2a** through **2.2c**) were used to visualize the aerial extent of soil that will be managed in accordance with these categories.

Figures 3.1a through **3.1c** present the results of the soil categorization for the cut material. As illustrated, most of the development in Area 1 and one cell in the additional cut in Area 2 did not exhibit chemical concentrations greater than applicable screening levels. Therefore, most of the soil is categorized as "A" (*Soil can be reused in area not beneath a surface cap, e.g., as backfill in utility corridors or in landscaped areas, as long as a risk assessment demonstrates attainment of the site-specific standard).*

There are two cells in Area 1 and two cells in Area 2 which were identified as having concentrations greater than both the Non-residential Soil Direct Contact and Soil-to-GW Protection MSCs. Cut soil within these cells are categorized as "E" (*Soil can be reused beneath an impervious surface cap that will serve as an engineering control under Act 2 at elevations above the groundwater table*). Depending on

the cell, the chemicals exceeding the MSCs included lead, 1,2-DCA, ethyl benzene, toluene, 1,2,4-TMB, 1,3,5-TMB, xylenes (total) and benzene.

As illustrated on **Figures 3.1a** through **3.1c**, an additional six cells in Area 1 and six cells in the additional cut in Area 2 have been categorized as "B" (*Soil that can be reused (1) in areas beneath an impervious surface cap (e.g., building slabs, parking lots, or roadways) that will serve as an engineering control under Act 2 at elevations above the groundwater table, or (2) in areas not beneath a surface cap that are more than 500 ft. from a shoreline (i.e., the edge of the Schuylkill River) as long as a risk assessment demonstrates attainment of the Site-specific standard*). The chemicals identified in these areas exhibited concentrations that were greater than the Non-residential Soil-to-GW Protection MSCs but less than the Non-residential Soil Direct Contact MSCs. Depending on the cell, the chemicals exceeding MSCs included lead, benzene, 1,2-DCA, naphthalene and toluene.

4 Soil Management

The soil sampling results described in Section 3.1, including the results from historical samples collected by Evergreen, AST site assessment and site characterization, and Act 2 soil samples, have been used to categorize and determine how soil that will be relocated during mass grading activities may be re-used on site. The sections below describe the process that will be used to manage soil during construction in accordance with the requirements specified in **Table 1.2** and the 2020 *Plan*.

4.1 Identification of Waste Material during Soil Movement

During mass grading activities, there is the potential for previously unidentified waste materials, such as leaded tank bottoms or containerized wastes, to be encountered. An environmental professional will be on site during mass grading to observe soil movement, to document that soil is placed appropriately, and to observe suspect waste materials. Procedures for identifying waste materials and subsequent notifications are described in **Appendix D**.

4.2 Bulk Soil Movement and Placement

Figure 4.1 identifies how soil in the cut cells will be managed. This drawing includes control points with specific coordinates to identify the boundaries of each area that has a soil category other than "A". The volume of soil associated with each category "B" and "E" area is provided in **Table 4.1**. **Table 4.1** is cumulative and provides a volume summary for all soil sampled to date. As noted earlier in this report, the grading plan for some portions of the proposed development was revised in February 2023. The volumes in **Table 4.1** reflect the anticipated cut volumes based on the updated grading plan. The table below summarizes changes in anticipated cut volume as a result of the grading plan changes.

Soil Management Category	Previous Volume (yd^3)	Updated Volume [9] (yd^3)
A	1,718,000	1,502,000
B	730,800	677,900
E	172,100	129,000
Total	**2,620,900**	**2,308,900**

Based on the additional characterization of anticipated deeper cut in Area 2, cells 201-A01 and 301-E02 were updated from "B" to "E". Two soil management areas (i.e., IP1LI-01 [3,846 yd^3] and IP1LI-02 [8,747 yd^3]) have been added with soil management category of "E". Additionally, the category of cell 301-N02 changed from "A" to "B". This change merged soil management areas IP1A-02 and IP1A-07 into IP1A-02 (252,064 yd^3; **Figure 4.1**). There are no other changes to the soil management categories for the rest of Area 2.

Overall, it is estimated that approximately 198,200 yd^3 of soil will be cut from Area 1 and re-used during site redevelopment[10]. As summarized in the table below, this includes 14,600 yd^3 that will be managed as category "E" material and 48,100 yd^3 that will be managed as category "B" material. 34,500 yd^3 has yet to be categorized due to underground utilities. The remaining soil (101,000 yd^3) will be managed as category "A".

Soil Management Category	Area 1 on Figure 1.2 Volume (yd^3)
A	101,000
B	48,100
E	14,600
Not Yet Categorized	34,500
Total	**198,200**

The earthwork contractor will excavate and segregate the category "B" and "E" soil identified on **Figure 4.1** and **Table 4.1** for reuse in accordance with the requirements specified in **Table 1.2**. An environmental professional will oversee the earthwork and will ensure that soil is managed consistent with this *Plan Addendum*.

[9] In some areas of the Facility, additional cut volume increased based on the updated grading plan. However, evaluation of the new cut areas is ongoing to ensure appropriate coverage. Should additional sampling be necessary, this information will be summarized in a forthcoming addendum.

[10] The volumes presented here are rounded and approximate. More precise estimates are included in Table 4.1. The volumes presented in this document are estimates based on a comparison of the design subgrades to the existing grades. Actual volumes will be tracked in the field and final record volumes will be calculated based on comparison of the final surveyed subgrade elevations to the pre-construction survey elevations.

5 Documentation

The earthwork contractor will provide survey documentation of the soil volume excavated from each category “B” and “E” area. The surveys will be reviewed by the environmental professional overseeing the earthwork. The environmental professional will also be responsible for documenting the movement and storage of this soil during construction, including documenting the location of each soil volume identified in the above table (more detail provided in **Table 4.1**), in the final developed condition. The documentation will include cubic yards of soil moved, coordinates or maps of the new soil locations, and as-built drawings demonstrating that the areas where this soil is placed are covered by development components that serve as adequate engineering controls. PESRM understands that plans and descriptions of surface caps will need to be included in the Cleanup Plan(s) and that the Cleanup Plan(s) will be subject to the Act 2 public involvement process and will be coordinated with Evergreen.

The results of field documentation performed by the environmental professional will be summarized in a Soil Management Report to be submitted to PADEP upon completion of each phase of construction.

6 References

Hilco Redevelopment Partners, Philadelphia Holdings, LLC (HRP). 2020. *Final Soil Management Plan*. June 15.

Pennsylvania Department of Environmental Protection (PADEP). 2021. *Management of Fill Policy*. January 16.

Terraphase Engineering Inc. 2021a. *Aboveground Storage Tank Closure Work Plan.* March.

_ _ _. 2021b. *Soil Management Plan Addendum No. 1*. October 29. Revised May 25, 2022.

_ _ _. 2022a. *Soil Management Plan Addendum No. 2 – Industrial Phase 1A Area*. August 4.

_ _ _. 2022b. *Soil Management Plan Addendum No. 3 – Industrial Phase 1B Area*. December 8.

Tables

Table 1.1
Development Component Fuctions
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Development Component	Exposure Barrier	Impervious Barrier
Surface Soil Layer Imported soil used in accessible areas at the ground surface will be subject to PADEP's Management of Fill Policy (PADEP 2020). Before using soil from the Site in accessible areas at the ground surface, a risk assessment will be conducted to demonstrates attainment of the Site-specific standard.	X	
Building Slab Minimum section will consist of 4 inches of concrete over 4 inches of aggregate subbase.	X	X
Parking Lot Minimum section will consist of 3.75 inches of concrete or asphalt over 4 inches of aggregate subbase.	X	X
Roadway Minimum section will consist of 5 inches of concrete and/or asphalt over 4 inches of aggregate subbase.	X	X
Drive Aisle Minimum section will consist of 5 inches of concrete or asphalt over 4 inches of aggregate subbase.	X	X

Table 1.2
Soil Reuse Categories
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Category	Description	Reuse Options[4]
A	Concentrations of target analytes below nonresidential soil direct contact[1,3] and soil-to-groundwater[2] MSCs.	(1) in areas beneath a surface cap that provides an exposure barrier (e.g., building slabs, parking lots, roadways, or imported soil) that will serve as an engineering control under Act 2, or (2) in areas not beneath a surface cap (e.g., as backfill in utility corridors or in landscaped areas) as long as a risk assessment demonstrates attainment of the Site-specific standard.
B	Concentrations of target analytes above nonresidential soil-to-groundwater numeric values[2] but below the nonresidential direct contact numeric values[1,3], where direct contact values are higher than the nonresidential soil-to-groundwater numeric values.	(1) in areas beneath an impervious surface cap (e.g., building slabs, parking lots, or roadways) that will serve as an engineering control under Act 2 at elevations above the groundwater table, or (2) in areas not beneath a surface cap that are more than 500 ft. from a shoreline (i.e., the edge of the Schuylkill River) as long as a risk assessment demonstrates attainment of the Site-specific standard.
C	Concentrations of target analytes above the nonresidential direct contact numeric values[1,3] but below the nonresidential soil-to-groundwater numeric values[2], where the soil-to-groundwater numeric values are higher than the nonresidential direct contact numeric values.	In areas beneath a surface cap that provides an exposure barrier (e.g., building slabs, parking lots, roadways, imported soil, or appropriate Site soil) that will serve as an engineering control under Act 2.[4,5]
D	Concentrations of target analytes above the nonresidential direct contact numeric values[1,3] but below site-specific leaching based soil standards (if derived by PESRM).	In areas beneath a surface cap that provides an exposure barrier (e.g., building slabs, parking lots, roadways, imported soil, or appropriate Site soil) that will serve as an engineering control under Act 2.[4,5]
E	Concentrations of target analytes above the nonresidential direct contact numeric values[1,3] and above both nonresidential soil-to-groundwater numeric values[2] and site-specific leaching-based standards (if derived by PESRM).	Soil can be reused beneath an impervious surface cap (e.g., building slabs, parking lots, or roadways) that will serve as an engineering control under Act 2 at elevations above the groundwater table.

1 The non-residential soil direct contact numeric value (0-2 ft bgs) are the current PADEP values.
2 The non-residential soil to groundwater numeric value are the current PADEP values for non-residential use aquifer (TDS ≤ 2500) soil-to-groundwater numeric value.
3 The Site-specific standard developed by Langan (2015) for lead is greater than PADEP's current non-residential soil direct contact numeric value of 1,000 mg/kg. For the SMP, PADEP's current generic value was used.
4 Imported soil used as an exposure barrier will be subject to PADEP's (2020) Management of Fill Policy.
5 Soil from the Site will only be considered appropriate for use as an exposure barrier if a risk assessment demonstrates attainment of the Site-specific standard.
6 Relocated soil from the Site will likely all be placed at elevations above the groundwater table because existing grades are above the groundwater table and the objective of soil relocation is to raise grades in areas of current relative lower elevation.

Table 1.3
Target Analyte List and Associated Soil Cleanup Standards
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Analyte	USEPA Analytical Method	CASRN	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Numeric Value (mg/kg)
Volatile Organic Compounds				
Benzene	8260	71-43-2	280	0.5
1,2-Dibromoethane (EDB)	8260	106-93-4	3.7	0.005
1,2-Dichloroethane (EDC)	8260	107-06-2	85	0.5
Ethylbenzene	8260	100-41-4	880	70
Isopropylbenzene (Cumene)	8260	98-82-8	10,000	2,500
Methyl Tertiary Butyl Ether	8260	1634-04-4	8,500	2
Naphthalene	8270	91-20-3	66	25
Toluene	8260	108-88-3	10,000	100
1,2,4-Trimethylbenzene	8260	95-63-6	4,700	300
1,3,5-Trimethylbenzene	8260	108-67-8	4,700	93
Xylenes (Total)	8260	1330-20-7	7,900	1,000
Semi-Volatile Compounds				
Anthracene	8270	120-12-7	190,000	350
Benzo(a)anthracene	8270	56-55-3	130	340
Benzo(a)pyrene	8270	50-32-8	91	46
Benzo(b)fluoranthene	8270	205-99-2	76	170
Benzo(g,h,i)perylene	8270	191-24-2	190,000	180
Chrysene	8270	218-01-9	760	230
Fluorene	8270	86-73-7	130,000	3,800
Phenanthrene	8270	85-01-8	190,000	10,000
Pyrene	8270	129-00-0	96,000	2,200
Metals				
Lead	6010/6020	7439-92-1	1000	450

Notes:

1 The Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) are the current PADEP values.

2 The Non-Residential Soil to Groundwater Numeric Value are the current PADEP values for Non-Residential Use Aquifer (TDS ≤ 2500) Soil-to-Groundwater Numeric Value.

3 The Act 2 Standards are subject to change, and the Standards in effect at the time of an Act 2 report submittal will apply.

Table 3.1a
Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-AC01-a	301-AC01-a	301-AC01-a	301-AC01-a	301-AC01-a	301-L01-d	301-T03-a	301-T03-c	301-T03-c	301-T03-c	301-T03-c	302-AD01-b	302-AD01-b
Cell	Soil Direct Contact	Soil to	301-AC01	301-AC01	301-AC01	301-AC01	301-AC01	301-L01	301-T03	301-T03	301-T03	301-T03	301-T03	302-AD01	302-AD01
Field Sample ID	Numeric Value	Groundwater	301-AC01-C1-VOC	301-AC01-C2-VOC	301-AC01-C3-VOC	301-AC01-C4-VOC	301-AC01-C5-VOC	301-L01-C1-VOC	301-T03-C5-VOC	301-T03-C1-VOC	301-T03-C2-VOC	301-T03-C3-VOC	301-T03-C4-VOC	302-AD01-C1-VOC	302-AD01-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	2.4 - 2.6	4.6 - 4.7	5.5 - 5.6	7.9 - 8.1	1.1 - 1.2	1.2 - 1.4	0.2 - 0.3	0.6 - 0.8	0.9 - 1.1	1.4 - 1.5	2.4 - 2.6	4.9 - 5.0
Sample Date	(mg/kg)	(mg/kg)	11/4/2022	11/4/2022	11/7/2022	11/7/2022	11/7/2022	10/21/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	11/4/2022	11/4/2022
VOCs															
Benzene	280	0.5	0.00023 J (0.00064)	U (0.00046)	U (0.00049)	0.00018 J (0.00047)	U (0.029)	0.00022 J (0.0005)	0.00028 J (0.00046)	0.00025 J (0.00039)	U (0.00044)	U (0.00051)	0.00017 J (0.00047)	0.00024 J (0.00053)	U (0.00051)
Cumene	10000	2500	U (0.0013)	U (0.00093)	U (0.00097)	0.00045 J (0.00094)	3 (0.058)	U (0.001)	0.00088 J (0.00092)	0.00033 J (0.00079)	0.00032 J (0.00088)	U (0.001)	0.0016 (0.00094)	U (0.001)	U (0.001)
1,2-Dibromoethane	3.7	0.005	U (0.00064)	U (0.00046)	U (0.00049)	U (0.00047)	U (0.029)	U (0.0005)	U (0.00046)	U (0.00039)	U (0.00044)	U (0.00051)	U (0.00047)	U (0.00053)	U (0.00051)
1,2-Dichloroethane	85	0.5	U (0.0013)	U (0.00093)	U (0.00097)	U (0.00094)	U (0.058)	U (0.001)	U (0.00092)	U (0.00079)	U (0.00088)	U (0.001)	U (0.00094)	U (0.001)	U (0.001)
Ethyl Benzene	880	70	U (0.0013)	U (0.00093)	U (0.00097)	U (0.00094)	U (0.058)	U (0.001)	U (0.00092)	U (0.00079)	U (0.00088)	U (0.001)	U (0.00094)	U (0.001)	U (0.001)
Methyl tert-butyl ether	8500	2	U (0.0026)	U (0.0018)	U (0.0019)	U (0.0019)	U (0.12)	U (0.002)	U (0.0018)	U (0.0016)	U (0.0018)	U (0.002)	U (0.0019)	U (0.0021)	U (0.002)
Toluene	10000	100	U (0.0013)	U (0.00093)	U (0.00097)	U (0.00094)	U (0.058)	U (0.001)	U (0.00092)	U (0.00079)	U (0.00088)	U (0.001)	U (0.00094)	U (0.001)	U (0.001)
1,2,4-Trimethylbenzene	4700	300	U (0.0026)	U (0.0018)	U (0.0019)	U (0.0019)	U (0.12)	U (0.002)	U (0.0018)	U (0.0016)	U (0.0018)	U (0.002)	U (0.0019)	U (0.0021)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	U (0.0026)	U (0.0018)	U (0.0019)	U (0.0019)	U (0.12)	U (0.002)	U (0.0018)	U (0.0016)	U (0.0018)	U (0.002)	U (0.0019)	U (0.0021)	U (0.002)
Xylenes (total)	7900	1000	U (0.0026)	U (0.0018)	U (0.0019)	U (0.0019)	U (0.12)	U (0.002)	U (0.0018)	U (0.0016)	U (0.0018)	U (0.002)	U (0.0019)	U (0.0021)	U (0.002)

Notes:

1 Concentrations are presented in mg/kg.

2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).

3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.

4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.

5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:

VOCs -- Volatile Organic Compounds.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.1a
Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AD01-d	302-AD02-d	302-AD02-d	302-AD02-d	302-AD02-d	302-AD02-d	302-AE01-d	302-AE01-d	302-AE01-d	302-AE01-d	302-AE01-d	302-AE02-a	302-AE02-b
Cell	Soil Direct Contact	Soil to	302-AD01	302-AD02	302-AD02	302-AD02	302-AD02	302-AD02	302-AE01	302-AE01	302-AE01	302-AE01	302-AE01	302-AE02	302-AE02
Field Sample ID	Numeric Value	Groundwater	302-AD01-C3-VOC	302-AD02-C1-VOC	302-AD02-C2-VOC	302-AD02-C3-VOC	302-AD02-C4-VOC	302-AD02-C5-VOC	302-AE01-C1-VOC	302-AE01-C2-VOC	302-AE01-C3-VOC	302-AE01-C4-VOC	302-AE01-C5-VOC	302-AE02-C1-VOC	302-AE02-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	7.5 - 7.6	0.6 - 0.8	2.4 - 2.6	3.7 - 3.8	5.5 - 5.6	6.4 - 6.6	0.5 - 0.6	2.3 - 2.4	3.0 - 3.2	4.9 - 5.0	6.1 - 6.2	0.2 - 0.3	9.5 - 10.0
Sample Date	(mg/kg)	(mg/kg)	11/8/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022	10/28/2022	10/28/2022	10/28/2022	10/28/2022	10/28/2022	11/8/2022	11/8/2022
VOCs															
Benzene	280	0.5	U (0.00036)	U (0.00074)	U (0.00048)	U (0.0005)	U (0.025)	U (0.00046)	U (0.00059)	0.00026 J (0.00049)	U (0.00048)	U (0.00079)	U (0.14)	U (0.00048)	U (0.00065)
Cumene	10000	2500	U (0.00073)	U (0.0015)	U (0.00096)	U (0.001)	10 (0.05)	0.013 (0.00092)	U (0.0012)	U (0.00099)	U (0.00096)	U (0.0016)	2.6 (0.28)	U (0.00097)	U (0.0013)
1,2-Dibromoethane	3.7	0.005	U (0.00036)	U (0.00074)	U (0.00048)	U (0.0005)	U (0.025)	U (0.00046)	U (0.00059)	U (0.00049)	U (0.00048)	U (0.00079)	U (0.14)	U (0.00048)	U (0.00065)
1,2-Dichloroethane	85	0.5	U (0.00073)	U (0.0015)	U (0.00096)	U (0.001)	U (0.05)	U (0.00092)	U (0.0012)	U (0.00099)	U (0.00096)	U (0.0016)	U (0.28)	U (0.00097)	U (0.0013)
Ethyl Benzene	880	70	U (0.00073)	U (0.0015)	U (0.00096)	U (0.001)	0.011 J (0.05)	U (0.00092)	U (0.0012)	U (0.00099)	U (0.00096)	U (0.0016)	U (0.28)	U (0.00097)	U (0.0013)
Methyl tert-butyl ether	8500	2	U (0.0014)	U (0.003)	U (0.0019)	U (0.002)	U (0.1)	U (0.0018)	U (0.0024)	U (0.002)	U (0.0019)	U (0.0031)	U (0.57)	U (0.0019)	U (0.0026)
Toluene	10000	100	U (0.00073)	U (0.0015)	U (0.00096)	U (0.001)	U (0.05)	U (0.00092)	U (0.0012)	U (0.00099)	U (0.00096)	U (0.0016)	U (0.28)	U (0.00097)	U (0.0013)
1,2,4-Trimethylbenzene	4700	300	U (0.0014)	U (0.003)	U (0.0019)	U (0.002)	0.048 J (0.1)	U (0.0018)	U (0.0024)	U (0.002)	U (0.0019)	U (0.0031)	U (0.57)	U (0.0019)	U (0.0026)
1,3,5-Trimethylbenzene	4700	93	U (0.0014)	U (0.003)	U (0.0019)	U (0.002)	U (0.1)	U (0.0018)	U (0.0024)	U (0.002)	U (0.0019)	U (0.0031)	U (0.57)	U (0.0019)	U (0.0026)
Xylenes (total)	7900	1000	U (0.0014)	U (0.003)	U (0.0019)	U (0.002)	0.09 J (0.1)	U (0.0018)	U (0.0024)	U (0.002)	U (0.0019)	U (0.0031)	U (0.57)	U (0.0019)	U (0.0026)

Notes:

1 Concentrations are presented in mg/kg.

2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).

3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.

4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.

5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:

VOCs -- Volatile Organic Compounds.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.1a
Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AE02-b	302-AE02-b	302-AF01-d	302-AF01-d	302-AF01-d	302-AF02-a	302-AF02-a	302-AF02-a	302-AF02-a	302-AG01-d	302-AG01-d	302-AG01-d	302-AG01-d
Cell	Soil Direct Contact	Soil to	302-AE02	302-AE02	302-AF01	302-AF01	302-AF01	302-AF02	302-AF02	302-AF02	302-AF02	302-AG01	302-AG01	302-AG01	302-AG01
Field Sample ID	Numeric Value	Groundwater	302-AE02-C3-VOC	302-AE02-C4-VOC	302-AF01-C1-VOC	302-AF01-C2-VOC	302-AF01-C3-VOC	302-AF02-C1-VOC	302-AF02-C2-VOC	302-AF02-C3-VOC	302-AF02-C4-VOC	302-AG01-C1-VOC	302-AG01-C2-VOC	302-AG01-C3-VOC	302-AG01-C4-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	5.3 - 5.5	22.5 - 23.0	1.5 - 1.7	3.0 - 3.2	5.5 - 5.6	1.1 - 1.2	2.4 - 2.6	5.0 - 5.2	6.1 - 6.2	0.3 - 0.5	2.1 - 2.3	3.4 - 3.5	4.9 - 5.0
Sample Date	(mg/kg)	(mg/kg)	11/8/2022	11/8/2022	10/31/2022	10/31/2022	10/31/2022	11/3/2022	11/3/2022	11/3/2022	11/3/2022	11/2/2022	11/2/2022	11/2/2022	11/2/2022
VOCs															
Benzene	280	0.5	U (0.00047)	U (0.027)	U (0.00067)	U (0.027)	U (0.00046)	U (0.00052)	U (0.00052)	U (0.00048)	U (0.053)	U (0.00048)	U (0.00078)	U (0.00052)	U (0.00049)
Cumene	10000	2500	U (0.00095)	13 (0.053)	U (0.0013)	4.6 (0.055)	0.003 (0.00093)	U (0.001)	U (0.001)	U (0.00097)	10 (0.11)	U (0.00095)	U (0.0016)	U (0.001)	U (0.00099)
1,2-Dibromoethane	3.7	0.005	U (0.00047)	U (0.027)	U (0.00067)	U (0.027)	U (0.00046)	U (0.00052)	U (0.00052)	U (0.00048)	U (0.053)	U (0.00048)	U (0.00078)	U (0.00052)	U (0.00049)
1,2-Dichloroethane	85	0.5	U (0.00095)	U (0.053)	U (0.0013)	U (0.055)	U (0.00093)	U (0.001)	U (0.001)	U (0.00097)	U (0.11)	U (0.00095)	U (0.0016)	U (0.001)	U (0.00099)
Ethyl Benzene	880	70	U (0.00095)	1.5 (0.053)	U (0.0013)	U (0.055)	U (0.00093)	U (0.001)	U (0.001)	U (0.00097)	U (0.11)	U (0.00095)	U (0.0016)	U (0.001)	U (0.00099)
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.11)	U (0.0027)	U (0.11)	U (0.0018)	U (0.0021)	U (0.0021)	U (0.0019)	U (0.21)	U (0.0019)	U (0.0031)	U (0.0021)	U (0.002)
Toluene	10000	100	U (0.00095)	U (0.053)	U (0.0013)	U (0.055)	U (0.00093)	U (0.001)	U (0.001)	U (0.00097)	U (0.11)	U (0.00095)	U (0.0016)	U (0.001)	U (0.00099)
1,2,4-Trimethylbenzene	4700	300	U (0.0019)	4.9 (0.11)	U (0.0027)	U (0.11)	U (0.0018)	U (0.0021)	U (0.0021)	U (0.0019)	0.042 J (0.21)	U (0.0019)	U (0.0031)	U (0.0021)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.11)	U (0.0027)	U (0.11)	U (0.0018)	U (0.0021)	U (0.0021)	U (0.0019)	U (0.21)	U (0.0019)	U (0.0031)	U (0.0021)	U (0.002)
Xylenes (total)	7900	1000	U (0.0019)	0.2765 J (0.11)	U (0.0027)	U (0.11)	U (0.0018)	U (0.0021)	U (0.0021)	U (0.0019)	U (0.21)	U (0.0019)	U (0.0031)	U (0.0021)	U (0.002)

Notes:

1 Concentrations are presented in mg/kg.

2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).

3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.

4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.

5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:

VOCs -- Volatile Organic Compounds.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.1a
Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AG01-d	302-AG02-d	302-AG02-d	302-AG02-d	302-AG02-d	302-AH01-a	302-AH01-a	302-AH01-d	302-AH02-c	302-AH02-d	302-AH02-d	302-AH02-d	302-AH03-a
Cell	Soil Direct Contact	Soil to	302-AG01	302-AG02	302-AG02	302-AG02	302-AG02	302-AH01	302-AH01	302-AH01	302-AH02	302-AH02	302-AH02	302-AH02	302-AH03
Field Sample ID	Numeric Value	Groundwater	302-AG01-C5-VOC	302-AG02-C1-VOC	302-AG02-C2-VOC	302-AG02-C3-VOC	302-AG02-C4-VOC	302-AH01-C1-VOC	302-AH01-C3-VOC	302-AH01-C2-VOC	302-AH02-C3-VOC	302-AH02-C1-VOC	302-AH02-C2-VOC	302-AH02-C4-VOC	302-AH03-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	6.4 - 3.8	0.6 - 0.8	2.1 - 2.3	4.3 - 4.4	5.8 - 5.9	0.9 - 1.1	4.0 - 4.1	4.3 - 4.4	5.5 - 5.6	0.6 - 0.8	3.0 - 3.2	7.6 - 7.8	4.9 - 5.0
Sample Date	(mg/kg)	(mg/kg)	11/2/2022	11/1/2022	11/1/2022	11/1/2022	11/1/2022	11/10/2022	11/10/2022	11/10/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022
VOCs															
Benzene	280	0.5	U (0.0005)	U (0.00049)	U (0.00048)	U (0.00054)	0.098 (0.028)	U (0.00057)	0.0014 (0.00049)	0.00021 J (0.00047)	0.00025 J (0.00055)	0.023 (0.00057)	0.003 (0.00057)	2800 (13)	220 (1.6)
Cumene	10000	2500	U (0.001)	U (0.00098)	U (0.00096)	U (0.0011)	4.2 (0.057)	U (0.0011)	U (0.00098)	U (0.00094)	U (0.0011)	U (0.0011)	U (0.0011)	7.2 (5.3)	14 (0.64)
1,2-Dibromoethane	3.7	0.005	U (0.0005)	U (0.00049)	U (0.00048)	U (0.00054)	U (0.028)	U (0.00057)	U (0.00049)	U (0.00047)	U (0.00055)	U (0.00057)	U (0.00057)	U (2.6)	U (0.32)
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.00098)	U (0.00096)	U (0.0011)	U (0.057)	U (0.0011)	U (0.00098)	U (0.00094)	U (0.0011)	0.00062 J (0.0011)	U (0.0011)	U (5.3)	U (0.64)
Ethyl Benzene	880	70	U (0.001)	U (0.00098)	U (0.00096)	U (0.0011)	0.048 J (0.057)	U (0.0011)	U (0.00098)	U (0.00094)	U (0.0011)	U (0.0011)	U (0.0011)	6.6 (5.3)	9.7 (0.64)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.002)	0.00019 J (0.0019)	U (0.0022)	U (0.11)	U (0.0023)	U (0.002)	U (0.0019)	U (0.0022)	U (0.0023)	U (0.0023)	U (10)	U (1.3)
Toluene	10000	100	U (0.001)	U (0.00098)	U (0.00096)	U (0.0011)	0.038 J (0.057)	U (0.0011)	U (0.00098)	U (0.00094)	U (0.0011)	0.0024 (0.0011)	U (0.0011)	2000 (26)	0.53 J (0.64)
1,2,4-Trimethylbenzene	4700	300	U (0.002)	U (0.002)	U (0.0019)	U (0.0022)	0.36 (0.11)	U (0.0023)	U (0.002)	U (0.0019)	U (0.0022)	U (0.0023)	U (0.0023)	3.2 J (10)	95 (1.3)
1,3,5-Trimethylbenzene	4700	93	U (0.002)	U (0.002)	U (0.0019)	U (0.0022)	U (0.11)	U (0.0023)	U (0.002)	U (0.0019)	U (0.0022)	U (0.0023)	U (0.0023)	U (10)	4.8 (1.3)
Xylenes (total)	7900	1000	U (0.002)	U (0.002)	U (0.0019)	U (0.0022)	0.3385 J (0.11)	U (0.0023)	U (0.002)	U (0.0019)	U (0.0022)	U (0.0023)	U (0.0023)	20.5 J (10)	2.32 J (1.3)

Notes:

1 Concentrations are presented in mg/kg.

2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).

3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.

4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.

5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:

VOCs -- Volatile Organic Compounds.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.1a
Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AH03-a	302-AH03-b	302-AH03-b	302-AI01-b	302-AI02-b	302-AI02-b	302-AI02-d	302-AI02-d	302-AI02-d	302-AI03-c	302-AI03-c	302-AI03-c	302-AI03-c
Cell	Soil Direct Contact	Soil to	302-AH03	302-AH03	302-AH03	302-AI01	302-AI02	302-AI02	302-AI02	302-AI02	302-AI02	302-AI03	302-AI03	302-AI03	302-AI03
Field Sample ID	Numeric Value	Groundwater	302-AH03-C4-VOC	302-AH03-C1-VOC	302-AH03-C2-VOC	302-AI01-C1-VOC	302-AI02-C1-VOC	302-AI02-C3-VOC	302-AI02-C2-VOC	302-AI02-C4-VOC	302-AI02-C5-VOC	302-AI03-C1-VOC	302-AI03-C2-VOC	302-AI03-C3-VOC	302-AI03-C4-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	7.6 - 7.8	1.1 - 1.2	2.7 - 2.9	3.2 - 3.4	0.9 - 1.1	3.4 - 3.5	2.7 - 2.9	6.1 - 6.2	8.5 - 8.7	0.6 - 0.8	2.1 - 2.3	3.0 - 3.2	5.2 - 5.3
Sample Date	(mg/kg)	(mg/kg)	11/9/2022	11/9/2022	11/9/2022	10/25/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022	10/27/2022	10/27/2022	10/27/2022	10/27/2022
VOCs															
Benzene	280	0.5	0.068 (0.00046)	0.0029 (0.0006)	0.0011 (0.00054)	U (0.00064)	U (0.0005)	0.00032 J (0.00046)	U (0.00047)	0.46 (0.026)	94 (2.6)	0.064 (0.033)	0.68 (0.028)	0.0064 (0.00057)	0.006 (0.0008)
Cumene	10000	2500	0.0022 (0.00093)	U (0.0012)	U (0.0011)	U (0.0013)	U (0.001)	U (0.00091)	U (0.00093)	U (0.00092)	U (0.26)	0.16 (0.066)	U (0.056)	U (0.0011)	U (0.0016)
1,2-Dibromoethane	3.7	0.005	U (0.00046)	U (0.0006)	U (0.00054)	U (0.00064)	U (0.0005)	U (0.00046)	U (0.00047)	U (0.00046)	U (0.13)	U (0.033)	U (0.028)	U (0.00057)	U (0.0008)
1,2-Dichloroethane	85	0.5	U (0.00093)	U (0.0012)	U (0.0011)	U (0.0013)	U (0.001)	U (0.00091)	U (0.00093)	0.013 J (0.052)	2.3 (0.26)	U (0.066)	U (0.056)	U (0.0011)	U (0.0016)
Ethyl Benzene	880	70	0.0013 (0.00093)	U (0.0012)	U (0.0011)	U (0.0013)	U (0.001)	U (0.00091)	U (0.00093)	0.00098 (0.00092)	0.69 (0.26)	0.059 J (0.066)	U (0.056)	U (0.0011)	U (0.0016)
Methyl tert-butyl ether	8500	2	U (0.0018)	U (0.0024)	U (0.0022)	U (0.0025)	U (0.002)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.53)	U (0.13)	U (0.11)	U (0.0023)	U (0.0032)
Toluene	10000	100	0.0022 (0.00093)	U (0.0012)	U (0.0011)	U (0.0013)	U (0.001)	U (0.00091)	U (0.00093)	0.2 (0.052)	190 (5.3)	U (0.066)	U (0.056)	U (0.0011)	U (0.0016)
1,2,4-Trimethylbenzene	4700	300	0.015 (0.0018)	U (0.0024)	U (0.0022)	U (0.0025)	U (0.002)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.53)	2.8 (0.13)	U (0.11)	U (0.0023)	U (0.0032)
1,3,5-Trimethylbenzene	4700	93	0.001 J (0.0018)	U (0.0024)	U (0.0022)	U (0.0025)	U (0.002)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.53)	4.6 (0.13)	U (0.11)	U (0.0023)	U (0.0032)
Xylenes (total)	7900	1000	0.000985 J (0.0018)	U (0.0024)	U (0.0022)	U (0.0025)	U (0.002)	U (0.0018)	U (0.0019)	0.00329 J (0.0018)	2.41 J (0.53)	0.633 J (0.13)	U (0.11)	U (0.0023)	U (0.0032)

Notes:

1 Concentrations are presented in mg/kg.

2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).

3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.

4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.

5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:

VOCs -- Volatile Organic Compounds.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.1a
Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AI04-a	302-AI04-a	302-AI04-a	302-AI04-a	302-AJ03-c	302-AJ03-c	302-AJ03-c	302-AJ03-c	302-AK02-a	302-AK02-a	302-AK02-a	302-AK02-d	302-AL02-a
Cell	Soil Direct Contact	Soil to	302-AI04	302-AI04	302-AI04	302-AI04	302-AJ03	302-AJ03	302-AJ03	302-AJ03	302-AK02	302-AK02	302-AK02	302-AK02	302-AL02
Field Sample ID	Numeric Value	Groundwater	302-AI04-C1-VOC	302-AI04-C2-VOC	302-AI04-C3-VOC	302-AI04-C4-VOC	302-AJ03-C1-VOC	302-AJ03-C2-VOC	302-AJ03-C3-VOC	302-AJ03-C4-VOC	302-AK02-C1-VOC	302-AK02-C3-VOC	302-AK02-C4-VOC	302-AK02-C2-VOC	302-AL02-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.3 - 0.5	2.1 - 2.3	3.7 - 3.8	5.0 - 5.2	1.8 - 2.0	2.4 - 2.6	4.6 - 4.7	6.7 - 6.9	0.5 - 0.6	2.3 - 2.4	3.0 - 3.2	1.8 - 2.0	1.5 - 1.7
Sample Date	(mg/kg)	(mg/kg)	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/25/2022	10/25/2022	10/25/2022	10/25/2022	11/11/2022
VOCs															
Benzene	280	0.5	0.0002 J (0.00054)	0.00019 J (0.0005)	1.2 (0.026)	1.1 (0.029)	0.00041 J (0.00059)	0.00049 J (0.00057)	0.009 (0.00046)	0.016 (0.00057)	0.0052 (0.0003)	U (0.001)	U (0.00048)	U (0.00058)	U (0.00054)
Cumene	10000	2500	0.00052 J (0.0011)	0.00013 J (0.001)	0.00035 J (0.00091)	0.0004 J (0.001)	U (0.0012)	U (0.0011)	U (0.00092)	U (0.0011)	U (0.0006)	U (0.0021)	U (0.00096)	U (0.0012)	U (0.0011)
1,2-Dibromoethane	3.7	0.005	U (0.00054)	U (0.0005)	U (0.00046)	U (0.0005)	U (0.00059)	U (0.00057)	U (0.00046)	U (0.00057)	U (0.0003)	U (0.001)	U (0.00048)	U (0.00058)	U (0.00054)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.001)	U (0.00091)	U (0.001)	U (0.0012)	U (0.0011)	U (0.00092)	U (0.0011)	U (0.0006)	U (0.0021)	U (0.00096)	U (0.0012)	U (0.0011)
Ethyl Benzene	880	70	0.00025 J (0.0011)	U (0.001)	U (0.00091)	U (0.001)	U (0.0012)	U (0.0011)	U (0.00092)	U (0.0011)	U (0.0006)	U (0.0021)	U (0.00096)	U (0.0012)	U (0.0011)
Methyl tert-butyl ether	8500	2	U (0.0022)	U (0.002)	U (0.0018)	U (0.002)	U (0.0024)	U (0.0023)	U (0.0018)	U (0.0023)	U (0.0012)	U (0.0042)	U (0.0019)	U (0.0023)	U (0.0022)
Toluene	10000	100	U (0.0011)	U (0.001)	U (0.00091)	U (0.001)	U (0.0012)	U (0.0011)	U (0.00092)	U (0.0011)	U (0.0006)	U (0.0021)	U (0.00096)	U (0.0012)	U (0.0011)
1,2,4-Trimethylbenzene	4700	300	0.00036 J (0.0022)	U (0.002)	U (0.0018)	U (0.002)	U (0.0024)	U (0.0023)	U (0.0018)	U (0.0023)	U (0.0012)	U (0.0042)	U (0.0019)	U (0.0023)	U (0.0022)
1,3,5-Trimethylbenzene	4700	93	U (0.0022)	U (0.002)	U (0.0018)	U (0.002)	U (0.0024)	U (0.0023)	U (0.0018)	U (0.0023)	U (0.0012)	U (0.0042)	U (0.0019)	U (0.0023)	U (0.0022)
Xylenes (total)	7900	1000	U (0.0022)	U (0.002)	U (0.0018)	U (0.002)	U (0.0024)	U (0.0023)	U (0.0018)	U (0.0023)	U (0.0012)	U (0.0042)	U (0.0019)	U (0.0023)	0.00149 J (0.0022)

Notes:

1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:

VOCs -- Volatile Organic Compounds.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.1a
Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AL02-a	302-AL02-c	302-AL02-d	302-AM01-c	302-AM01-c	302-AM01-c	302-AM01-c	302-AO01-a
Cell	Soil Direct Contact	Soil to	302-AL02	302-AL02	302-AL02	302-AM01	302-AM01	302-AM01	302-AM01	302-AO01
Field Sample ID	Numeric Value	Groundwater	302-AL02-C4-VOC	302-AL02-C1-VOC	302-AL02-C2-VOC	302-AM01-C1-VOC	302-AM01-C2-VOC	302-AM01-C3-VOC	302-AM01-C4-VOC	302-AO01-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.1 - 2.3	0.0 - 0.2	1.1 - 1.2	0.2 - 0.3	0.6 - 0.8	0.9 - 1.1	1.4 - 1.5	0.6 - 0.8
Sample Date	(mg/kg)	(mg/kg)	11/11/2022	11/11/2022	11/11/2022	10/24/2022	10/24/2022	10/24/2022	10/24/2022	10/24/2022
VOCs										
Benzene	280	0.5	0.00083 (0.00046)	U (0.00054)	U (0.00063)	2.8 (0.027)	0.0041 (0.00053)	U (0.00054)	0.00023 J (0.00046)	U (0.001)
Cumene	10000	2500	U (0.00093)	U (0.0011)	U (0.0013)	0.0088 J (0.055)	U (0.001)	U (0.0011)	U (0.00093)	U (0.0021)
1,2-Dibromoethane	3.7	0.005	U (0.00046)	U (0.00054)	U (0.00063)	U (0.027)	U (0.00053)	U (0.00054)	U (0.00046)	U (0.001)
1,2-Dichloroethane	85	0.5	U (0.00093)	U (0.0011)	U (0.0013)	U (0.055)	U (0.001)	U (0.0011)	U (0.00093)	U (0.0021)
Ethyl Benzene	880	70	U (0.00093)	U (0.0011)	U (0.0013)	0.019 J (0.055)	U (0.001)	U (0.0011)	U (0.00093)	U (0.0021)
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.0022)	U (0.0025)	U (0.11)	U (0.0021)	U (0.0021)	U (0.0019)	U (0.0042)
Toluene	10000	100	U (0.00093)	U (0.0011)	U (0.0013)	0.092 (0.055)	U (0.001)	U (0.0011)	U (0.00093)	U (0.0021)
1,2,4-Trimethylbenzene	4700	300	U (0.0019)	0.00037 J (0.0022)	U (0.0025)	0.036 J (0.11)	U (0.0021)	U (0.0021)	U (0.0019)	U (0.0042)
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.0022)	U (0.0025)	0.01 J (0.11)	U (0.0021)	U (0.0021)	U (0.0019)	U (0.0042)
Xylenes (total)	7900	1000	0.00125 J (0.0019)	0.00148 J (0.0022)	0.00171 J (0.0025)	0.151 J (0.11)	U (0.0021)	U (0.0021)	U (0.0019)	U (0.0042)

Notes:

1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:

VOCs -- Volatile Organic Compounds.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.1b
Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Area 2)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	201-A01-b	301-D01-f	301-E02-e	301-F01-d	301-G01-c	301-H01-b	301-N02-e	301-O02-c	301-Q04-e
Cell	Soil Direct Contact	Soil to	201-A01	301-D01	301-E02	301-F01	301-G01	301-H01	301-N02	301-O02	301-Q04
Field Sample ID	Numeric Value	Groundwater	201-A01-D1-VOC	301-D01-D1-VOC	301-E02-D1-VOC	301-F01-D1-VOC	301-G01-D1-VOC	301-H01-D1-VOC	301-N02-D1-VOC	301-O02-D1-VOC	301-Q04-D1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.5 - 2.7	0.5 - 0.6	0.3 - 0.5	3.4 - 3.5	5.2 - 5.3	4.1 - 4.3	4.4 - 4.6	2.9 - 3.0	5.2 - 5.3
Sample Date	(mg/kg)	(mg/kg)	3/28/2023	3/28/2023	3/28/2023	3/29/2023	3/30/2023	3/30/2023	3/31/2023	3/30/2023	3/31/2023
VOCs											
Benzene	280	0.5	0.0008 (0.00053)	1.2 (0.029)	200 (0.65)	1.7 (0.032)	16 (0.072)	2.3 (0.034)	4.2 (0.027)	0.89 (0.03)	U (0.00043)
Cumene	10000	2500	0.038 (0.0011)	31 (0.29)	24 (1.3)	4.7 (0.065)	3 (0.14)	0.42 (0.069)	0.57 (0.055)	0.85 (0.061)	U (0.00086)
1,2-Dibromoethane	3.7	0.005	U (0.00053)	U (0.029)	U (0.65)	U (0.032)	U (0.072)	U (0.034)	U (0.027)	U (0.03)	U (0.00043)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.059)	6 (1.3)	U (0.065)	U (0.14)	U (0.069)	U (0.055)	U (0.061)	U (0.00086)
Ethyl Benzene	880	70	0.0018 (0.0011)	7.7 (0.059)	420 (13)	7.3 (0.065)	27 (0.14)	2.7 (0.069)	1.2 (0.055)	0.49 (0.061)	U (0.00086)
Methyl tert-butyl ether	8500	2	U (0.0021)	U (0.12)	U (2.6)	U (0.13)	0.51 (0.29)	U (0.14)	U (0.11)	U (0.12)	U (0.0017)
Toluene	10000	100	0.0016 (0.0011)	0.41 (0.059)	2000 (13)	0.11 (0.065)	34 (0.14)	3.1 (0.069)	0.065 (0.055)	0.057 J (0.061)	U (0.00086)
1,2,4-Trimethylbenzene	4700	300	0.023 (0.0021)	4.8 (0.12)	610 (26)	13 (0.13)	57 (1.1)	8.5 (0.14)	2.6 (0.11)	1.5 (0.12)	U (0.0017)
1,3,5-Trimethylbenzene	4700	93	0.0099 (0.0021)	0.76 (0.12)	210 (2.6)	3.9 (0.13)	17 (0.29)	2.7 (0.14)	0.81 (0.11)	0.92 (0.12)	U (0.0017)
Xylenes (total)	7900	1000	0.0094 J (0.0021)	2.67 J (0.12)	2520 J (26)	28.3 J (0.13)	158 J (1.1)	13.4 J (0.14)	2.539 J (0.11)	1.546 J (0.12)	U (0.0017)

Notes:
1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
5 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:
VOCs -- Volatile Organic Compounds.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.2a
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	301-AC01-C1	301-AC01-C2	301-AC01-C3	301-AC01-C4	301-AC01-C5	301-L01-C1	301-T03-C1	301-T03-C2	301-T03-C3	301-T03-C4	301-T03-C5	302-AD01-C1
Cell	Direct Contact Numeric	Groundwater Numeric	301-AC01	301-AC01	301-AC01	301-AC01	301-AC01	301-L01	301-T03	301-T03	301-T03	301-T03	301-T03	302-AD01
Field Sample ID	Value (0-2 ft bgs)	Value	301-AC01-C1-COMP	301-AC01-C2-COMP	301-AC01-C3-COMP	301-AC01-C4-COMP	301-AC01-C5-COMP	301-L01-C1-COMP	301-T03-C1-COMP	301-T03-C2-COMP	301-T03-C3-COMP	301-T03-C4-COMP	301-T03-C5-COMP	302-AD01-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	11/4/2022	11/4/2022	11/7/2022	11/7/2022	11/7/2022	10/21/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	11/4/2022
PAHs														
Anthracene	190000	350	U (0.11)	U (0.12)	U (0.13)	U (0.11)	U (0.11)	U (0.12)	U (0.53)	U (0.1)	U (0.53)	U (0.58)	U (0.12)	0.5 (0.12)
Benzo(a)anthracene	130	340	0.11 (0.11)	U (0.12)	U (0.13)	U (0.11)	U (0.11)	U (0.12)	U (0.53)	0.028 J (0.1)	U (0.53)	U (0.58)	0.022 J (0.12)	1.4 (0.12)
Benzo(a)pyrene	91	46	0.13 J (0.15)	U (0.15)	U (0.17)	U (0.15)	U (0.15)	U (0.15)	U (0.71)	U (0.14)	U (0.7)	U (0.77)	U (0.16)	1.6 (0.16)
Benzo(b)fluoranthene	76	170	0.16 (0.11)	U (0.12)	0.037 J (0.13)	U (0.11)	U (0.11)	U (0.12)	U (0.53)	0.031 J (0.1)	U (0.53)	U (0.58)	U (0.12)	1.9 (0.12)
Benzo(g,h,i)perylene	190000	180	0.078 J (0.15)	U (0.15)	U (0.17)	U (0.15)	U (0.15)	U (0.15)	U (0.71)	0.32 (0.14)	U (0.7)	U (0.77)	U (0.16)	0.94 (0.16)
Chrysene	760	230	0.11 (0.11)	U (0.12)	0.022 J (0.13)	U (0.11)	U (0.11)	U (0.12)	U (0.53)	0.038 J (0.1)	U (0.53)	U (0.58)	0.032 J (0.12)	1.4 (0.12)
Fluorene	130000	3800	U (0.19)	U (0.19)	U (0.21)	U (0.19)	U (0.18)	U (0.19)	U (0.89)	U (0.18)	U (0.88)	U (0.97)	U (0.19)	0.28 (0.2)
Naphthalene	66	25	U (0.19)	U (0.19)	U (0.21)	U (0.19)	U (0.18)	U (0.19)	U (0.89)	U (0.18)	U (0.88)	U (0.97)	U (0.19)	0.31 (0.2)
Phenanthrene	190000	10000	0.078 J (0.11)	U (0.12)	U (0.13)	U (0.11)	U (0.11)	U (0.12)	U (0.53)	0.031 J (0.1)	U (0.53)	U (0.58)	U (0.12)	1.9 (0.12)
Pyrene	96000	2200	0.17 (0.11)	U (0.12)	0.032 J (0.13)	U (0.11)	U (0.11)	U (0.12)	U (0.53)	0.039 J (0.1)	U (0.53)	U (0.58)	0.061 J (0.12)	2.3 (0.12)
Metals														
Lead	1000	450	130 (2.27)	7.41 (2.36)	7.79 (2.5)	7.55 (2.27)	7.54 (2.17)	7.13 (2.31)	43.6 (2.14)	10.7 (2.11)	16.4 (2.08)	25.7 (2.21)	37.2 (2.34)	1350 (2.42)

Notes:
1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 No concentrations exceed the Site-specific standard of 2,520 mg/kg for lead.
6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:
PAHs -- Polycyclic Aromatic Hydrocarbons.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.2a
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	302-AD01-C2	302-AD01-C3	302-AD02-C1	302-AD02-C2	302-AD02-C3	302-AD02-C4	302-AD02-C5	302-AE01-C1	302-AE01-C2	302-AE01-C3	302-AE01-C4	302-AE01-C5
Cell	Direct Contact Numeric	Groundwater Numeric	302-AD01	302-AD01	302-AD02	302-AD02	302-AD02	302-AD02	302-AD02	302-AE01	302-AE01	302-AE01	302-AE01	302-AE01
Field Sample ID	Value (0-2 ft bgs)	Value	302-AD01-C2-COMP	302-AD01-C3-COMP	302-AD02-C1-COMP	302-AD02-C2-COMP	302-AD02-C3-COMP	302-AD02-C4-COMP	302-AD02-C5-COMP	302-AE01-C1-COMP	302-AE01-C2-COMP	302-AE01-C3-COMP	302-AE01-C4-COMP	302-AE01-C5-COMP
Sample Date	(mg/kg)	(mg/kg)	11/4/2022	11/8/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022	10/28/2022	10/28/2022	10/28/2022	10/28/2022	10/28/2022
PAHs														
Anthracene	190000	350	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	0.32 (0.12)	0.079 J (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	0.092 J (0.11)
Benzo(a)anthracene	130	340	0.055 J (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	0.022 J (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)pyrene	91	46	0.064 J (0.16)	U (0.14)	U (0.15)	U (0.15)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.14)
Benzo(b)fluoranthene	76	170	0.071 J (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	0.039 J (0.16)	U (0.14)	U (0.15)	U (0.15)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.14)
Chrysene	760	230	0.047 J (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	0.024 J (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)
Fluorene	130000	3800	U (0.2)	U (0.18)	U (0.19)	U (0.18)	U (0.19)	0.97 (0.19)	0.21 (0.18)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	0.32 (0.18)
Naphthalene	66	25	U (0.2)	U (0.18)	U (0.19)	U (0.18)	U (0.19)	U (0.19)	U (0.18)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	0.068 J (0.18)
Phenanthrene	190000	10000	0.051 J (0.12)	0.022 J (0.11)	U (0.12)	U (0.11)	U (0.11)	1.9 (0.12)	0.42 (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	0.78 (0.11)
Pyrene	96000	2200	0.081 J (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	0.23 (0.12)	0.045 J (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	0.089 J (0.11)
Metals														
Lead	1000	450	53.4 (2.38)	3.9 (2.19)	29 (2.3)	7.06 (2.21)	7.01 (2.27)	120 (2.17)	7.57 (2.13)	2.75 (2.32)	6.75 (2.57)	5.67 (2.39)	5.43 (2.41)	5.2 (2.04)

Notes:
1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 No concentrations exceed the Site-specific standard of 2,520 mg/kg for lead.
6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:
PAHs -- Polycyclic Aromatic Hydrocarbons.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.2a
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	302-AE02-C1	302-AE02-C2	302-AE02-C3	302-AE02-C4	302-AF01-C1	302-AF01-C2	302-AF01-C3	302-AF02-C1	302-AF02-C2	302-AF02-C3	302-AF02-C4	302-AG01-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AE02	302-AE02	302-AE02	302-AE02	302-AF01	302-AF01	302-AF01	302-AF02	302-AF02	302-AF02	302-AF02	302-AG01
Field Sample ID	Value (0-2 ft bgs)	Value	302-AE02-C1-COMP	302-AE02-C2-COMP	302-AE02-C3-COMP	302-AE02-C4-COMP	302-AF01-C1-COMP	302-AF01-C2-COMP	302-AF01-C3-COMP	302-AF02-C1-COMP	302-AF02-C2-COMP	302-AF02-C3-COMP	302-AF02-C4-COMP	302-AG01-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	11/8/2022	11/8/2022	11/8/2022	11/8/2022	10/31/2022	10/31/2022	10/31/2022	11/3/2022	11/3/2022	11/3/2022	11/3/2022	11/2/2022
PAHs														
Anthracene	190000	350	0.22 (0.11)	U (0.1)	U (0.1)	0.84 (0.12)	U (0.12)	U (0.11)	0.085 J (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	U (0.14)
Benzo(a)anthracene	130	340	0.51 (0.11)	U (0.1)	U (0.1)	0.048 J (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	U (0.14)
Benzo(a)pyrene	91	46	0.4 (0.15)	U (0.14)	U (0.14)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.15)	U (0.15)	U (0.19)
Benzo(b)fluoranthene	76	170	0.51 (0.11)	U (0.1)	U (0.1)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	U (0.14)
Benzo(g,h,i)perylene	190000	180	0.22 (0.15)	U (0.14)	U (0.14)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.15)	U (0.15)	U (0.19)
Chrysene	760	230	0.49 (0.11)	U (0.1)	U (0.1)	0.059 J (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	U (0.14)
Fluorene	130000	3800	0.12 J (0.19)	U (0.17)	U (0.17)	U (0.2)	U (0.19)	U (0.19)	0.25 (0.18)	U (0.19)	U (0.2)	U (0.19)	0.031 J (0.18)	U (0.24)
Naphthalene	66	25	0.086 J (0.19)	U (0.17)	U (0.17)	9.1 (1)	U (0.19)	U (0.19)	0.029 J (0.18)	U (0.19)	U (0.2)	U (0.19)	U (0.18)	U (0.24)
Phenanthrene	190000	10000	0.86 (0.11)	U (0.1)	0.037 J (0.1)	6.8 (0.12)	U (0.12)	U (0.11)	0.58 (0.11)	U (0.11)	U (0.12)	U (0.11)	0.08 J (0.11)	U (0.14)
Pyrene	96000	2200	0.67 (0.11)	U (0.1)	U (0.1)	0.82 (0.12)	U (0.12)	U (0.11)	0.053 J (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	U (0.14)
Metals														
Lead	1000	450	103 (2.26)	4.13 (2.06)	4.08 (2.09)	4.44 (2.41)	7.8 (2.28)	8.3 (2.25)	3.41 (2.11)	8.06 (2.22)	7.37 (2.38)	6.46 (2.32)	6.04 (2.14)	336 (2.9)

Notes:
1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 No concentrations exceed the Site-specific standard of 2,520 mg/kg for lead.
6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:
PAHs -- Polycyclic Aromatic Hydrocarbons.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.2a
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	302-AG01-C2	302-AG01-C3	302-AG01-C4	302-AG01-C5	302-AG02-C1	302-AG02-C2	302-AG02-C3	302-AG02-C4	302-AH01-C1	302-AH01-C2	302-AH01-C3	302-AH02-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AG01	302-AG01	302-AG01	302-AG01	302-AG02	302-AG02	302-AG02	302-AG02	302-AH01	302-AH01	302-AH01	302-AH02
Field Sample ID	Value (0-2 ft bgs)	Value	302-AG01-C2-COMP	302-AG01-C3-COMP	302-AG01-C4-COMP	302-AG01-C5-COMP	302-AG02-C1-COMP	302-AG02-C2-COMP	302-AG02-C3-COMP	302-AG02-C4-COMP	302-AH01-C1-COMP	302-AH01-C2-COMP	302-AH01-C3-COMP	302-AH02-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	11/2/2022	11/2/2022	11/2/2022	11/2/2022	11/1/2022	11/1/2022	11/1/2022	11/1/2022	11/10/2022	11/10/2022	11/10/2022	11/9/2022
PAHs														
Anthracene	190000	350	U (0.11)	U (0.12)	U (0.12)	U (0.11)	U (0.14)	U (0.12)	U (0.11)	1.5 (0.11)	0.28 (0.12)	U (0.12)	U (0.12)	U (0.13)
Benzo(a)anthracene	130	340	U (0.11)	U (0.12)	U (0.12)	0.024 J (0.11)	U (0.14)	U (0.12)	U (0.11)	0.022 J (0.11)	0.96 (0.12)	U (0.12)	U (0.12)	U (0.13)
Benzo(a)pyrene	91	46	U (0.14)	U (0.16)	U (0.16)	U (0.15)	U (0.19)	U (0.16)	U (0.14)	U (0.15)	0.77 (0.16)	U (0.16)	U (0.16)	U (0.18)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.12)	U (0.12)	0.042 J (0.11)	U (0.14)	U (0.12)	U (0.11)	U (0.11)	1 (0.12)	U (0.12)	U (0.12)	U (0.13)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (0.16)	U (0.16)	0.035 J (0.15)	U (0.19)	U (0.16)	U (0.14)	U (0.15)	0.3 (0.16)	U (0.16)	U (0.16)	U (0.18)
Chrysene	760	230	U (0.11)	U (0.12)	U (0.12)	0.025 J (0.11)	U (0.14)	U (0.12)	U (0.11)	0.035 J (0.11)	1.1 (0.12)	U (0.12)	U (0.12)	U (0.13)
Fluorene	130000	3800	U (0.18)	U (0.2)	U (0.19)	U (0.19)	U (0.23)	U (0.2)	U (0.18)	4.5 (0.19)	0.38 (0.2)	U (0.2)	U (0.2)	U (0.22)
Naphthalene	66	25	U (0.18)	U (0.2)	U (0.19)	U (0.19)	U (0.23)	U (0.2)	U (0.18)	6 (0.19)	0.21 (0.2)	U (0.2)	U (0.2)	U (0.22)
Phenanthrene	190000	10000	U (0.11)	U (0.12)	U (0.12)	0.029 J (0.11)	U (0.14)	U (0.12)	U (0.11)	12 (1.1)	3 (0.12)	U (0.12)	U (0.12)	U (0.13)
Pyrene	96000	2200	U (0.11)	U (0.12)	U (0.12)	0.033 J (0.11)	U (0.14)	U (0.12)	U (0.11)	0.83 (0.11)	1.7 (0.12)	U (0.12)	U (0.12)	U (0.13)
Metals														
Lead	1000	450	451 (2.18)	424 (2.31)	3.32 (2.22)	8.23 (2.16)	8.95 (2.77)	1.85 J (2.38)	6.81 (2.06)	5.99 (2.2)	30.7 (2.39)	13.9 (2.39)	11.8 (2.35)	5.82 (2.63)

Notes:
1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 No concentrations exceed the Site-specific standard of 2,520 mg/kg for lead.
6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:
PAHs -- Polycyclic Aromatic Hydrocarbons.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.2a
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	302-AH02-C2	302-AH02-C3	302-AH02-C4	302-AH03-C1	302-AH03-C2	302-AH03-C3	302-AH03-C4	302-AI01-C1	302-AI02-C1	302-AI02-C2	302-AI02-C3	302-AI02-C4
Cell	Direct Contact Numeric	Groundwater Numeric	302-AH02	302-AH02	302-AH02	302-AH03	302-AH03	302-AH03	302-AH03	302-AI01	302-AI02	302-AI02	302-AI02	302-AI02
Field Sample ID	Value (0-2 ft bgs)	Value	302-AH02-C2-COMP	302-AH02-C3-COMP	302-AH02-C4-COMP	302-AH03-C1-COMP	302-AH03-C2-COMP	302-AH03-C3-COMP	302-AH03-C4-COMP	302-AI01-C1-COMP	302-AI02-C1-COMP	302-AI02-C2-COMP	302-AI02-C3-COMP	302-AI02-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022	10/25/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022
PAHs														
Anthracene	190000	350	U (0.11)	U (0.11)	0.82 (0.12)	U (0.11)	U (0.12)	1 (0.11)	2 (0.22)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.11)	0.031 J (0.12)	0.13 (0.11)	U (0.12)	0.054 J (0.11)	0.042 J (0.22)	0.13 (0.12)	0.12 (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(a)pyrene	91	46	U (0.14)	U (0.15)	U (0.17)	0.29 (0.15)	U (0.16)	U (0.15)	U (0.29)	0.34 (0.16)	0.12 J (0.16)	U (0.16)	U (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.11)	U (0.12)	0.27 (0.11)	U (0.12)	U (0.11)	U (0.22)	0.2 (0.12)	0.13 (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (0.15)	U (0.17)	0.19 (0.15)	U (0.16)	U (0.15)	U (0.29)	0.6 (0.16)	0.057 J (0.16)	U (0.16)	U (0.15)	U (0.16)
Chrysene	760	230	U (0.11)	U (0.11)	0.061 J (0.12)	0.11 (0.11)	U (0.12)	0.083 J (0.11)	0.064 J (0.22)	0.19 (0.12)	0.1 J (0.12)	U (0.12)	U (0.11)	U (0.12)
Fluorene	130000	3800	U (0.18)	U (0.19)	3.8 (0.21)	U (0.19)	U (0.2)	4.6 (0.19)	6.7 (0.36)	U (0.21)	U (0.2)	U (0.2)	U (0.18)	U (0.2)
Naphthalene	66	25	U (0.18)	U (0.19)	7.5 (0.21)	U (0.19)	U (0.2)	18 (0.95)	13 (1.8)	U (0.21)	U (0.2)	U (0.2)	U (0.18)	U (0.2)
Phenanthrene	190000	10000	U (0.11)	U (0.11)	8.6 (1.2)	0.048 J (0.11)	U (0.12)	18 (0.57)	15 (1.1)	0.052 J (0.12)	0.1 J (0.12)	U (0.12)	U (0.11)	U (0.12)
Pyrene	96000	2200	U (0.11)	U (0.11)	0.77 (0.12)	0.078 J (0.11)	U (0.12)	1.6 (0.11)	1.5 (0.22)	0.051 J (0.12)	0.13 (0.12)	U (0.12)	U (0.11)	U (0.12)
Metals														
Lead	1000	450	5.06 (2.17)	3.86 (2.25)	6.19 (2.38)	8.4 (2.31)	9.71 (2.29)	2.99 (2.28)	4.58 (2.1)	184 (2.5)	55.4 (2.33)	8.69 (2.4)	6.58 (2.13)	8.46 (2.28)

Notes:

1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 No concentrations exceed the Site-specific standard of 2,520 mg/kg for lead.
6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:

PAHs -- Polycyclic Aromatic Hydrocarbons.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.2a
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	302-AI02-C5	302-AI03-C1	302-AI03-C2	302-AI03-C3	302-AI03-C4	302-AI04-C1	302-AI04-C2	302-AI04-C3	302-AI04-C4	302-AJ03-C1	302-AJ03-C2	302-AJ03-C3
Cell	Direct Contact Numeric	Groundwater Numeric	302-AI02	302-AI03	302-AI03	302-AI03	302-AI03	302-AI04	302-AI04	302-AI04	302-AI04	302-AJ03	302-AJ03	302-AJ03
Field Sample ID	Value (0-2 ft bgs)	Value	302-AI02-C5-COMP	302-AI03-C1-COMP	302-AI03-C2-COMP	302-AI03-C3-COMP	302-AI03-C4-COMP	302-AI04-C1-COMP	302-AI04-C2-COMP	302-AI04-C3-COMP	302-AI04-C4-COMP	302-AJ03-C1-COMP	302-AJ03-C2-COMP	302-AJ03-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	11/10/2022	10/27/2022	10/27/2022	10/27/2022	10/27/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022
PAHs														
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	U (0.11)	U (0.11)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	0.031 J (0.11)	0.098 J (0.11)	U (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.15)	U (0.15)	U (0.14)	U (0.15)	U (0.16)	U (0.14)	U (0.16)	U (0.18)	U (0.14)	0.089 J (0.15)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	0.033 J (0.11)	0.12 (0.11)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.15)	U (0.15)	U (0.14)	U (0.15)	U (0.16)	U (0.14)	U (0.16)	U (0.18)	U (0.14)	0.059 J (0.15)	U (0.15)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	0.027 J (0.11)	0.099 J (0.11)	U (0.11)
Fluorene	130000	3800	U (0.19)	0.091 J (0.19)	U (0.19)	U (0.17)	U (0.19)	U (0.19)	U (0.17)	U (0.19)	U (0.22)	U (0.18)	U (0.19)	U (0.19)
Naphthalene	66	25	U (0.19)	U (0.19)	U (0.19)	U (0.17)	U (0.19)	U (0.19)	U (0.17)	U (0.19)	U (0.22)	U (0.18)	0.031 J (0.19)	U (0.19)
Phenanthrene	190000	10000	U (0.12)	0.2 (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	0.044 J (0.11)	0.11 (0.11)	U (0.11)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	0.022 J (0.12)	U (0.1)	U (0.12)	U (0.13)	0.05 J (0.11)	0.15 (0.11)	U (0.11)
Metals														
Lead	1000	450	8.31 (2.28)	6.89 (2.23)	8 (2.24)	3.88 (2.03)	3.39 (2.2)	6.88 (2.27)	2.04 (1.99)	5.87 (2.38)	5.32 (2.65)	56.2 (2.13)	3.91 (2.26)	2.59 (2.28)

Notes:
1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 No concentrations exceed the Site-specific standard of 2,520 mg/kg for lead.
6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:
PAHs -- Polycyclic Aromatic Hydrocarbons.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.2a
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	302-AJ03-C4	302-AK02-C1	302-AK02-C2	302-AK02-C3	302-AK02-C4	302-AL02-C1	302-AL02-C2	302-AL02-C3	302-AL02-C4	302-AM01-C1	302-AM01-C2	302-AM01-C3
Cell	Direct Contact Numeric	Groundwater Numeric	302-AJ03	302-AK02	302-AK02	302-AK02	302-AK02	302-AL02	302-AL02	302-AL02	302-AL02	302-AM01	302-AM01	302-AM01
Field Sample ID	Value (0-2 ft bgs)	Value	302-AJ03-C4-COMP	302-AK02-C1-COMP	302-AK02-C2-COMP	302-AK02-C3-COMP	302-AK02-C4-COMP	302-AL02-C1-COMP	302-AL02-C2-COMP	302-AL02-C3-COMP	302-AL02-C4-COMP	302-AM01-C1-COMP	302-AM01-C2-COMP	302-AM01-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	10/26/2022	10/25/2022	10/25/2022	10/25/2022	10/25/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	10/24/2022	10/24/2022	10/24/2022
PAHs														
Anthracene	190000	350	U (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.1)	U (0.1)	0.061 J (0.11)	0.23 (0.11)	0.34 (0.12)	0.092 J (0.11)	U (0.11)	U (0.11)
Benzo(a)anthracene	130	340	U (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.1)	0.025 J (0.1)	0.38 (0.11)	0.29 (0.11)	0.46 (0.12)	0.45 (0.11)	0.081 J (0.11)	U (0.11)
Benzo(a)pyrene	91	46	U (0.15)	U (0.14)	U (0.16)	U (0.15)	U (0.14)	U (0.14)	0.69 (0.15)	0.22 (0.15)	0.34 (0.16)	0.55 (0.15)	0.089 J (0.14)	U (0.14)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.1)	0.035 J (0.1)	0.74 (0.11)	0.18 (0.11)	0.33 (0.12)	0.61 (0.11)	0.21 (0.11)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.14)	U (0.16)	U (0.15)	U (0.14)	0.023 J (0.14)	0.46 (0.15)	0.17 (0.15)	0.2 (0.16)	0.4 (0.15)	0.043 J (0.14)	U (0.14)
Chrysene	760	230	U (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.1)	0.027 J (0.1)	0.42 (0.11)	0.62 (0.11)	0.6 (0.12)	0.42 (0.11)	0.13 (0.11)	U (0.11)
Fluorene	130000	3800	U (0.19)	U (0.18)	U (0.2)	U (0.19)	U (0.18)	U (0.17)	0.026 J (0.18)	0.11 J (0.19)	0.27 (0.2)	0.031 J (0.19)	U (0.18)	U (0.18)
Naphthalene	66	25	U (0.19)	U (0.18)	U (0.2)	U (0.19)	U (0.18)	U (0.17)	0.14 J (0.18)	0.083 J (0.19)	0.13 J (0.2)	0.046 J (0.19)	U (0.18)	U (0.18)
Phenanthrene	190000	10000	U (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.1)	0.024 J (0.1)	0.3 (0.11)	0.18 (0.11)	0.76 (0.12)	0.35 (0.11)	U (0.11)	U (0.11)
Pyrene	96000	2200	U (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.1)	0.047 J (0.1)	0.55 (0.11)	0.59 (0.11)	0.79 (0.12)	0.46 (0.11)	0.075 J (0.11)	U (0.11)
Metals														
Lead	1000	450	4.39 (2.2)	6.74 (2.07)	4.72 (2.4)	3.79 (2.26)	5.62 (2.08)	18.8 (2.02)	132 (2.14)	353 (2.27)	3.64 (2.32)	119 (2.15)	11.9 (2.12)	52.3 (2.09)

Notes:
1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 No concentrations exceed the Site-specific standard of 2,520 mg/kg for lead.
6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:
PAHs -- Polycyclic Aromatic Hydrocarbons.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.2a
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Area 1)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell Field Sample ID Sample Date	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	302-AM01-C4 302-AM01 302-AM01-C4-COMP 10/24/2022	302-AO01-C1 302-AO01 302-AO01-C1-COMP 10/24/2022
PAHs				
Anthracene	190000	350	U (0.11)	U (0.1)
Benzo(a)anthracene	130	340	U (0.11)	0.027 J (0.1)
Benzo(a)pyrene	91	46	U (0.15)	U (0.14)
Benzo(b)fluoranthene	76	170	U (0.11)	0.047 J (0.1)
Benzo(g,h,i)perylene	190000	180	U (0.15)	0.036 J (0.14)
Chrysene	760	230	U (0.11)	0.064 J (0.1)
Fluorene	130000	3800	U (0.19)	U (0.17)
Naphthalene	66	25	U (0.19)	U (0.17)
Phenanthrene	190000	10000	U (0.11)	U (0.1)
Pyrene	96000	2200	U (0.11)	0.04 J (0.1)
Metals				
Lead	1000	450	21.4 (2.14)	5.81 (1.99)

Notes:
1 Concentrations are presented in mg/kg.
2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
5 No concentrations exceed the Site-specific standard of 2,520 mg/kg for lead.
6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

Abbreviations:
PAHs -- Polycyclic Aromatic Hydrocarbons.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.2b
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Area 2)
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Direct	Non-Residential Soil to	201-A01-D1	301-D01-D1	301-E02-D1	301-F01-D1	301-G01-D1	301-H01-D1	301-N02-D1	301-O02-D1	301-Q04-D1
Cell	Contact Numeric Value	Groundwater Numeric	201-A01	301-D01	301-E02	301-F01	301-G01	301-H01	301-N02	301-O02	301-Q04
Field Sample ID	(0-2 ft bgs)	Value	201-A01-D1-COMP	301-D01-D1-COMP	301-E02-D1-COMP	301-F01-D1-COMP	301-G01-D1-COMP	301-H01-D1-COMP	301-N02-D1-COMP	301-O02-D1-COMP	301-Q04-D1-COMP
Sample Date	(mg/kg)	(mg/kg)	3/28/2023	3/28/2023	3/28/2023	3/29/2023	3/30/2023	3/30/2023	3/31/2023	3/30/2023	3/31/2023
PAHs											
Anthracene	190000	350	0.59 (0.12)	U (0.11)	U (0.12)	0.22 (0.12)	0.12 (0.12)	0.042 J (0.11)	0.62 J (1.2)	U (0.11)	0.26 (0.12)
Benzo(a)anthracene	130	340	1 (0.12)	0.026 J (0.11)	U (0.12)	0.29 (0.12)	0.056 J (0.12)	U (0.11)	U (1.2)	U (0.11)	0.59 (0.12)
Benzo(a)pyrene	91	46	0.99 (0.16)	U (0.15)	U (0.16)	0.25 (0.16)	U (0.16)	U (0.15)	U (1.6)	U (0.15)	0.56 (0.16)
Benzo(b)fluoranthene	76	170	1.2 (0.12)	U (0.11)	U (0.12)	0.3 (0.12)	0.036 J (0.12)	U (0.11)	U (1.2)	U (0.11)	0.58 (0.12)
Benzo(g,h,i)perylene	190000	180	0.52 (0.16)	U (0.15)	0.032 J (0.16)	0.086 J (0.16)	U (0.16)	U (0.15)	U (1.6)	U (0.15)	0.26 (0.16)
Chrysene	760	230	0.99 (0.12)	0.02 J (0.11)	U (0.12)	0.27 (0.12)	0.05 J (0.12)	U (0.11)	U (1.2)	U (0.11)	0.52 (0.12)
Fluorene	130000	3800	0.36 (0.2)	U (0.19)	U (0.19)	0.14 J (0.21)	0.29 (0.2)	0.26 (0.19)	4 (2)	0.1 J (0.19)	0.077 J (0.2)
Naphthalene	66	25	0.15 (0.041)	0.13 (0.038)	1.4 (0.039)	0.23 (0.041)	1.8 (0.039)	3.8 (0.038)	29 (0.4)	0.096 (0.038)	0.049 (0.04)
Phenanthrene	190000	10000	2.5 (0.12)	0.043 J (0.11)	0.029 J (0.12)	0.76 (0.12)	0.56 (0.12)	0.42 (0.11)	5 (1.2)	0.16 (0.11)	0.97 (0.12)
Pyrene	96000	2200	2 (0.12)	0.034 J (0.11)	0.029 J (0.12)	0.51 (0.12)	0.16 (0.12)	0.057 J (0.11)	0.41 J (1.2)	0.023 J (0.11)	1 (0.12)
Metals											
Lead	1000	450	2540 (2.4)	59.4 (2.3)	1640 (2.25)	12.9 (2.4)	8.38 (2.38)	19.6 (2.26)	8.41 (2.34)	7.52 (2.25)	72.7 (2.33)

Notes:

1 Concentrations are presented in mg/kg.

2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).

3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.

4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.

5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,520 mg/kg for lead.

6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the

Abbreviations:

PAHs -- Polycyclic Aromatic Hydrocarbons.
ft bgs -- Feet Below Ground Surface.
mg/kg -- Milligram per Kilogram.

Table 3.3
Historical and PESRM Sampling Results Summary
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Chem Group	Chemical	Cell	Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW (mg/kg)
VOC	Benzene	301-L01	Area 1	7	U (0.32) - 0.34	0.1	280	0.5
VOC	Benzene	301-T03	Area 1	2	U (0.0072)	0.0032	280	0.5
VOC	Benzene	302-AD02	Area 1	2	U (0.004)	0.0011	280	0.5
VOC	Benzene	302-AE01	Area 1	1	U (0.006)	0.0030	280	0.5
VOC	Benzene	302-AE02	Area 1	2	0.003 - 0.009	0.0060	280	0.5
VOC	Benzene	302-AF01	Area 1	1	U (0.005)	0.0025	280	0.5
VOC	Benzene	302-AF02	Area 1	4	U (0.007)	0.0028	280	0.5
VOC	Benzene	302-AG02	Area 1	2	U (1.7)	0.43	280	0.5
VOC	Benzene	302-AH01	Area 1	2	U (0.005)	0.0015	280	0.5
VOC	Benzene	302-AH03	Area 1	2	U (0.032)	0.016	280	0.5
VOC	Benzene	302-AI01	Area 1	2	U (0.00058) - 0.0024	0.0013	280	0.5
VOC	Benzene	302-AI03	Area 1	1	0.22 - 0.22	0.22	280	0.5
VOC	Benzene	302-AI04	Area 1	2	U (0.03)	0.015	280	0.5
VOC	Benzene	302-AJ04	Area 1	1	U (0.025)	0.013	280	0.5
VOC	Benzene	302-AL01	Area 1	11	0.0119 - 1300	155	280	0.5
VOC	Cumene	301-L01	Area 1	7	U (0.32) - 4.7	1.1	10000	2500
VOC	Cumene	301-T03	Area 1	2	U (0.0072)	0.0032	10000	2500
VOC	Cumene	302-AD02	Area 1	2	U (0.004)	0.0016	10000	2500
VOC	Cumene	302-AE01	Area 1	1	U (0.006)	0.0030	10000	2500
VOC	Cumene	302-AE02	Area 1	2	U (0.007)	0.0028	10000	2500
VOC	Cumene	302-AF01	Area 1	1	U (0.005)	0.0025	10000	2500
VOC	Cumene	302-AF02	Area 1	4	U (0.007)	0.0028	10000	2500
VOC	Cumene	302-AG02	Area 1	2	16 - 16	8.0	10000	2500
VOC	Cumene	302-AH01	Area 1	2	U (0.005)	0.0025	10000	2500
VOC	Cumene	302-AH03	Area 1	2	U (0.064)	0.031	10000	2500
VOC	Cumene	302-AI01	Area 1	2	U (0.0023)	0.0011	10000	2500
VOC	Cumene	302-AI03	Area 1	1	3.5 - 3.5	3.5	10000	2500
VOC	Cumene	302-AI04	Area 1	2	U (0.061)	0.029	10000	2500
VOC	Cumene	302-AJ04	Area 1	1	U (0.051)	0.026	10000	2500
VOC	Cumene	302-AL01	Area 1	2	U (0.43)	0.11	10000	2500
VOC	Ethyl Benzene	301-L01	Area 1	7	U (0.32)	0.076	880	70
VOC	Ethyl Benzene	301-T03	Area 1	2	U (0.0072)	0.00	880	70
VOC	Ethyl Benzene	302-AD02	Area 1	2	U (0.004)	0.0011	880	70
VOC	Ethyl Benzene	302-AE01	Area 1	1	U (0.006)	0.0	880	70
VOC	Ethyl Benzene	302-AE02	Area 1	2	U (0.007)	0.0	880	70
VOC	Ethyl Benzene	302-AF01	Area 1	1	U (0.005)	0.00250	880	70
VOC	Ethyl Benzene	302-AF02	Area 1	4	U (0.007)	0.00	880	70
VOC	Ethyl Benzene	302-AG02	Area 1	2	U (1.7)	0.43	880	70
VOC	Ethyl Benzene	302-AH01	Area 1	2	U (0.005)	0.001	880	70
VOC	Ethyl Benzene	302-AH03	Area 1	2	U (0.064)	0.031	880	70
VOC	Ethyl Benzene	302-AI01	Area 1	2	U (0.0012) - 0.00055	0.001	880	70
VOC	Ethyl Benzene	302-AI03	Area 1	1	7.5 - 7.5	7.50	880	70
VOC	Ethyl Benzene	302-AI04	Area 1	2	U (0.061)	0.03	880	70
VOC	Ethyl Benzene	302-AJ04	Area 1	1	U (0.051)	0.0	880	70
VOC	Ethyl Benzene	302-AL01	Area 1	11	U (8.8) - 0.0434	0.611	880	70
VOC	Methyl tert-butyl ether	301-L01	Area 1	7	U (0.32)	0.0756	8500	2
VOC	Methyl tert-butyl ether	301-T03	Area 1	2	U (0.0072)	0.003	8500	2
VOC	Methyl tert-butyl ether	302-AD02	Area 1	2	U (0.004)	0.00	8500	2
VOC	Methyl tert-butyl ether	302-AH01	Area 1	2	U (0.005)	0.0015	8500	2
VOC	Methyl tert-butyl ether	302-AH03	Area 1	2	U (0.032)	0.0155	8500	2
VOC	Methyl tert-butyl ether	302-AI01	Area 1	2	U (0.0012)	0.00058	8500	2
VOC	Methyl tert-butyl ether	302-AI03	Area 1	1	U (0.029)	0.01450	8500	2
VOC	Methyl tert-butyl ether	302-AI04	Area 1	2	U (0.03)	0.015	8500	2
VOC	Methyl tert-butyl ether	302-AJ04	Area 1	1	U (0.025)	0.01250	8500	2
VOC	Methyl tert-butyl ether	302-AL01	Area 1	2	U (0.21)	0.05280	8500	2
VOC	Toluene	301-L01	Area 1	7	U (0.32)	0.0756	10000	100
VOC	Toluene	301-T03	Area 1	2	U (0.0072)	0.00315	10000	100
VOC	Toluene	302-AD02	Area 1	2	U (0.004)	0.00	10000	100

Table 3.3
Historical and PESRM Sampling Results Summary
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Chem Group	Chemical	Cell	Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW (mg/kg)
VOC	Toluene	302-AE01	Area 1	1	U (0.006)	0.00	10000	100
VOC	Toluene	302-AE02	Area 1	2	0.001 - 0.003	0.0020	10000	100
VOC	Toluene	302-AF01	Area 1	1	U (0.005)	0.0	10000	100
VOC	Toluene	302-AF02	Area 1	4	U (0.007)	0.0	10000	100
VOC	Toluene	302-AG02	Area 1	2	U (1.7)	0.4	10000	100
VOC	Toluene	302-AH01	Area 1	2	U (0.005)	0.00149	10000	100
VOC	Toluene	302-AH03	Area 1	2	U (0.064)	0.03125	10000	100
VOC	Toluene	302-AI01	Area 1	2	U (0.0012) - 0.0013	0.00095	10000	100
VOC	Toluene	302-AI03	Area 1	1	0.081 - 0.081	0.08100	10000	100
VOC	Toluene	302-AI04	Area 1	2	U (0.061)	0.0293	10000	100
VOC	Toluene	302-AJ04	Area 1	1	U (0.051)	0.02550	10000	100
VOC	Toluene	302-AL01	Area 1	11	U (44) - 790	95.05142	10000	100
VOC	1,2,4-Trimethylbenzene	301-L01	Area 1	7	U (0.32)	0.0864	4700	300
VOC	1,2,4-Trimethylbenzene	301-T03	Area 1	2	0.011 - 0.011	0.007	4700	300
VOC	1,2,4-Trimethylbenzene	302-AD02	Area 1	2	U (0.004)	0.002	4700	300
VOC	1,2,4-Trimethylbenzene	302-AE01	Area 1	1	U (0.006)	0.0030	4700	300
VOC	1,2,4-Trimethylbenzene	302-AE02	Area 1	2	U (0.007)	0.0	4700	300
VOC	1,2,4-Trimethylbenzene	302-AF01	Area 1	1	U (0.005)	0.0025	4700	300
VOC	1,2,4-Trimethylbenzene	302-AF02	Area 1	4	U (0.007)	0.00	4700	300
VOC	1,2,4-Trimethylbenzene	302-AG02	Area 1	2	U (1.7)	0.4263	4700	300
VOC	1,2,4-Trimethylbenzene	302-AH01	Area 1	2	U (0.005)	0.002	4700	300
VOC	1,2,4-Trimethylbenzene	302-AI01	Area 1	2	U (0.0023)	0.001	4700	300
VOC	1,2,4-Trimethylbenzene	302-AL01	Area 1	2	U (0.43)	0.108	4700	300
VOC	1,3,5-Trimethylbenzene	301-L01	Area 1	7	U (0.32)	0.08644	4700	93
VOC	1,3,5-Trimethylbenzene	301-T03	Area 1	2	U (0.0072)	0.003	4700	93
VOC	1,3,5-Trimethylbenzene	302-AD02	Area 1	2	U (0.004)	0.0016	4700	93
VOC	1,3,5-Trimethylbenzene	302-AE01	Area 1	1	U (0.006)	0.00300	4700	93
VOC	1,3,5-Trimethylbenzene	302-AE02	Area 1	2	U (0.007)	0.00275	4700	93
VOC	1,3,5-Trimethylbenzene	302-AF01	Area 1	1	U (0.005)	0.0025	4700	93
VOC	1,3,5-Trimethylbenzene	302-AF02	Area 1	4	U (0.007)	0	4700	93
VOC	1,3,5-Trimethylbenzene	302-AG02	Area 1	2	U (1.7)	0.43	4700	93
VOC	1,3,5-Trimethylbenzene	302-AH01	Area 1	2	U (0.005)	0	4700	93
VOC	1,3,5-Trimethylbenzene	302-AI01	Area 1	2	U (0.0023)	0.0	4700	93
VOC	1,3,5-Trimethylbenzene	302-AL01	Area 1	2	U (0.43)	0.108	4700	93
VOC	Xylenes (total)	301-L01	Area 1	7	U (0.64)	0.1	7900	1000
VOC	Xylenes (total)	301-T03	Area 1	2	U (0.014)	0.01	7900	1000
VOC	Xylenes (total)	302-AD02	Area 1	2	U (0.004)	0.00	7900	1000
VOC	Xylenes (total)	302-AE01	Area 1	1	U (0.006)	0.0	7900	1000
VOC	Xylenes (total)	302-AE02	Area 1	2	0.002 - 0.002	0.0	7900	1000
VOC	Xylenes (total)	302-AF01	Area 1	1	U (0.005)	0.003	7900	1000
VOC	Xylenes (total)	302-AF02	Area 1	4	U (0.007)	0.0	7900	1000
VOC	Xylenes (total)	302-AG02	Area 1	2	U (1.7)	0.4	7900	1000
VOC	Xylenes (total)	302-AH01	Area 1	2	U (0.005)	0.001	7900	1000
VOC	Xylenes (total)	302-AH03	Area 1	2	U (0.064)	0.031	7900	1000
VOC	Xylenes (total)	302-AI01	Area 1	2	U (0.0012) - 0.0034	0.00	7900	1000
VOC	Xylenes (total)	302-AI03	Area 1	1	19 - 19	19.000	7900	1000
VOC	Xylenes (total)	302-AI04	Area 1	2	U (0.061)	0.03	7900	1000
VOC	Xylenes (total)	302-AJ04	Area 1	1	U (0.051)	0	7900	1000
VOC	Xylenes (total)	302-AL01	Area 1	11	U (8.8) - 0.127	0.62	7900	1000
SVOC	Anthracene	301-L01	Area 1	7	U (0.19) - 0.42	0.15	190000	350
SVOC	Anthracene	301-T03	Area 1	2	0.23 - 0.23	0.137	190000	350
SVOC	Anthracene	302-AD02	Area 1	2	U (0.19)	0.06	190000	350
SVOC	Anthracene	302-AH01	Area 1	2	U (0.19)	0.1	190000	350
SVOC	Anthracene	302-AI01	Area 1	2	0.086 - 0.086	0.052	190000	350
SVOC	Anthracene	302-AL01	Area 1	2	0.0417 - 0.0417	0.030	190000	350
SVOC	Benzo(a)anthracene	301-L01	Area 1	7	U (0.19) - 0.09	0.0625	130	340
SVOC	Benzo(a)anthracene	301-T03	Area 1	2	0.34 - 0.34	0.19	130	340
SVOC	Benzo(a)anthracene	302-AD02	Area 1	2	U (0.19)	0.057	130	340

Table 3.3
Historical and PESRM Sampling Results Summary
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Chem Group	Chemical	Cell	Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW (mg/kg)
SVOC	Benzo(a)anthracene	302-AH01	Area 1	2	U (0.19) - 0.3	0.16	130	340
SVOC	Benzo(a)anthracene	302-AI01	Area 1	2	0.237 - 0.237	0.128	130	340
SVOC	Benzo(a)anthracene	302-AL01	Area 1	2	0.206 - 0.206	0.1	130	340
SVOC	Benzo(a)pyrene	301-L01	Area 1	7	U (0.19) - 9.2	1.35	91	46
SVOC	Benzo(a)pyrene	301-T03	Area 1	2	U (0.09)	0.04450	91	46
SVOC	Benzo(a)pyrene	302-AD02	Area 1	2	U (0.19)	0.05650	91	46
SVOC	Benzo(a)pyrene	302-AH01	Area 1	2	U (0.19) - 0.22	0.11900	91	46
SVOC	Benzo(a)pyrene	302-AI01	Area 1	2	0.274 - 0.274	0.15	91	46
SVOC	Benzo(a)pyrene	302-AL01	Area 1	2	0.238 - 0.238	0.1283	91	46
SVOC	Benzo(b)fluoranthene	301-L01	Area 1	7	U (0.19) - 4.3	0.65	76	170
SVOC	Benzo(b)fluoranthene	301-T03	Area 1	2	U (0.09)	0.045	76	170
SVOC	Benzo(b)fluoranthene	302-AD02	Area 1	2	U (0.19)	0.06	76	170
SVOC	Benzo(b)fluoranthene	302-AH01	Area 1	2	U (0.19) - 0.29	0.1540	76	170
SVOC	Benzo(b)fluoranthene	302-AI01	Area 1	2	0.354 - 0.354	0.18600	76	170
SVOC	Benzo(b)fluoranthene	302-AL01	Area 1	2	0.31 - 0.31	0.164	76	170
SVOC	Benzo(g,h,i)perylene	301-L01	Area 1	7	U (0.19) - 5	0.74393	190000	180
SVOC	Benzo(g,h,i)perylene	301-T03	Area 1	2	0.17 - 0.17	0.1070	190000	180
SVOC	Benzo(g,h,i)perylene	302-AD02	Area 1	2	U (0.19)	0.1	190000	180
SVOC	Benzo(g,h,i)perylene	302-AH01	Area 1	2	U (0.19)	0.0565	190000	180
SVOC	Benzo(g,h,i)perylene	302-AI01	Area 1	2	0.208 - 0.208	0	190000	180
SVOC	Benzo(g,h,i)perylene	302-AL01	Area 1	2	0.174 - 0.174	0.09625	190000	180
SVOC	Chrysene	301-L01	Area 1	7	U (0.19) - 17	2.5	760	230
SVOC	Chrysene	301-T03	Area 1	2	U (0.09)	0.04450	760	230
SVOC	Chrysene	302-AD02	Area 1	2	U (0.19)	0.05650	760	230
SVOC	Chrysene	302-AH01	Area 1	2	U (0.19) - 0.3	0.16	760	230
SVOC	Chrysene	302-AI01	Area 1	2	0.266 - 0.266	0.1420	760	230
SVOC	Chrysene	302-AL01	Area 1	2	0.216 - 0.216	0.1173	760	230
SVOC	Fluorene	301-L01	Area 1	7	U (0.19) - 2.1	0.6105	130000	3800
SVOC	Fluorene	301-T03	Area 1	2	0.16 - 0.16	0.10200	130000	3800
SVOC	Fluorene	302-AD02	Area 1	2	U (0.19)	0.1	130000	3800
SVOC	Fluorene	302-AH01	Area 1	2	U (0.19)	0.0565	130000	3800
SVOC	Fluorene	302-AI01	Area 1	2	0.0406 - 0.0406	0.03	130000	3800
SVOC	Fluorene	302-AL01	Area 1	2	U (0.037)	0.0183	130000	3800
SVOC	Naphthalene	301-L01	Area 1	7	U (0.32) - 0.39	0.126	66	25
SVOC	Naphthalene	301-T03	Area 1	2	0.037 - 0.037	0.01985	66	25
SVOC	Naphthalene	302-AD02	Area 1	2	U (0.19)	0.1	66	25
SVOC	Naphthalene	302-AE01	Area 1	1	U (0.006)	0.00	66	25
SVOC	Naphthalene	302-AE02	Area 1	2	U (0.007)	0.00	66	25
SVOC	Naphthalene	302-AF01	Area 1	1	U (0.005)	0.0	66	25
SVOC	Naphthalene	302-AF02	Area 1	4	U (0.007)	0.00	66	25
SVOC	Naphthalene	302-AG02	Area 1	2	0.52 - 0.52	0.261	66	25
SVOC	Naphthalene	302-AH01	Area 1	2	U (0.19)	0.05650	66	25
SVOC	Naphthalene	302-AH03	Area 1	2	U (0.064)	0.031	66	25
SVOC	Naphthalene	302-AI01	Area 1	2	0.0551 - 0.0551	0.0	66	25
SVOC	Naphthalene	302-AI03	Area 1	1	12 - 12	12.00000	66	25
SVOC	Naphthalene	302-AI04	Area 1	2	U (0.061)	0.029	66	25
SVOC	Naphthalene	302-AJ04	Area 1	1	U (0.051)	0.026	66	25
SVOC	Naphthalene	302-AL01	Area 1	2	0.052 - 0.052	0	66	25
SVOC	Phenanthrene	301-L01	Area 1	7	U (0.19) - 4.8	1	190000	10000
SVOC	Phenanthrene	301-T03	Area 1	2	1.2 - 1.2	0.6	190000	10000
SVOC	Phenanthrene	302-AD02	Area 1	2	U (0.19)	0	190000	10000
SVOC	Phenanthrene	302-AH01	Area 1	2	U (0.19) - 0.24	0.13	190000	10000
SVOC	Phenanthrene	302-AI01	Area 1	2	0.402 - 0.402	0.21	190000	10000
SVOC	Phenanthrene	302-AL01	Area 1	2	0.193 - 0.193	0.11	190000	10000
SVOC	Pyrene	301-L01	Area 1	7	U (0.19) - 7.1	1.15650	96000	2200
SVOC	Pyrene	301-T03	Area 1	2	1.1 - 1.1	0.572	96000	2200
SVOC	Pyrene	302-AD02	Area 1	2	U (0.19)	0.057	96000	2200
SVOC	Pyrene	302-AH01	Area 1	2	U (0.19) - 0.48	0.249	96000	2200

Table 3.3
Historical and PESRM Sampling Results Summary
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Chem Group	Chemical	Cell	Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW (mg/kg)
SVOC	Pyrene	302-AI01	Area 1	2	0.404 - 0.404	0.21	96000	2200
SVOC	Pyrene	302-AL01	Area 1	2	0.306 - 0.306	0.162	96000	2200
INORG	Lead	301-L01	Area 1	7	3.2 - 86	20.843	1000	450
INORG	Lead	301-T03	Area 1	2	U (1.3) - 6.5	3.5750	1000	450
INORG	Lead	302-AD02	Area 1	2	8.1 - 18.9	13.50	1000	450
INORG	Lead	302-AE01	Area 1	1	9.96 - 9.96	9.960	1000	450
INORG	Lead	302-AE02	Area 1	2	240 - 547	393.500	1000	450
INORG	Lead	302-AF01	Area 1	1	11.3 - 11.3	11.300	1000	450
INORG	Lead	302-AF02	Area 1	4	7.81 - 9.99	8.955	1000	450
INORG	Lead	302-AG02	Area 1	2	15.1 - 31.1	23.100	1000	450
INORG	Lead	302-AH01	Area 1	2	17.8 - 266	141.90000	1000	450
INORG	Lead	302-AH03	Area 1	2	4.57 - 10.3	7.4350	1000	450
INORG	Lead	302-AI01	Area 1	2	6.6 - 139	72.800	1000	450
INORG	Lead	302-AI03	Area 1	1	7.89 - 7.89	7.890	1000	450
INORG	Lead	302-AI04	Area 1	2	5.2 - 7.76	6.48000	1000	450
INORG	Lead	302-AJ04	Area 1	1	4.66 - 4.66	4.660	1000	450
INORG	Lead	302-AL01	Area 1	2	5.7 - 544	274.8500	1000	450
VOC	Cumene	201-A01	Area 2	3	0.52 - 13.5	5.0400	10000	2500
VOC	Cumene	301-D01	Area 2	19	0.0591 - 61	13.752	10000	2500
VOC	Cumene	301-E02	Area 2	28	0.0016 - 41	5.66019	10000	2500
VOC	Cumene	301-G01	Area 2	2	0.19 - 19	9.60	10000	2500
VOC	Cumene	301-H01	Area 2	20	0.003 - 13	2.435	10000	2500
VOC	Cumene	301-N02	Area 2	3	U (0.22) - 1.1	0.4009	10000	2500
VOC	Cumene	301-Q04	Area 2	6	U (0.234) - 1.07	0.18	10000	2500
VOC	Benzene	201-A01	Area 2	3	1.3 - 56.8	21.000	280	0.5
VOC	Benzene	301-D01	Area 2	19	0.024 - 69	14.623	280	0.5
VOC	Benzene	301-E02	Area 2	28	0.0015 - 74	9.00	280	0.5
VOC	Benzene	301-G01	Area 2	2	U (0.24) - 1.8	0.908	280	0.5
VOC	Benzene	301-H01	Area 2	20	0.0004 - 46	6.356	280	0.5
VOC	Benzene	301-N02	Area 2	3	0.015 - 0.22	0.11500	280	0.5
VOC	Benzene	301-Q04	Area 2	6	0.00046 - 0.023	0.026	280	0.5
VOC	Ethyl Benzene	201-A01	Area 2	3	2.5 - 52.3	20.300	880	70
VOC	Ethyl Benzene	301-D01	Area 2	19	0.0581 - 250	60.9	880	70
VOC	Ethyl Benzene	301-E02	Area 2	28	0.0003 - 700	46.525	880	70
VOC	Ethyl Benzene	301-G01	Area 2	2	U (0.47) - 1.7	0.86500	880	70
VOC	Ethyl Benzene	301-H01	Area 2	20	0.00019 - 91	14.719	880	70
VOC	Ethyl Benzene	301-N02	Area 2	3	U (0.22)	0.071	880	70
VOC	Ethyl Benzene	301-Q04	Area 2	6	U (0.234)	0.02490	880	70
VOC	Methyl tert-butyl ether	201-A01	Area 2	3	2.3 - 67.5	25.033	8500	2
VOC	Methyl tert-butyl ether	301-D01	Area 2	19	0.019 - 120	12.59479	8500	2
VOC	Methyl tert-butyl ether	301-E02	Area 2	28	U (6.9) - 1.3	0.4219	8500	2
VOC	Methyl tert-butyl ether	301-G01	Area 2	2	U (0.95) - 0.4	0.23000	8500	2
VOC	Methyl tert-butyl ether	301-H01	Area 2	20	U (0.63) - 2.6	0.2888	8500	2
VOC	Methyl tert-butyl ether	301-N02	Area 2	3	0.0076 - 0.0076	0.073	8500	2
VOC	Methyl tert-butyl ether	301-Q04	Area 2	6	0.00085 - 0.0011	0.029	8500	2
VOC	Toluene	201-A01	Area 2	3	U (2.6) - 17.6	6.740	10000	100
VOC	Toluene	301-D01	Area 2	19	0.0387 - 370	52.96062	10000	100
VOC	Toluene	301-E02	Area 2	28	0.0021 - 2000	104.5979	10000	100
VOC	Toluene	301-G01	Area 2	2	U (0.47) - 4	2.01500	10000	100
VOC	Toluene	301-H01	Area 2	20	0.00083 - 180	16.9734	10000	100
VOC	Toluene	301-N02	Area 2	3	U (0.22)	0.07087	10000	100
VOC	Toluene	301-Q04	Area 2	6	U (0.234) - 0.0031	0.025	10000	100
VOC	1,2,4-Trimethylbenzene	201-A01	Area 2	3	7.8 - 149	56.133	4700	300
VOC	1,2,4-Trimethylbenzene	301-D01	Area 2	18	0.0508 - 530	143.2	4700	300
VOC	1,2,4-Trimethylbenzene	301-E02	Area 2	28	0.0023 - 870	81.91387	4700	300
VOC	1,2,4-Trimethylbenzene	301-G01	Area 2	2	0.022 - 2	1.01100	4700	300
VOC	1,2,4-Trimethylbenzene	301-H01	Area 2	20	0.0018 - 180	30	4700	300
VOC	1,2,4-Trimethylbenzene	301-N02	Area 2	3	U (0.22)	0.071	4700	300

Table 3.3
Historical and PESRM Sampling Results Summary
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Chem Group	Chemical	Cell	Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW (mg/kg)
VOC	1,2,4-Trimethylbenzene	301-Q04	Area 2	5	U (0.234) - 0.588	0.1284	4700	300
VOC	1,3,5-Trimethylbenzene	201-A01	Area 2	3	2.7 - 47.8	18	4700	93
VOC	1,3,5-Trimethylbenzene	301-D01	Area 2	19	0.246 - 200	51.1161	4700	93
VOC	1,3,5-Trimethylbenzene	301-E02	Area 2	28	0.00036 - 400	31.6859	4700	93
VOC	1,3,5-Trimethylbenzene	301-G01	Area 2	2	U (0.95) - 0.76	0.41	4700	93
VOC	1,3,5-Trimethylbenzene	301-H01	Area 2	20	0.00029 - 53	9.2178	4700	93
VOC	1,3,5-Trimethylbenzene	301-N02	Area 2	3	U (0.22)	0.0709	4700	93
VOC	1,3,5-Trimethylbenzene	301-Q04	Area 2	5	U (0.234) - 0.25	0.0608	4700	93
VOC	Xylenes (total)	201-A01	Area 2	3	5.5 - 135	58.9000	7900	1000
VOC	Xylenes (total)	301-D01	Area 2	19	0.0912 - 1400	316.6977	7900	1000
VOC	Xylenes (total)	301-E02	Area 2	25	0.00149 - 3290	254.1444	7900	1000
VOC	Xylenes (total)	301-G01	Area 2	2	U (0.95) - 5.17	2.62	7900	1000
VOC	Xylenes (total)	301-H01	Area 2	20	0.00168 - 410	60.5314	7900	1000
VOC	Xylenes (total)	301-N02	Area 2	3	U (0.65) - 0.6	0.311	7900	1000
VOC	Xylenes (total)	301-Q04	Area 2	6	U (0.703)	0.0691	7900	1000
SVOC	Anthracene	201-A01	Area 2	3	0.11 - 0.38	0.21	190000	350
SVOC	Anthracene	301-E02	Area 2	10	0.0051 - 0.11	0.033	190000	350
SVOC	Anthracene	301-G01	Area 2	2	0.0024 - 0.016	0.009	190000	350
SVOC	Anthracene	301-N02	Area 2	3	0.036 - 0.3	0	190000	350
SVOC	Anthracene	301-Q04	Area 2	6	U (0.4) - 0.349	0.2	190000	350
SVOC	Benzo(a)anthracene	201-A01	Area 2	3	0.036 - 0.39	0.2	130	340
SVOC	Benzo(a)anthracene	301-E02	Area 2	10	U (0.12) - 0.13	0.0	130	340
SVOC	Benzo(a)anthracene	301-G01	Area 2	2	0.0043 - 0.01	0.0	130	340
SVOC	Benzo(a)anthracene	301-N02	Area 2	3	0.0086 - 1.1	0.4	130	340
SVOC	Benzo(a)anthracene	301-Q04	Area 2	6	U (0.4) - 1.19	0.3	130	340
SVOC	Benzo(a)pyrene	201-A01	Area 2	3	0.022 - 0.39	0.2	91	46
SVOC	Benzo(a)pyrene	301-E02	Area 2	10	U (0.16) - 0.12	0.03	91	46
SVOC	Benzo(a)pyrene	301-G01	Area 2	2	0.0046 - 0.0064	0.0	91	46
SVOC	Benzo(a)pyrene	301-N02	Area 2	3	0.0044 - 1.2	0.40	91	46
SVOC	Benzo(a)pyrene	301-Q04	Area 2	6	U (0.4) - 2.47	0.5	91	46
SVOC	Benzo(b)fluoranthene	201-A01	Area 2	3	0.026 - 0.57	0.2	76	170
SVOC	Benzo(b)fluoranthene	301-E02	Area 2	10	U (0.12) - 0.16	0.0	76	170
SVOC	Benzo(b)fluoranthene	301-G01	Area 2	2	0.0057 - 0.0096	0.01	76	170
SVOC	Benzo(b)fluoranthene	301-N02	Area 2	3	0.0077 - 2	0.7	76	170
SVOC	Benzo(b)fluoranthene	301-Q04	Area 2	6	U (0.4) - 3.1	1	76	170
SVOC	Benzo(g,h,i)perylene	201-A01	Area 2	3	0.011 - 0.23	0.09	190000	180
SVOC	Benzo(g,h,i)perylene	301-E02	Area 2	10	U (0.16) - 0.087	0.0	190000	180
SVOC	Benzo(g,h,i)perylene	301-G01	Area 2	2	0.004 - 0.012	0.01	190000	180
SVOC	Benzo(g,h,i)perylene	301-N02	Area 2	3	0.0042 - 0.42	0.14	190000	180
SVOC	Benzo(g,h,i)perylene	301-Q04	Area 2	6	U (0.4) - 2.45	0.5	190000	180
SVOC	Chrysene	201-A01	Area 2	3	0.059 - 0.4	0.175	760	230
SVOC	Chrysene	301-E02	Area 2	10	U (0.12) - 0.13	0.03	760	230
SVOC	Chrysene	301-G01	Area 2	2	0.0034 - 0.013	0.01	760	230
SVOC	Chrysene	301-N02	Area 2	3	0.013 - 1.4	0.5	760	230
SVOC	Chrysene	301-Q04	Area 2	6	U (0.4) - 1.5	0.368	760	230
SVOC	Fluorene	201-A01	Area 2	3	0.16 - 0.75	0.4	130000	3800
SVOC	Fluorene	301-E02	Area 2	10	0.024 - 2	0.3	130000	3800
SVOC	Fluorene	301-G01	Area 2	2	0.0078 - 0.093	0.1	130000	3800
SVOC	Fluorene	301-N02	Area 2	3	0.12 - 0.21	0.2	130000	3800
SVOC	Fluorene	301-Q04	Area 2	6	U (0.4) - 0.156	0.2	130000	3800
SVOC	Naphthalene	201-A01	Area 2	3	0.56 - 31.5	13.453	66	25
SVOC	Naphthalene	301-D01	Area 2	22	U (31) - 170	22.3	66	25
SVOC	Naphthalene	301-E02	Area 2	28	0.00079 - 53	8.6	66	25
SVOC	Naphthalene	301-G01	Area 2	2	0.043 - 0.62	0.332	66	25
SVOC	Naphthalene	301-H01	Area 2	19	0.0007 - 15	2.7	66	25
SVOC	Naphthalene	301-N02	Area 2	3	0.11 - 0.42	0.2500	66	25
SVOC	Naphthalene	301-Q04	Area 2	6	U (0.4) - 1.5	0.5103	66	25
SVOC	Phenanthrene	201-A01	Area 2	3	0.39 - 2	1.0	190000	10000

Table 3.3
Historical and PESRM Sampling Results Summary
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Chem Group	Chemical	Cell	Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW (mg/kg)
SVOC	Phenanthrene	301-E02	Area 2	10	0.033 - 3	0.49050	190000	10000
SVOC	Phenanthrene	301-G01	Area 2	2	0.011 - 0.087	0.049	190000	10000
SVOC	Phenanthrene	301-N02	Area 2	3	0.25 - 1.3	0.6	190000	10000
SVOC	Phenanthrene	301-Q04	Area 2	6	U (0.4) - 1.18	0.35	190000	10000
SVOC	Pyrene	201-A01	Area 2	3	0.078 - 0.64	0.30	96000	2200
SVOC	Pyrene	301-E02	Area 2	10	0.0086 - 0.23	0.05	96000	2200
SVOC	Pyrene	301-G01	Area 2	2	0.007 - 0.039	0.0	96000	2200
SVOC	Pyrene	301-N02	Area 2	3	0.034 - 2.1	0.7	96000	2200
SVOC	Pyrene	301-Q04	Area 2	6	U (0.4) - 2.25	0.53	96000	2200
INORG	Lead	201-A01	Area 2	3	6.6 - 178	64.80000	1000	450
INORG	Lead	301-D01	Area 2	14	9 - 1580	296.07143	1000	450
INORG	Lead	301-E02	Area 2	18	6.54 - 461	61.50278	1000	450
INORG	Lead	301-G01	Area 2	2	33.4 - 103	68.20000	1000	450
INORG	Lead	301-H01	Area 2	13	6.33 - 13	8.88231	1000	450
INORG	Lead	301-N02	Area 2	3	6.5 - 579	198.8667	1000	450
INORG	Lead	301-Q04	Area 2	6	2.5 - 280	55.90	1000	450

Notes:
U -- Not Detected.
Detection limits are in parentheses.
All samples at a location are included, regardless of depth.
Calculation of the average used half the analytical limit if the chemical was non-detect, except for 1,2-dibromoethane and 1,2-dichloroethane which were detected at a frequency of <1%.
Indicates average concentration exceeds the Non-Res Soil-to-GW Numeric Value.

Table 4.1
Bulk Soil Movement and Placement, Soil Reuse Categories and Volume Estimates
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

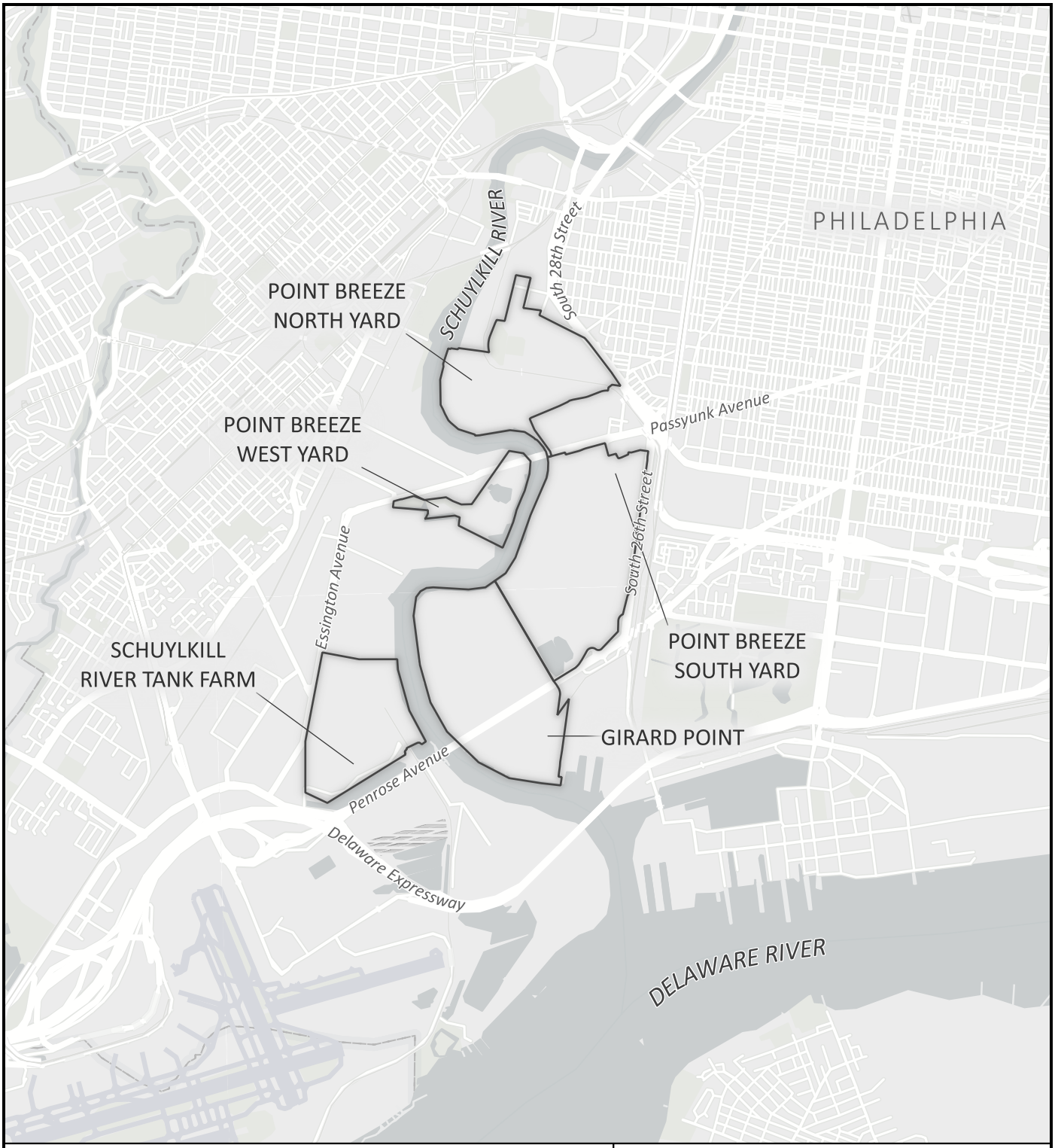
Area ID	Soil Reuse Category	Description	Previous Volume (yd^3)	Updated Volume (yd^3)	Deeper Additional Cut (Area 2) Volume (yd^3)
--	A	--	1,819,258	1,602,914	531
IP1A-02	B	To be reused (1) in areas beneath an impervious surface cap that will serve as an engineering control at elevations above the groundwater table, or (2) in areas not beneath a surface cap that are more than 500 ft. from a shoreline as long as a risk assessment demonstrates attainment of the Site-specific standard.	779,115	252,064	7,829
IP1A-06				12,490	--
IP1A-08				2,951	--
IP1A-09				--	--
IP1A-10				--	--
IP1A-12				5,424	--
IP1A-13				825	--
IP1A-16				11,302	--
IP1A-17				7,276	--
IP1A-18				6,155	--
IP1A-19				12,899	--
IP1A-23				9,769	--
IP1A-24				17,804	--
IP1A-26				7,858	--
IP1A-27				3,490	--
IP1A-29				9,684	--
IP1A-30				14,436	--
IP1A-31				5,490	--
IP1A-32				20,863	--
IP1A-33				13,137	--
IP1A-34				11,534	--
IP1A-35				3,566	--
IP1A-37				3,947	--
IP1B-01				6,650	--
IP1B-02				12,230	--
IP1B-03				9,529	--
IP1B-04				16,428	--
IP1B-05				3,022	--
IP1B-10				8,137	--
IP1B-11				11,865	--
IP1B-12				8,506	--
IP1B-13				20,282	--
IP1B-14				12,062	--
IP1B-15				6,330	--
IP1B-17				32,141	--
IP1B-20				9,365	--
IP1B-21				11,245	--
IP1B-22				14,015	--
IP1B-23				18,700	--
IP1C-02				9,584	--
IP1C-04				30,889	--
IP1C-05				7,622	--
IP1LI-03				6,021	--
IP1LI-04				2,926	--
IP1LI-05				17,422	--
IP1LI-06				5,065	--
--				12,959	--
		Category B Total (yd^3):	779,115	725,956	7,829

Table 4.1
Bulk Soil Movement and Placement, Soil Reuse Categories and Volume Estimates
Soil Management Plan Addendum No. 4
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Area ID	Soil Reuse Category	Description	Previous Volume (yd^3)	Updated Volume (yd^3)	Deeper Additional Cut (Area 2) Volume (yd^3)
IP1A-01	E	To be reused beneath an impervious surface cap that will serve as an engineering control at elevations above the groundwater table.	186,596	2,937	--
IP1A-03				2,582	--
IP1A-04				14,086	--
IP1A-05				3,030	--
IP1A-11				1,172	--
IP1A-14				5,988	--
IP1A-15				2,712	--
IP1A-20				5,614	--
IP1A-21				6,369	--
IP1A-22				8,541	--
IP1A-28				10,012	--
IP1A-36				10,181	--
IP1B-06				1,754	--
IP1B-07				5,971	--
IP1B-08				8,614	--
IP1B-09				7,472	--
IP1B-16				6,274	--
IP1B-18				5,900	--
IP1B-19				7,231	--
IP1C-01				6,518	--
IP1C-03				8,058	--
IP1LI-01				3,846	660
IP1LI-02				8,747	909
		Category E Total (yd^3):	186,596	143,609	1,569
--	Not Sampled	Not sampled due to underground utilities.	34,587	34,540	--
		Overall Total (yd^3):	2,819,555	2,507,019	9,929

Note:
Area IDs are presented on Figure 4.1.

Figures



0 2,000 4,000 6,000 8,000 Feet

1 Inch = 4000 Feet

N

Legend

Property Boundary

SAFETY FIRST

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CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 4
PROJECT NUMBER:	P044.001.001

Site Location

FIGURE 1.1

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Main Branch\(20230417) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum - parent - Site Location 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial

Passyunk Avenue
South 28th Street
Outlot 1
Lot 17
ROW-3
Shoreline Lot
Lot 13
Lot 16
Lot 12
ROW-1
Lot 11
ROW-2
Lot 15
South 26th Street
Outlot 2
ROW-4
SCHUYLKILL RIVER
Lot 9
Lot 14
Lot 8
Lot 6
Lot 5
Outlot 3
Lot 7
Lot 4
Outlot 4
ROW-5
Lot 3A
ROW-6
Penrose Avenue
Lot 3B
Outlot 5

Legend

- Area 1 (Sampling Results Included in This Plan Addendum)
- Area 2 (Area of Deeper Cut With Sampling Results in This Plan Addendum)
- Area Not Sampled Due to Presence of Gas Pipeline
- Areas Previously Sampled (Results Summarized in Prior SMP Addenda)
- Lot Boundaries
- Currently Permitted Limit of Disturbance

N

0 250 500 750 1,000 ft

1 Inch = 750 Feet

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

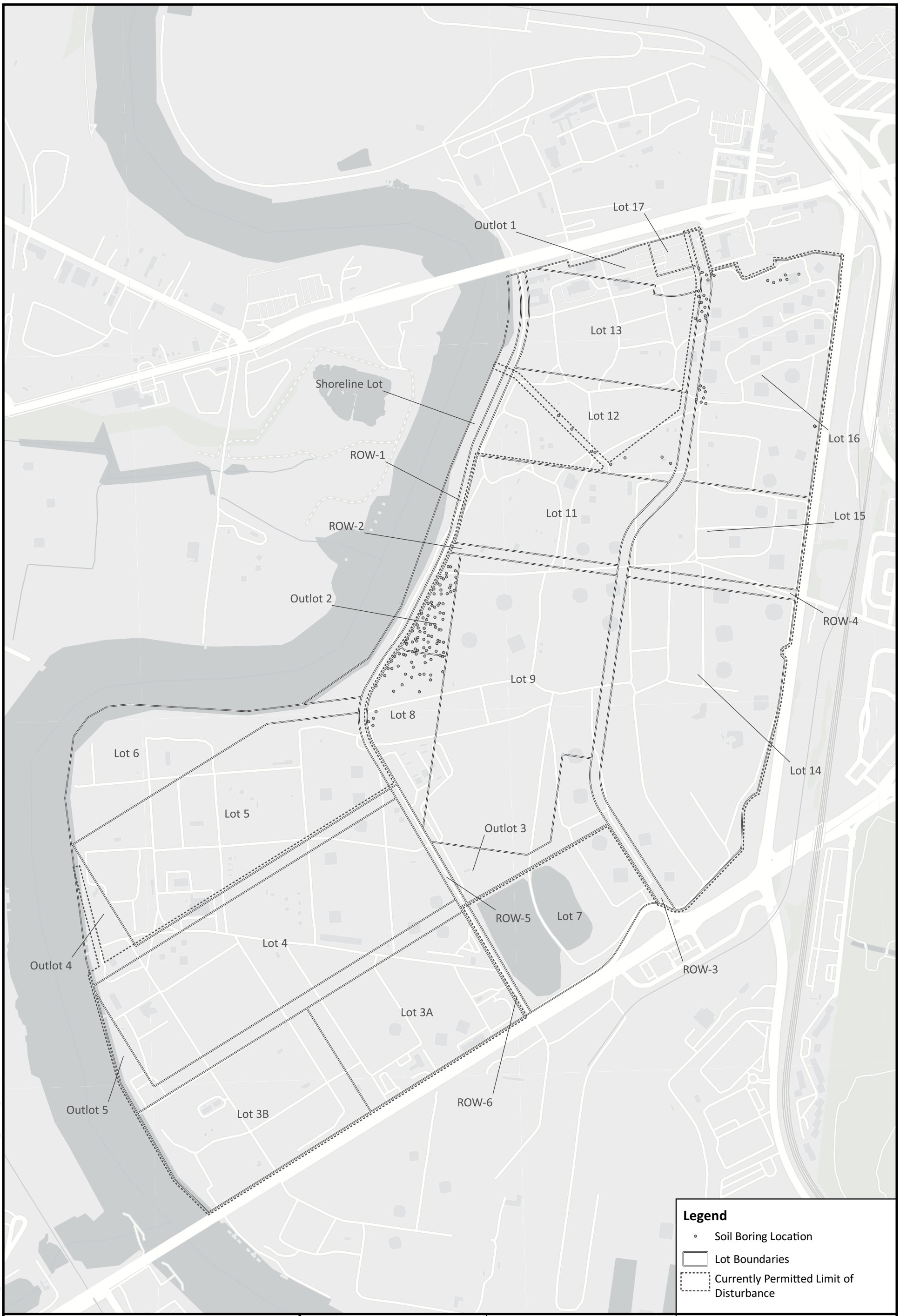
PROJECT: Soil Management Plan Addendum No. 4

PROJECT NUMBER: P044.001.001

SMP Addendum No. 4 Development Area (SMP Sampling Area)

FIGURE 1.2

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Main Branch\(20230501) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum L&I - Development Area 2 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



SAFETY FIRST

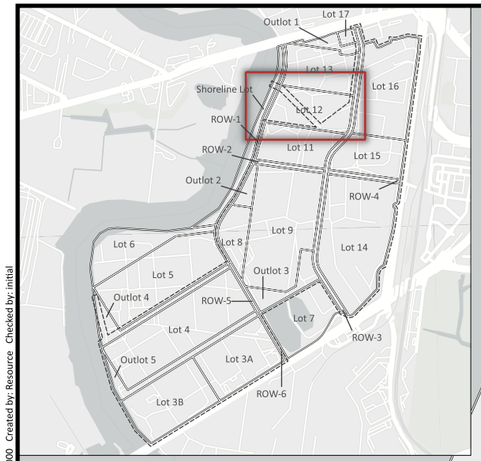
terraphase engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 4
PROJECT NUMBER:	P044.001.001

SMP Addendum No. 4 Recent Soil Boring Locations

FIGURE 2.1

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Main Branch\(20230501) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum L&I - Boring Locations 3 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



Lot 13

Lot 12

Lot 11

Lot 16

Lot 15

301 J01
301 K01
301 L01
301 L02
301 M02
301 N03
301 N02
301 O02
301 P02
301 Q02
301 Q03
301 R02
301 R03
301 S02
301 S03
301 T01
301 T02
301 T03
301 T04
301 U01
301 U02
301 U03
301 U04
301 V01
301 V02
301 V03

Legend

- Boring Locations
- Lot Boundaries

Sampling Cell Boundaries, categorized by approximate cut volume within each cell (CY)

- 2,000
- 4,000
- 6,000
- 8,000
- 10,000

Notes:
As described in Section 2.1, samples are collected at a frequency of approximately one sample per 2,000 (CY).

0 150 300 450 600 ft

1 Inch = 150 Feet

N

SAFETY FIRST

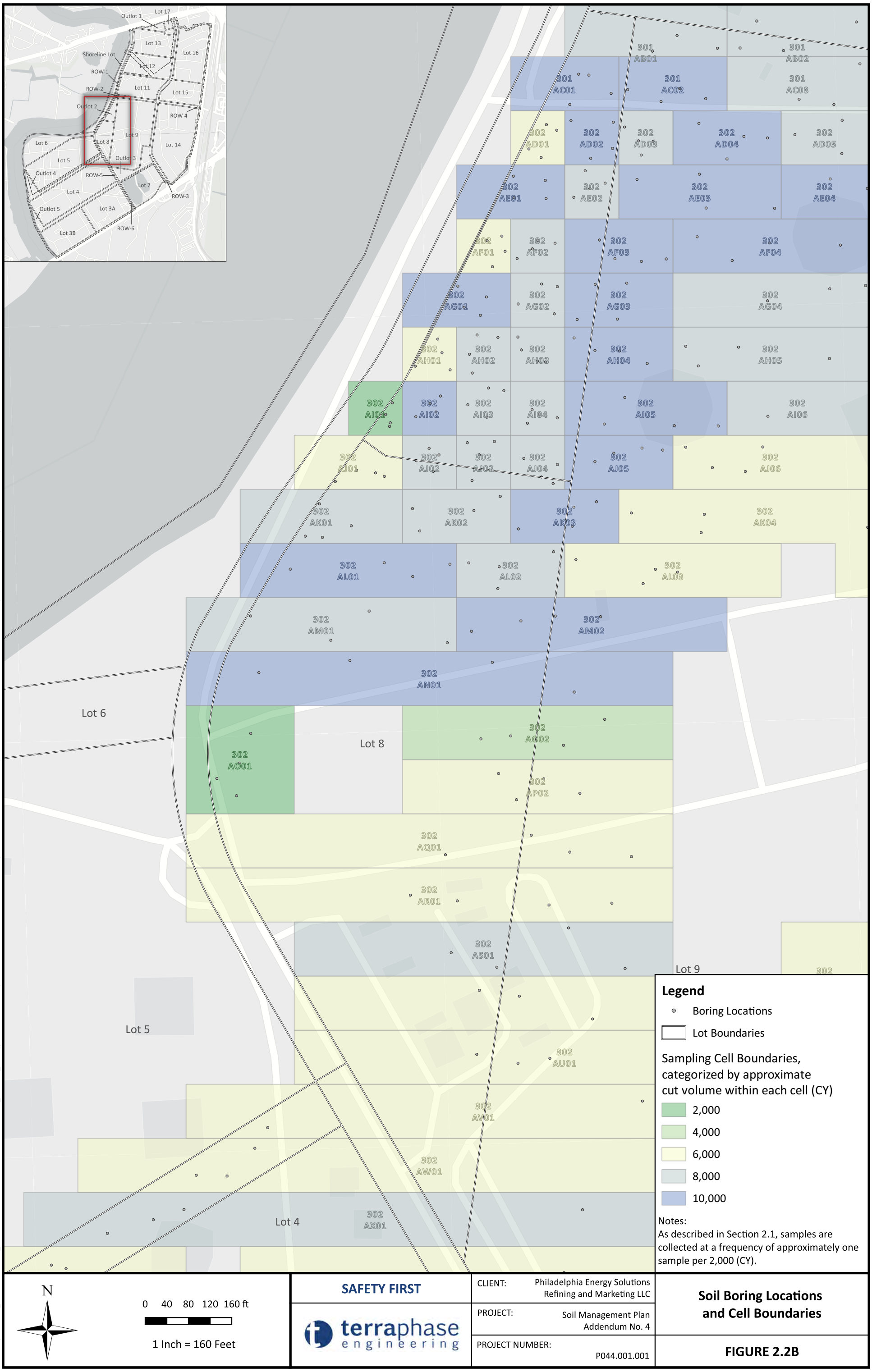
terraphase engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 4
PROJECT NUMBER:	P044.001.001

Soil Boring Locations and Cell Boundaries

FIGURE 2.2A

N:\GIS\Dry\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Main Branch\(20230501) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum L&I - Boring Locations and Cell Boundaries by Volume - 2.2A 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



N:\GIS\Prj\P044.001_PESRM-PES\GIS_QGZ and GPKG\Main Branch\(20230501) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum L&I - Boring Locations and Cell Boundaries by Volume - 2.2B 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial

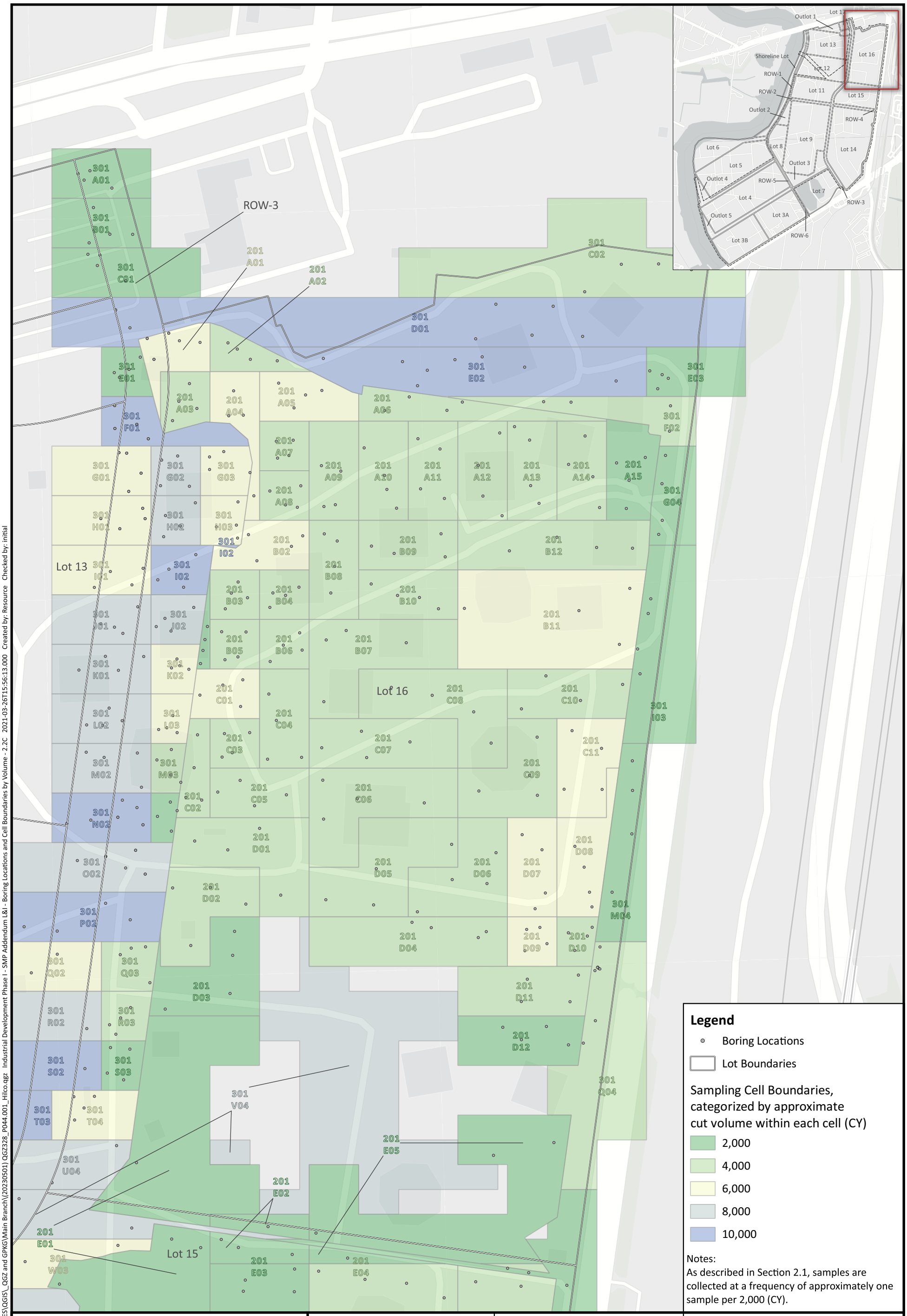
SAFETY FIRST

terraphase engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 4
PROJECT NUMBER:	P044.001.001

Soil Boring Locations and Cell Boundaries

FIGURE 2.2B



SAFETY FIRST

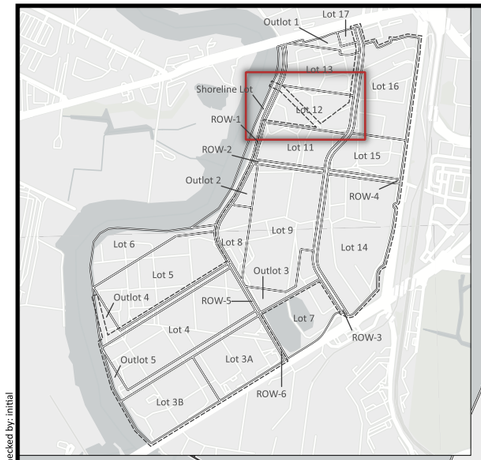
terraphase engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 4
PROJECT NUMBER:	P044.001.001

Soil Boring Locations and Cell Boundaries

FIGURE 2.2C

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Main Branch\(20230501) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum L&I - Boring Locations and Cell Boundaries by Volume - 2.2C 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



SCHUYLKILL

Lot 13

Lot 12

Lot 11

Lot 15

Lot 16

301 K01

301 L02

301 M02

301 N02

301 O02

301 P02

301 Q02

301 Q03

301 R03

301 S03

301 U01

301 U03

301 U04

301 V01

301 V03

Legend

Lot Boundaries

Sampling Cell Boundaries and Categorization

- A (≤ NonRes DC & S-GW MSCs)
- B (> NonRes S-GW MSC only)
- E (> NonRes DC & S-GW MSCs)
- Not sampled due to underground utilities

0 150 300 450 600 ft

1 Inch = 150 Feet

N

SAFETY FIRST

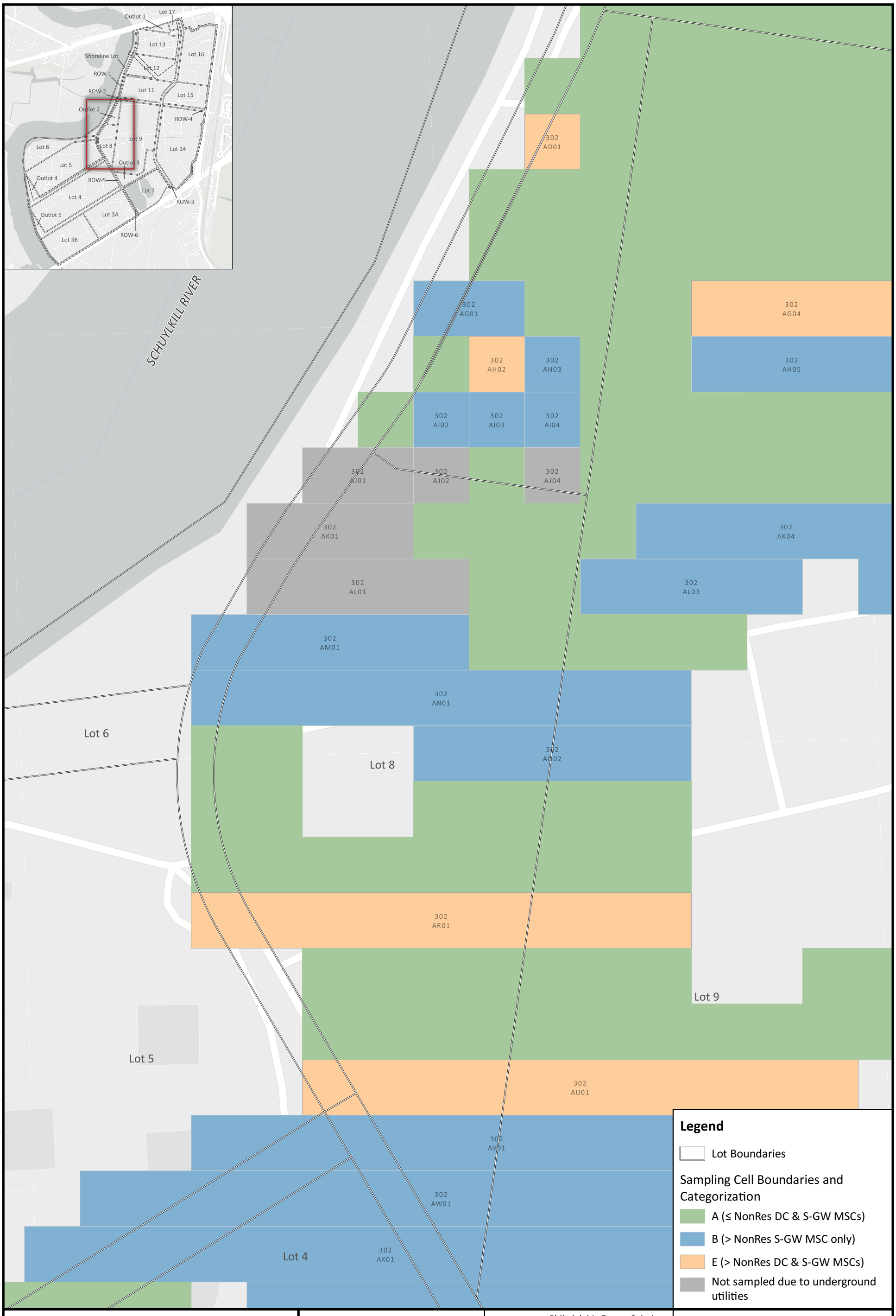
terraphase engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 4
PROJECT NUMBER:	P044.001.001

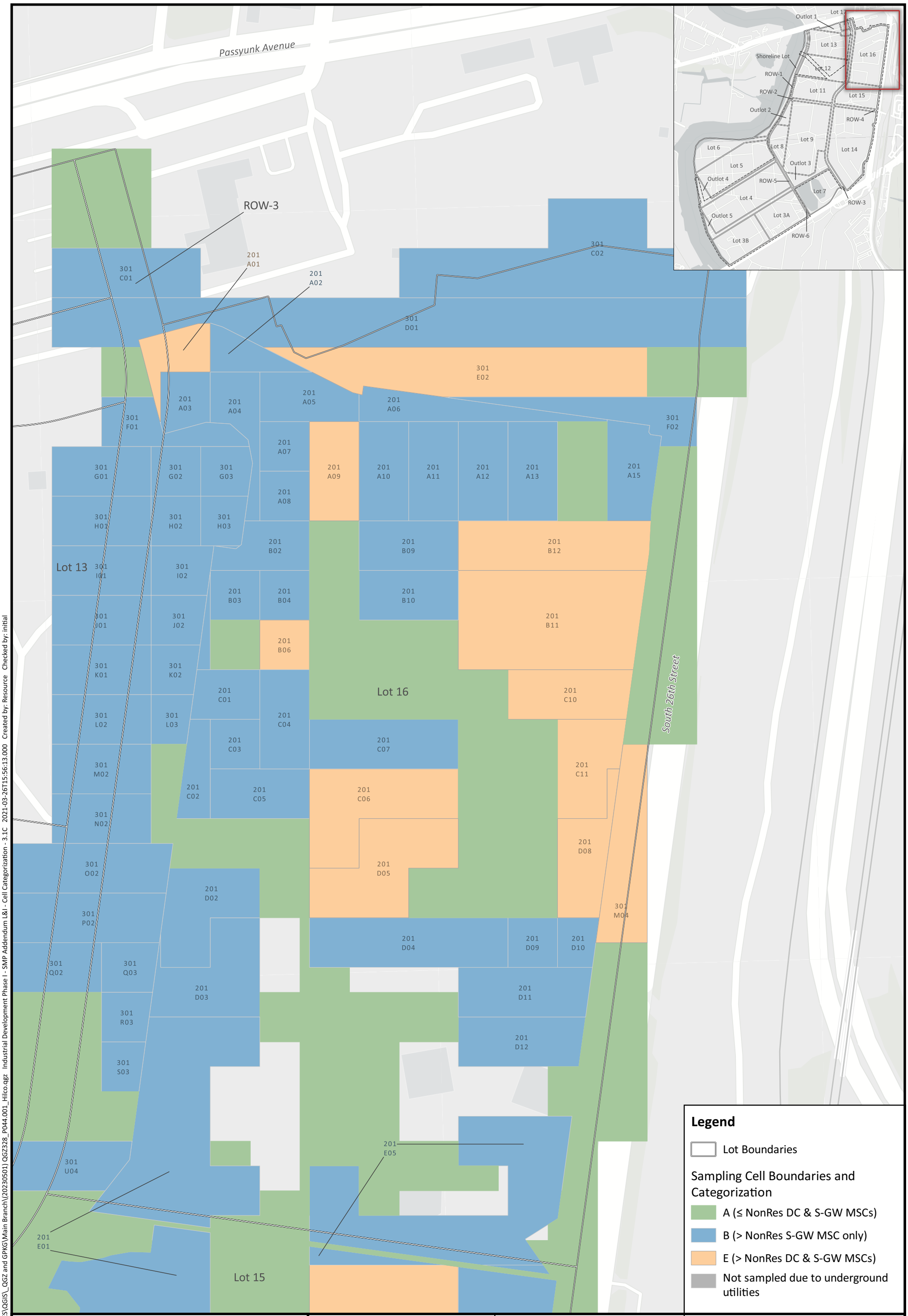
Soil Management Plan Management Categorization (Lot 12 Area)

FIGURE 3.1A

N:\GIS\Dy\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Main Branch\(20230501) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum L&I - Cell Categorization - 3.1A 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Main Branch\(20230501) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum L&I - Cell Categorization - 3.1B 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



SAFETY FIRST

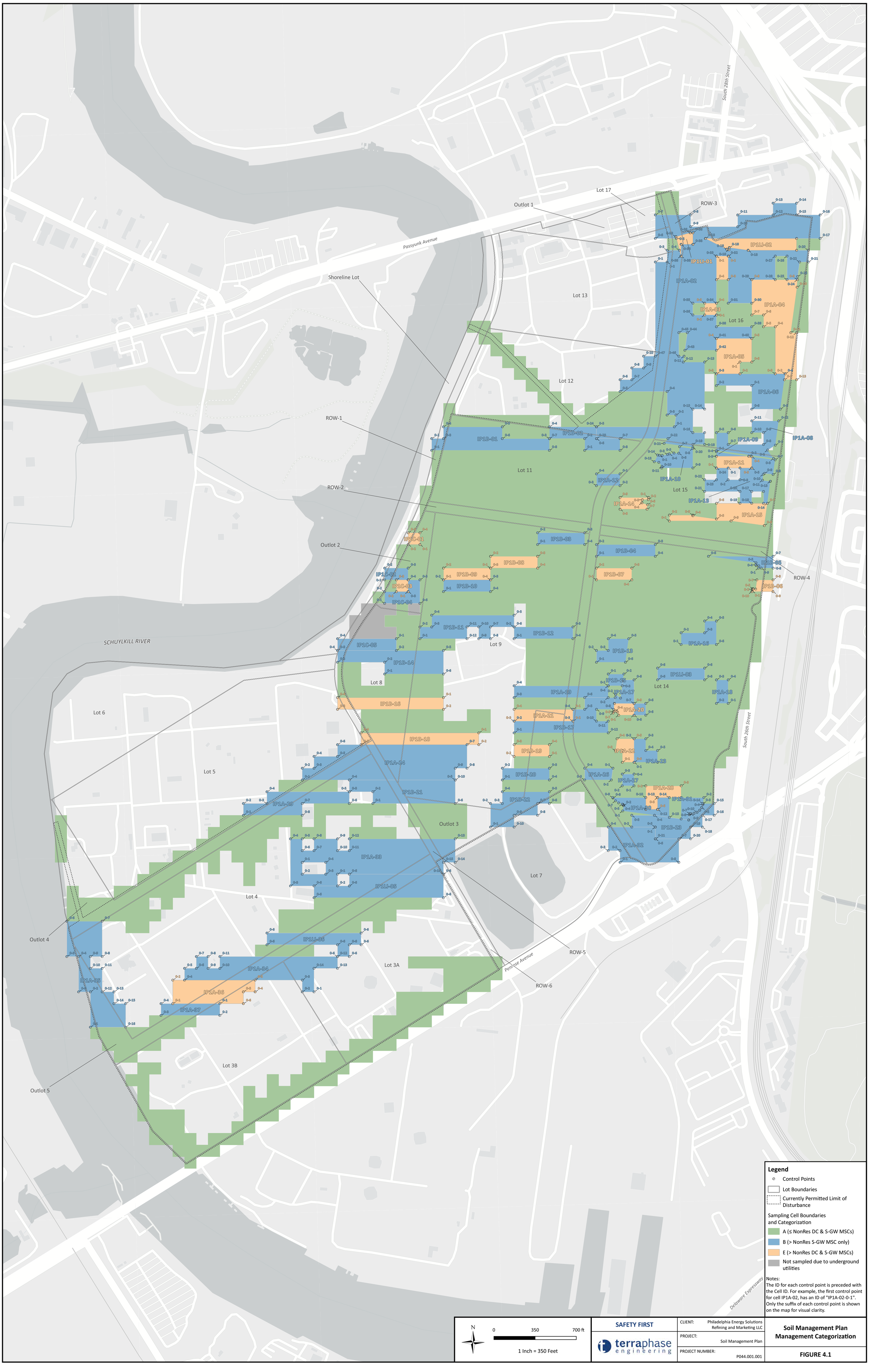
terraphase engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 4
PROJECT NUMBER:	P044.001.001

Soil Management Plan Management Categorization (Lot 16/ROW-1 Area)

FIGURE 3.1C

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Main Branch\(20230501) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum L&I - Cell Categorization - 3.1C 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



N:\GIS\Prj\P044.001_PESRM-PES\GIS_QGZ and GPKG\Main Branch\(20230501) QGZ328_P044.001_Hilco.qgz Industrial Development Phase I - SMP Addendum L&I - CAD Figure (large format) 2021-03-26T15:56:13.000 Created by: MR Checked by: initial

Appendix A

Laboratory Reports

ANALYTICAL REPORT

Lab Number:	L2259023
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/27/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259023
Report Date: 10/27/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2259023-01	301-L01-C1-VOC	SOIL	PHILADELPHIA, PA	10/21/22 13:25	10/21/22
L2259023-02	301-L01-C1-COMP	SOIL	PHILADELPHIA, PA	10/21/22 13:25	10/21/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259023
Project Number:	200.00135.006	**Report Date:**	10/27/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259023
Project Number:	200.00135.006	**Report Date:**	10/27/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 10/27/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259023
Project Number: 200.00135.006
Report Date: 10/27/22

SAMPLE RESULTS

Lab ID: L2259023-01
Client ID: 301-L01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/21/22 13:25
Date Received: 10/21/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/25/22 14:45
Analyst: AJK
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00022	J	mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2259023

Project Number: 200.00135.006 **Report Date:** 10/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 10/25/22 08:31
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1704108-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	96		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259023
Report Date: 10/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1704108-3 WG1704108-4								
Methyl tert butyl ether	106		106		66-130	0		30
Benzene	100		98		70-130	2		30
1,2-Dichloroethane	105		107		70-130	2		30
Toluene	97		97		70-130	0		30
1,2-Dibromoethane	103		105		70-130	2		30
Ethylbenzene	101		99		70-130	2		30
p/m-Xylene	105		104		70-130	1		30
o-Xylene	102		102		70-130	0		30
Isopropylbenzene	95		94		70-130	1		30
1,3,5-Trimethylbenzene	98		97		70-130	1		30
1,2,4-Trimethylbenzene	98		96		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	106		106		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	99		97		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259023
Report Date: 10/27/22

SAMPLE RESULTS

Lab ID: L2259023-02
Client ID: 301-L01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/21/22 13:25
Date Received: 10/21/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/25/22 06:32
Analyst: WR
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 10/24/22 04:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259023
Report Date: 10/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 10/25/22 04:08
Analyst: WR

Extraction Method: EPA 3546
Extraction Date: 10/24/22 04:11

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG1703202-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	97		25-120
Phenol-d6	96		10-120
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	87		30-120
2,4,6-Tribromophenol	89		10-136
4-Terphenyl-d14	81		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259023

Report Date: 10/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1703202-2 WG1703202-3								
Naphthalene	72		80		40-140	11		50
Fluorene	79		84		40-140	6		50
Phenanthrene	73		77		40-140	5		50
Anthracene	75		80		40-140	6		50
Pyrene	78		84		35-142	7		50
Benzo(a)anthracene	79		83		40-140	5		50
Chrysene	78		83		40-140	6		50
Benzo(b)fluoranthene	82		89		40-140	8		50
Benzo(a)pyrene	82		87		40-140	6		50
Benzo(ghi)perylene	80		82		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	92		100		25-120
Phenol-d6	96		99		10-120
Nitrobenzene-d5	111		114		23-120
2-Fluorobiphenyl	81		85		30-120
2,4,6-Tribromophenol	89		95		10-136
4-Terphenyl-d14	78		83		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259023
Project Number: 200.00135.006
Report Date: 10/27/22

SAMPLE RESULTS

Lab ID: L2259023-02
Client ID: 301-L01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/21/22 13:25
Date Received: 10/21/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.13		mg/kg	2.31	0.124	1	10/25/22 00:30	10/25/22 11:39	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259023
Report Date: 10/27/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02 Batch: WG1703138-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	10/25/22 00:30	10/25/22 11:31	1,6010D	DMB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259023

Report Date: 10/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1703138-2 SRM Lot Number: D113-540								
Lead, Total	106		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259023
Report Date: 10/27/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1703138-3 QC Sample: L2259023-02 Client ID: 301-L01-C1-COMP												
Lead, Total	7.13	48.8	52.8	94		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259023

Report Date: 10/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1703138-4 QC Sample: L2259023-02 Client ID: 301-L01-C1-COMP						
Lead, Total	7.13	6.55	mg/kg	8		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259023
Report Date: 10/27/22

SAMPLE RESULTS

Lab ID: L2259023-01
Client ID: 301-L01-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/21/22 13:25
Date Received: 10/21/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.3		%	0.100	NA	1	-	10/22/22 11:04	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259023
Report Date: 10/27/22

SAMPLE RESULTS

Lab ID: L2259023-02
Client ID: 301-L01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/21/22 13:25
Date Received: 10/21/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.2		%	0.100	NA	1	-	10/22/22 11:04	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259023

Report Date: 10/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1702771-1 QC Sample: L2258743-01 Client ID: DUP Sample						
Solids, Total	91.3	91.4	%	0		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259023
Report Date: 10/27/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2259023-01A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2259023-01B	Vial water preserved	A	NA		2.1	Y	Absent	22-OCT-22 07:16	PA-8260HLW(14)
L2259023-01C	Vial water preserved	A	NA		2.1	Y	Absent	22-OCT-22 07:16	PA-8260HLW(14)
L2259023-01D	Plastic 2oz unpreserved for TS	A	NA		2.1	Y	Absent		TS(7)
L2259023-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2259023-02B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259023
Project Number:	200.00135.006	**Report Date:**	10/27/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259023
Project Number:	200.00135.006	**Report Date:**	10/27/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259023
Project Number:	200.00135.006	**Report Date:**	10/27/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259023
Project Number:	200.00135.006	**Report Date:**	10/27/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 10/22/22

ALPHA Job #: L2259023

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193

Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~[illegible]~~ ~~[illegible]~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Data Deliverables

Billing Information

☐ Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING

Filtration
☐ Done
☒ Not Needed
☐ Lab to do

Preservation
☐ Lab to do

(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
59023-01	301-L01-C1-VOC	10/21	1325	S	TS	☑	☐	☐		4
-02	301-L01-C1-Comp	10/21	1325	S	TS	☐	☑	☑		2
						☐	☐	☐		4
						☐	☐	☐		2
						☐	☐	☐		4
						☐	☐	☐		2
						☐	☐	☐		4
						☐	☐	☐		2
						☐	☐	☐		4
						☐	☐	☐		2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-		
Preservative	F	A	A	-	-	-	-	-	-	-	-	-		

Relinquished By:	Date/Time	Received By:	Date/Time
	10/21/22 1500		10/21/22 1300
	10/21/22 2100		10.21.22 2100
10/22/22 0030			

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO. 01-01(M)

ANALYTICAL REPORT

Lab Number:	L2259352
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/31/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2259352-01	302-AO01-C1-VOC	SOIL	PHILADELPHIA, PA	10/24/22 11:00	10/24/22
L2259352-02	302-AO01-C1-COMP	SOIL	PHILADELPHIA, PA	10/24/22 11:00	10/24/22
L2259352-03	302-AM01-C1-VOC	SOIL	PHILADELPHIA, PA	10/24/22 13:00	10/24/22
L2259352-04	302-AM01-C1-COMP	SOIL	PHILADELPHIA, PA	10/24/22 13:00	10/24/22
L2259352-05	302-AM01-C2-VOC	SOIL	PHILADELPHIA, PA	10/24/22 13:30	10/24/22
L2259352-06	302-AM01-C2-COMP	SOIL	PHILADELPHIA, PA	10/24/22 13:30	10/24/22
L2259352-07	302-AM01-C3-VOC	SOIL	PHILADELPHIA, PA	10/24/22 13:45	10/24/22
L2259352-08	302-AM01-C3-COMP	SOIL	PHILADELPHIA, PA	10/24/22 13:45	10/24/22
L2259352-09	302-AM01-C4-VOC	SOIL	PHILADELPHIA, PA	10/24/22 14:00	10/24/22
L2259352-10	302-AM01-C4-COMP	SOIL	PHILADELPHIA, PA	10/24/22 14:00	10/24/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259352
Project Number:	200.00135.006	**Report Date:**	10/31/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259352
Project Number:	200.00135.006	**Report Date:**	10/31/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1703742-4 Laboratory Duplicate RPD for lead (88%), performed on L2259352-02, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 10/31/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-01
Client ID: 302-AO01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 11:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/27/22 09:29
Analyst: JIC
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0042	0.00042	1
Benzene	ND		mg/kg	0.0010	0.00035	1
1,2-Dichloroethane	ND		mg/kg	0.0021	0.00054	1
Toluene	ND		mg/kg	0.0021	0.0011	1
1,2-Dibromoethane	ND		mg/kg	0.0010	0.00061	1
Ethylbenzene	ND		mg/kg	0.0021	0.00029	1
p/m-Xylene	ND		mg/kg	0.0042	0.0012	1
o-Xylene	ND		mg/kg	0.0021	0.00061	1
Xylenes, Total	ND		mg/kg	0.0021	0.00061	1
Isopropylbenzene	ND		mg/kg	0.0021	0.00023	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0042	0.00040	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0042	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-03
Client ID: 302-AM01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 13:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/27/22 09:55
Analyst: JIC
Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	2.8		mg/kg	0.027	0.0091	1
1,2-Dichloroethane	ND		mg/kg	0.055	0.014	1
Toluene	0.092		mg/kg	0.055	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	0.019	J	mg/kg	0.055	0.0077	1
p/m-Xylene	0.094	J	mg/kg	0.11	0.031	1
o-Xylene	0.057		mg/kg	0.055	0.016	1
Xylenes, Total	0.15	J	mg/kg	0.055	0.016	1
Isopropylbenzene	0.0088	J	mg/kg	0.055	0.0060	1
1,3,5-Trimethylbenzene	0.010	J	mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	0.036	J	mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-05
Client ID: 302-AM01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 13:30
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/27/22 10:22
Analyst: JIC
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.0041		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-07
Client ID: 302-AM01-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 13:45
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/27/22 10:48
Analyst: JIC
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-09
Client ID: 302-AM01-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 14:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/27/22 11:14
Analyst: JIC
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00023	J	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 10/27/22 09:03
Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,05,07,09 Batch: WG1705395-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 10/27/22 09:03
Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 03 Batch: WG1705396-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	95		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,05,07,09 Batch: WG1705395-3 WG1705395-4								
Methyl tert butyl ether	79		86		66-130	8		30
Benzene	80		95		70-130	17		30
1,2-Dichloroethane	79		86		70-130	8		30
Toluene	88		104		70-130	17		30
1,2-Dibromoethane	91		100		70-130	9		30
Ethylbenzene	86		102		70-130	17		30
p/m-Xylene	92		109		70-130	17		30
o-Xylene	93		105		70-130	12		30
Isopropylbenzene	86		102		70-130	17		30
1,3,5-Trimethylbenzene	90		106		70-130	16		30
1,2,4-Trimethylbenzene	91		105		70-130	14		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	89		89		70-130
Toluene-d8	105		106		70-130
4-Bromofluorobenzene	101		101		70-130
Dibromofluoromethane	97		97		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 03 Batch: WG1705396-3 WG1705396-4								
Methyl tert butyl ether	79		86		66-130	8		30
Benzene	80		95		70-130	17		30
1,2-Dichloroethane	79		86		70-130	8		30
Toluene	88		104		70-130	17		30
1,2-Dibromoethane	91		100		70-130	9		30
Ethylbenzene	86		102		70-130	17		30
p/m-Xylene	92		109		70-130	17		30
o-Xylene	93		105		70-130	12		30
Isopropylbenzene	86		102		70-130	17		30
1,3,5-Trimethylbenzene	90		106		70-130	16		30
1,2,4-Trimethylbenzene	91		105		70-130	14		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	89		90		70-130
Toluene-d8	105		106		70-130
4-Bromofluorobenzene	101		100		70-130
Dibromofluoromethane	97		97		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-02
Client ID: 302-AO01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 11:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/27/22 09:39
Analyst: SLR
Percent Solids: 96%

Extraction Method: EPA 3546
Extraction Date: 10/25/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.040	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.027	J	mg/kg	0.10	0.019	1
Chrysene	0.064	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.047	J	mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.036	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	50		23-120
2-Fluorobiphenyl	46		30-120
4-Terphenyl-d14	37		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-04
Client ID: 302-AM01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 13:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/27/22 08:52
Analyst: SLR
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 10/25/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.046	J	mg/kg	0.19	0.023	1
Fluorene	0.031	J	mg/kg	0.19	0.018	1
Phenanthrene	0.35		mg/kg	0.11	0.023	1
Anthracene	0.092	J	mg/kg	0.11	0.036	1
Pyrene	0.46		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.45		mg/kg	0.11	0.021	1
Chrysene	0.42		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.61		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.55		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.40		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-06
Client ID: 302-AM01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 13:30
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/26/22 08:31
Analyst: MG
Percent Solids: 90%

Extraction Method: EPA 3546
Extraction Date: 10/25/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.075	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.081	J	mg/kg	0.11	0.020	1
Chrysene	0.13		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.21		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.089	J	mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.043	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	74		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-08
Client ID: 302-AM01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 13:45
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/26/22 07:43
Analyst: MG
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 10/25/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-10
Client ID: 302-AM01-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 14:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/26/22 04:55
Analyst: MG
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 10/25/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 10/26/22 01:43
Analyst: MG

Extraction Method: EPA 3546
Extraction Date: 10/25/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10 Batch: WG1704019-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	72		25-120
Phenol-d6	72		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	66		30-120
2,4,6-Tribromophenol	72		10-136
4-Terphenyl-d14	67		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259352

Report Date: 10/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10 Batch: WG1704019-2 WG1704019-3								
Naphthalene	72		62		40-140	15		50
Fluorene	73		66		40-140	10		50
Phenanthrene	67		62		40-140	8		50
Anthracene	69		64		40-140	8		50
Pyrene	72		67		35-142	7		50
Benzo(a)anthracene	71		67		40-140	6		50
Chrysene	71		67		40-140	6		50
Benzo(b)fluoranthene	77		73		40-140	5		50
Benzo(a)pyrene	76		72		40-140	5		50
Benzo(ghi)perylene	72		69		40-140	4		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	86		76		25-120
Phenol-d6	83		75		10-120
Nitrobenzene-d5	99		86		23-120
2-Fluorobiphenyl	77		67		30-120
2,4,6-Tribromophenol	83		74		10-136
4-Terphenyl-d14	74		66		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-02
Client ID: 302-AO01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/24/22 11:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.81		mg/kg	1.99	0.107	1	10/25/22 18:02	10/26/22 11:09	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-04
Client ID: 302-AM01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/24/22 13:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	119		mg/kg	2.15	0.115	1	10/25/22 18:02	10/26/22 11:05	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-06
Client ID: 302-AM01-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/24/22 13:30
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.9		mg/kg	2.12	0.114	1	10/25/22 18:02	10/26/22 11:33	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-08
Client ID: 302-AM01-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/24/22 13:45
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	52.3		mg/kg	2.09	0.112	1	10/25/22 18:02	10/26/22 11:37	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259352
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-10
Client ID: 302-AM01-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/24/22 14:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	21.4		mg/kg	2.14	0.115	1	10/25/22 18:02	10/26/22 11:40	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10 Batch: WG1703742-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	10/25/22 18:02	10/26/22 10:51	1,6010D	NTB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259352

Report Date: 10/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 Batch: WG1703742-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1703742-3 QC Sample: L2259352-02 Client ID: 302-AO01-C1-COMP												
Lead, Total	5.81	41.7	46.0	96		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259352

Report Date: 10/31/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1703742-4 QC Sample: L2259352-02 Client ID: 302-AO01-C1-COMP						
Lead, Total	5.81	14.9	mg/kg	**88**	Q	20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-01
Client ID: 302-AO01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 11:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-02
Client ID: 302-AO01-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/24/22 11:00
Date Received: 10/24/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.7		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-03
Client ID: 302-AM01-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/24/22 13:00
Date Received: 10/24/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.9		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-04
Client ID: 302-AM01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 13:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.2		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-05
Client ID: 302-AM01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 13:30
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-06
Client ID: 302-AM01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 13:30
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.8		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-07
Client ID: 302-AM01-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/24/22 13:45
Date Received: 10/24/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.1		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-08
Client ID: 302-AM01-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/24/22 13:45
Date Received: 10/24/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-09
Client ID: 302-AM01-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/24/22 14:00
Date Received: 10/24/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.0		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259352-10
Client ID: 302-AM01-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/24/22 14:00
Date Received: 10/24/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.0		%	0.100	NA	1	-	10/25/22 13:21	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259352

Report Date: 10/31/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10 QC Batch ID: WG1703822-1 QC Sample: L2259352-01 Client ID: 302-AO01-C1-VOC						
Solids, Total	85.7	85.5	%	0		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2259352-01A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2259352-01B	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-01C	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-01D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2259352-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2259352-02B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2259352-03A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2259352-03B	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-03C	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-03D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2259352-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2259352-04B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2259352-05A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2259352-05B	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-05C	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-05D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2259352-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2259352-06B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2259352-07A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2259352-07B	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-07C	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-07D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2259352-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259352
Report Date: 10/31/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2259352-08B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2259352-09A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2259352-09B	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-09C	Vial water preserved	A	NA		2.9	Y	Absent	25-OCT-22 06:42	PA-8260HLW(14)
L2259352-09D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2259352-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2259352-10B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259352
Project Number:	200.00135.006	**Report Date:**	10/31/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259352
Project Number:	200.00135.006	**Report Date:**	10/31/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259352
Project Number:	200.00135.006	**Report Date:**	10/31/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259352
Project Number:	200.00135.006	**Report Date:**	10/31/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 10-25-22

ALPHA Job #: L2259352

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~13161~~ ~~17823~~ 18559

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
59352-01	302-AM01-C1-VOC	10/24	1100	S	TS	☑	☐	☐		4
-02	302-AM01-C1-Comp		1100			☐	☐	☑		2
-03	302-AM01-C1-VOC		1300			☑	☐	☐		4
-04	302-AM01-C1-Comp		1300			☐	☑	☑		2
-05	302-AM01-C2-VOC		1330			☑	☐	☐		4
-06	302-AM01-C2-Comp		1330			☐	☑	☑		2
-07	302-AM01-C3-VOC		1345			☐	☐	☐		4
-08	302-AM01-C3-Comp		1345			☐	☑	☑		2
-09	302-AM01-C4-VOC		1400			☑	☐	☐		4
-10	302-AM01-C4-Comp	↓	1400	↓	↓	☐	☑	☑		2
	Container Type					G	G	G		
	Preservative					F	A	A		

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Relinquished By:	Date/Time	Received By:	Date/Time
	10/24		
	10/24/22 1800		10/24/22 1830
	10/24/22 2100		10.24.22 2100

GEAAL 10/25/22 0100

ANALYTICAL REPORT

Lab Number:	L2259629
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/31/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2259629-01	302-AK02-C1-VOC	SOIL	PHILADELPHIA, PA	10/25/22 13:00	10/25/22
L2259629-02	302-AK02-C1-COMP	SOIL	PHILADELPHIA, PA	10/25/22 13:00	10/25/22
L2259629-03	302-AK02-C2-VOC	SOIL	PHILADELPHIA, PA	10/25/22 13:15	10/25/22
L2259629-04	302-AK02-C2-COMP	SOIL	PHILADELPHIA, PA	10/25/22 13:15	10/25/22
L2259629-05	302-AK02-C3-VOC	SOIL	PHILADELPHIA, PA	10/25/22 13:30	10/25/22
L2259629-06	302-AK02-C3-COMP	SOIL	PHILADELPHIA, PA	10/25/22 13:30	10/25/22
L2259629-07	302-AK02-C4-VOC	SOIL	PHILADELPHIA, PA	10/25/22 13:45	10/25/22
L2259629-08	302-AK02-C4-COMP	SOIL	PHILADELPHIA, PA	10/25/22 13:45	10/25/22
L2259629-09	302-AI01-C1-VOC	SOIL	PHILADELPHIA, PA	10/25/22 11:00	10/25/22
L2259629-10	302-AI01-C1-COMP	SOIL	PHILADELPHIA, PA	10/25/22 11:00	10/25/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259629
Project Number:	200.00135.006	**Report Date:**	10/31/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259629
Project Number:	200.00135.006	**Report Date:**	10/31/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2259629-01: The internal standard (IS) response for 1,4-dichlorobenzene-d4 (49%) was below the acceptance criteria; however, re-analysis achieved the following results: fluorobenzene (33%), chlorobenzene-d5 (39%), and 1,4-dichlorobenzene-d4 (42%). The results of both analyses are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 10/31/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-01
Client ID: 302-AK02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:00
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/27/22 22:21
Analyst: JIC
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0012	0.00012	1
Benzene	0.0052		mg/kg	0.00030	0.00010	1
1,2-Dichloroethane	ND		mg/kg	0.00060	0.00015	1
Toluene	ND		mg/kg	0.00060	0.00032	1
1,2-Dibromoethane	ND		mg/kg	0.00030	0.00018	1
Ethylbenzene	ND		mg/kg	0.00060	0.00008	1
p/m-Xylene	ND		mg/kg	0.0012	0.00034	1
o-Xylene	ND		mg/kg	0.00060	0.00017	1
Xylenes, Total	ND		mg/kg	0.00060	0.00017	1
Isopropylbenzene	ND		mg/kg	0.00060	0.00006	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0012	0.00012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0012	0.00020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-01 R
Client ID: 302-AK02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:00
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/28/22 14:38
Analyst: JIC
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-03
Client ID: 302-AK02-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:15
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/27/22 22:47
Analyst: JIC
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-05
Client ID: 302-AK02-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:30
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/27/22 23:14
Analyst: JIC
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0042	0.00042	1
Benzene	ND		mg/kg	0.0010	0.00035	1
1,2-Dichloroethane	ND		mg/kg	0.0021	0.00054	1
Toluene	ND		mg/kg	0.0021	0.0011	1
1,2-Dibromoethane	ND		mg/kg	0.0010	0.00062	1
Ethylbenzene	ND		mg/kg	0.0021	0.00030	1
p/m-Xylene	ND		mg/kg	0.0042	0.0012	1
o-Xylene	ND		mg/kg	0.0021	0.00061	1
Xylenes, Total	ND		mg/kg	0.0021	0.00061	1
Isopropylbenzene	ND		mg/kg	0.0021	0.00023	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0042	0.00041	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0042	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-07
Client ID: 302-AK02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:45
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/27/22 23:40
Analyst: JIC
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-09
Client ID: 302-AI01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 11:00
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/28/22 00:06
Analyst: JIC
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2259629

Project Number: 200.00135.006 **Report Date:** 10/31/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 10/27/22 20:35
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09 Batch: WG1705408-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2259629

Project Number: 200.00135.006 **Report Date:** 10/31/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 10/28/22 08:19
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1706164-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	102		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09 Batch: WG1705408-3 WG1705408-4								
Methyl tert butyl ether	90		88		66-130	2		30
Benzene	95		90		70-130	5		30
1,2-Dichloroethane	90		88		70-130	2		30
Toluene	98		93		70-130	5		30
1,2-Dibromoethane	106		102		70-130	4		30
Ethylbenzene	97		92		70-130	5		30
p/m-Xylene	95		90		70-130	5		30
o-Xylene	95		90		70-130	5		30
Isopropylbenzene	101		97		70-130	4		30
1,3,5-Trimethylbenzene	101		95		70-130	6		30
1,2,4-Trimethylbenzene	99		94		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	105		103		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	100		99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259629

Report Date: 10/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1706164-3 WG1706164-4								
Methyl tert butyl ether	96		98		66-130	2		30
Benzene	98		100		70-130	2		30
1,2-Dichloroethane	102		106		70-130	4		30
Toluene	97		101		70-130	4		30
1,2-Dibromoethane	100		103		70-130	3		30
Ethylbenzene	99		103		70-130	4		30
p/m-Xylene	104		109		70-130	5		30
o-Xylene	101		104		70-130	3		30
Isopropylbenzene	95		98		70-130	3		30
1,3,5-Trimethylbenzene	99		101		70-130	2		30
1,2,4-Trimethylbenzene	97		100		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		106		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	98		97		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-02
Client ID: 302-AK02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:00
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 13:15
Analyst: MG
Percent Solids: 94%

Extraction Method: EPA 3546
Extraction Date: 10/26/22 22:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-04
Client ID: 302-AK02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:15
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 13:39
Analyst: MG
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 10/26/22 22:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	108		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-06
Client ID: 302-AK02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:30
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 14:03
Analyst: MG
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 10/26/22 22:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	90		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-08
Client ID: 302-AK02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:45
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 14:27
Analyst: MG
Percent Solids: 92%

Extraction Method: EPA 3546
Extraction Date: 10/26/22 22:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-10
Client ID: 302-AI01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 11:00
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 14:51
Analyst: MG
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 10/26/22 22:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.052	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.051	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.13		mg/kg	0.12	0.023	1
Chrysene	0.19		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.20		mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.34		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.60		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	94		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259629
Report Date: 10/31/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 10/28/22 17:45
Analyst: MG

Extraction Method: EPA 3546
Extraction Date: 10/26/22 22:57

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10 Batch: WG1704619-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	78		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259629

Report Date: 10/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10 Batch: WG1704619-2 WG1704619-3								
Naphthalene	72		58		40-140	22		50
Fluorene	80		66		40-140	19		50
Phenanthrene	77		62		40-140	22		50
Anthracene	78		63		40-140	21		50
Pyrene	70		64		35-142	9		50
Benzo(a)anthracene	82		67		40-140	20		50
Chrysene	81		69		40-140	16		50
Benzo(b)fluoranthene	78		70		40-140	11		50
Benzo(a)pyrene	88		68		40-140	26		50
Benzo(ghi)perylene	77		63		40-140	20		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	67		59		23-120
2-Fluorobiphenyl	78		63		30-120
4-Terphenyl-d14	73		63		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-02
Client ID: 302-AK02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:00
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.74		mg/kg	2.07	0.111	1	10/26/22 22:15	10/27/22 09:10	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-04
Client ID: 302-AK02-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/25/22 13:15
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.72		mg/kg	2.40	0.129	1	10/26/22 22:15	10/27/22 09:20	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-06
Client ID: 302-AK02-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/25/22 13:30
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.79		mg/kg	2.26	0.121	1	10/26/22 22:15	10/27/22 09:24	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-08
Client ID: 302-AK02-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/25/22 13:45
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.62		mg/kg	2.08	0.111	1	10/26/22 22:15	10/27/22 09:27	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259629
Project Number: 200.00135.006
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-10
Client ID: 302-AI01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/25/22 11:00
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	184		mg/kg	2.50	0.134	1	10/26/22 22:15	10/27/22 09:31	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259629
Report Date: 10/31/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10 Batch: WG1704515-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	10/26/22 22:15	10/27/22 08:22	1,6010D	NTB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259629

Report Date: 10/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 Batch: WG1704515-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1704515-3 WG1704515-4 QC Sample: L2259712-01 Client ID: MS Sample												
Lead, Total	30.8	42.8	74.9	103		84.1	122		75-125	12		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-01
Client ID: 302-AK02-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/25/22 13:00
Date Received: 10/25/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.2		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-02
Client ID: 302-AK02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:00
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.5		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-03
Client ID: 302-AK02-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:15
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-04
Client ID: 302-AK02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:15
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-05
Client ID: 302-AK02-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/25/22 13:30
Date Received: 10/25/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-06
Client ID: 302-AK02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:30
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.3		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-07
Client ID: 302-AK02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:45
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.8		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-08
Client ID: 302-AK02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 13:45
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-09
Client ID: 302-AI01-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/25/22 11:00
Date Received: 10/25/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.7		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

SAMPLE RESULTS

Lab ID: L2259629-10
Client ID: 302-AI01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/25/22 11:00
Date Received: 10/25/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.8		%	0.100	NA	1	-	10/26/22 12:37	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259629

Report Date: 10/31/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10 QC Batch ID: WG1704428-1 QC Sample: L2259414-10 Client ID: DUP Sample						
Solids, Total	75.6	73.1	%	3		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2259629-01A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2259629-01B	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-01C	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-01D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2259629-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2259629-02B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2259629-03A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2259629-03B	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-03C	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-03D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2259629-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2259629-04B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2259629-05A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2259629-05B	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-05C	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-05D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2259629-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2259629-06B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2259629-07A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2259629-07B	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-07C	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-07D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2259629-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259629
Report Date: 10/31/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2259629-08B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2259629-09A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2259629-09B	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-09C	Vial water preserved	A	NA		3.6	Y	Absent	26-OCT-22 11:44	PA-8260HLW(14)
L2259629-09D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2259629-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2259629-10B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259629
Project Number:	200.00135.006	**Report Date:**	10/31/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259629
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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259629
Project Number:	200.00135.006	**Report Date:**	10/31/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259629
Project Number:	200.00135.006	**Report Date:**	10/31/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 10/26/22

ALPHA Job #: L2259629

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~13101~~ ~~17853~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
59629-01	302-AK02-C1-VOC	10/25	1300	S	TS	☑	☐	☐		4
-02	302-AK02-C1-Comp		1300			☐	☑	☑		2
-03	302-AK02-C2-VOC		1315			☑	☐	☐		4
-04	302-AK02-C2-Comp		1315			☐	☑	☑		2
-05	302-AK02-C3-VOC		1330			☑	☐	☐		4
-06	302-AK02-C3-Comp		1330			☐	☑	☑		2
-07	302-AK02-C4-VOC		1345			☑	☐	☐		4
-08	302-AK02-C4-Comp		1345			☐	☑	☑		2
-09	302-AI01-C1-VOC		1100			☑	☐	☐		4
-10	302-AI01-C1-Comp	↓	1100	↓	↓	☐	☑	☑		2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
	10/25	PHAAL	
	10/25/22 1800		10/25/22 1450
10/26/22 0136	10/25/22		10/25/22 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

ANALYTICAL REPORT

Lab Number:	L2259963
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/02/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259963
Report Date: 11/02/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2259963-01	302-AJ03-C1-VOC	SOIL	PHILADELPHIA, PA	10/26/22 11:30	10/26/22
L2259963-02	302-AJ03-C1-COMP	SOIL	PHILADELPHIA, PA	10/26/22 11:30	10/26/22
L2259963-03	302-AJ03-C2-VOC	SOIL	PHILADELPHIA, PA	10/26/22 11:45	10/26/22
L2259963-04	302-AJ03-C2-COMP	SOIL	PHILADELPHIA, PA	10/26/22 11:45	10/26/22
L2259963-05	302-AJ03-C3-VOC	SOIL	PHILADELPHIA, PA	10/26/22 12:00	10/26/22
L2259963-06	302-AJ03-C3-COMP	SOIL	PHILADELPHIA, PA	10/26/22 12:00	10/26/22
L2259963-07	302-AJ03-C4-VOC	SOIL	PHILADELPHIA, PA	10/26/22 12:15	10/26/22
L2259963-08	302-AJ03-C4-COMP	SOIL	PHILADELPHIA, PA	10/26/22 12:15	10/26/22
L2259963-09	302-AI04-C1-VOC	SOIL	PHILADELPHIA, PA	10/26/22 14:15	10/26/22
L2259963-10	302-AI04-C1-COMP	SOIL	PHILADELPHIA, PA	10/26/22 14:15	10/26/22
L2259963-11	302-AI04-C2-VOC	SOIL	PHILADELPHIA, PA	10/26/22 14:30	10/26/22
L2259963-12	302-AI04-C2-COMP	SOIL	PHILADELPHIA, PA	10/26/22 14:30	10/26/22
L2259963-13	302-AI04-C3-VOC	SOIL	PHILADELPHIA, PA	10/26/22 14:45	10/26/22
L2259963-14	302-AI04-C3-COMP	SOIL	PHILADELPHIA, PA	10/26/22 14:45	10/26/22
L2259963-15	302-AI04-C4-VOC	SOIL	PHILADELPHIA, PA	10/26/22 15:00	10/26/22
L2259963-16	302-AI04-C4-COMP	SOIL	PHILADELPHIA, PA	10/26/22 15:00	10/26/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259963
Project Number:	200.00135.006	**Report Date:**	11/02/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259963
Project Number:	200.00135.006	**Report Date:**	11/02/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2259963-13: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

L2259963-15: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 11/02/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-01
Client ID: 302-AJ03-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 11:30
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/31/22 09:38
Analyst: JIC
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.00041	J	mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-03
Client ID: 302-AJ03-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 11:45
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/31/22 10:04
Analyst: JIC
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00049	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-05
Client ID: 302-AJ03-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 12:00
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/31/22 10:30
Analyst: JIC
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.0090		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-07
Client ID: 302-AJ03-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 12:15
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/31/22 10:56
Analyst: JIC
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.016		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-09
Client ID: 302-AI04-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 14:15
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/31/22 11:22
Analyst: JIC
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	0.00020	J	mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	0.00025	J	mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.00052	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	0.00036	J	mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-11
Client ID: 302-AI04-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 14:30
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/31/22 12:13
Analyst: JIC
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00019	J	mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.00013	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-13
Client ID: 302-AI04-C3-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 14:45
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/31/22 12:39
Analyst: JIC
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.76	E	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	0.00035	J	mg/kg	0.00091	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-13
Client ID: 302-AI04-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 14:45
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/01/22 18:03
Analyst: JIC
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	1.2		mg/kg	0.026	0.0087	1
1,2-Dichloroethane	ND		mg/kg	0.053	0.014	1
Toluene	ND		mg/kg	0.053	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	ND		mg/kg	0.053	0.0074	1
p/m-Xylene	ND		mg/kg	0.10	0.029	1
o-Xylene	ND		mg/kg	0.053	0.015	1
Xylenes, Total	ND		mg/kg	0.053	0.015	1
Isopropylbenzene	ND		mg/kg	0.053	0.0057	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-15
Client ID: 302-AI04-C4-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 15:00
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 10/31/22 13:05
Analyst: JIC
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.56	E	mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.00040	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-15
Client ID: 302-AI04-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 15:00
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/01/22 18:31
Analyst: JIC
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	1.1		mg/kg	0.029	0.0098	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	ND		mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	ND		mg/kg	0.059	0.0083	1
p/m-Xylene	ND		mg/kg	0.12	0.033	1
o-Xylene	ND		mg/kg	0.059	0.017	1
Xylenes, Total	ND		mg/kg	0.059	0.017	1
Isopropylbenzene	ND		mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2259963

Project Number: 200.00135.006 **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 10/31/22 09:08
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,13,15 Batch: WG1706750-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2259963

Project Number: 200.00135.006 **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/01/22 16:43
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13,15 Batch: WG1707005-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	104		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259963
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15 Batch: WG1706750-3 WG1706750-4								
Methyl tert butyl ether	81		80		66-130	1		30
Benzene	92		92		70-130	0		30
1,2-Dichloroethane	82		82		70-130	0		30
Toluene	99		101		70-130	2		30
1,2-Dibromoethane	93		95		70-130	2		30
Ethylbenzene	96		98		70-130	2		30
p/m-Xylene	105		108		70-130	3		30
o-Xylene	100		102		70-130	2		30
Isopropylbenzene	94		98		70-130	4		30
1,3,5-Trimethylbenzene	97		100		70-130	3		30
1,2,4-Trimethylbenzene	96		99		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	86		85		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	96		96		70-130
Dibromofluoromethane	100		99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259963

Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13,15 Batch: WG1707005-3 WG1707005-4								
Methyl tert butyl ether	101		98		66-130	3		30
Benzene	101		91		70-130	10		30
1,2-Dichloroethane	103		97		70-130	6		30
Toluene	97		89		70-130	9		30
1,2-Dibromoethane	89		86		70-130	3		30
Ethylbenzene	93		85		70-130	9		30
p/m-Xylene	92		84		70-130	9		30
o-Xylene	87		80		70-130	8		30
Isopropylbenzene	92		84		70-130	9		30
1,3,5-Trimethylbenzene	91		85		70-130	7		30
1,2,4-Trimethylbenzene	92		85		70-130	8		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	113		113		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	95		97		70-130
Dibromofluoromethane	105		100		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-02
Client ID: 302-AJ03-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 11:30
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 15:15
Analyst: MG
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 10/27/22 19:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.044	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.034	1
Pyrene	0.050	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.031	J	mg/kg	0.11	0.020	1
Chrysene	0.027	J	mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.033	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	84		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-04
Client ID: 302-AJ03-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 11:45
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 15:39
Analyst: MG
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 10/27/22 19:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.031	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.11		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.15		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.098	J	mg/kg	0.11	0.021	1
Chrysene	0.099	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.12		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.089	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.059	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-06
Client ID: 302-AJ03-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 12:00
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 16:03
Analyst: MG
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 10/27/22 19:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-08
Client ID: 302-AJ03-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 12:15
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 16:27
Analyst: MG
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 10/27/22 19:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	94		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-10
Client ID: 302-AI04-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 14:15
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/29/22 03:47
Analyst: CMM
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 10/27/22 19:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.022	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	74		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-12
Client ID: 302-AI04-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 14:30
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 17:15
Analyst: MG
Percent Solids: 96%

Extraction Method: EPA 3546
Extraction Date: 10/27/22 19:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	75		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-14
Client ID: 302-AI04-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 14:45
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 17:39
Analyst: MG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 10/27/22 19:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-16
Client ID: 302-AI04-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 15:00
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/28/22 18:03
Analyst: MG
Percent Solids: 75%

Extraction Method: EPA 3546
Extraction Date: 10/27/22 20:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.22	0.027	1
Fluorene	ND		mg/kg	0.22	0.022	1
Phenanthrene	ND		mg/kg	0.13	0.027	1
Anthracene	ND		mg/kg	0.13	0.043	1
Pyrene	ND		mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.025	1
Chrysene	ND		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.037	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.054	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	84		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 10/28/22 17:45
Analyst: MG

Extraction Method: EPA 3546
Extraction Date: 10/26/22 22:57

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1704619-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	78		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259963

Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1704619-2 WG1704619-3								
Naphthalene	72		58		40-140	22		50
Fluorene	80		66		40-140	19		50
Phenanthrene	77		62		40-140	22		50
Anthracene	78		63		40-140	21		50
Pyrene	70		64		35-142	9		50
Benzo(a)anthracene	82		67		40-140	20		50
Chrysene	81		69		40-140	16		50
Benzo(b)fluoranthene	78		70		40-140	11		50
Benzo(a)pyrene	88		68		40-140	26		50
Benzo(ghi)perylene	77		63		40-140	20		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	67		59		23-120
2-Fluorobiphenyl	78		63		30-120
4-Terphenyl-d14	73		63		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-02
Client ID: 302-AJ03-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 11:30
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	56.2		mg/kg	2.13	0.114	1	10/28/22 00:26	10/28/22 12:23	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-04
Client ID: 302-AJ03-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 11:45
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.91		mg/kg	2.26	0.121	1	10/28/22 00:26	10/28/22 12:27	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-06
Client ID: 302-AJ03-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 12:00
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.59		mg/kg	2.28	0.122	1	10/28/22 00:26	10/28/22 12:32	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-08
Client ID: 302-AJ03-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 12:15
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.39		mg/kg	2.20	0.118	1	10/28/22 00:26	10/28/22 12:36	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-10
Client ID: 302-AI04-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 14:15
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.88		mg/kg	2.27	0.122	1	10/28/22 00:26	10/28/22 12:41	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-12
Client ID: 302-AI04-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 14:30
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.04		mg/kg	1.99	0.107	1	10/28/22 00:26	10/28/22 12:46	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-14
Client ID: 302-AI04-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 14:45
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.87		mg/kg	2.38	0.128	1	10/28/22 00:26	10/28/22 12:50	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2259963
Project Number: 200.00135.006
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-16
Client ID: 302-AI04-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 15:00
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.32		mg/kg	2.65	0.142	1	10/28/22 00:26	10/28/22 12:55	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1704869-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	10/28/22 00:26	10/28/22 09:51	1,6010D	JMF

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259963

Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1704869-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259963
Report Date: 11/02/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1704869-3 QC Sample: L2260027-01 Client ID: MS Sample												
Lead, Total	64.2	50.3	95.9	**63**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259963

Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1704869-4 QC Sample: L2260027-01 Client ID: DUP Sample						
Lead, Total	64.2	73.3	mg/kg	13		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Serial Dilution Analysis
Batch Quality Control

Lab Number: L2259963
Report Date: 11/02/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1704869-6 QC Sample: L2260027-01 Client ID: DUP Sample						
Lead, Total	64.2	73.8	mg/kg	15		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-01
Client ID: 302-AJ03-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 11:30
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.6		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-02
Client ID: 302-AJ03-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 11:30
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-03
Client ID: 302-AJ03-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/26/22 11:45
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.7		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-04
Client ID: 302-AJ03-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/26/22 11:45
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.6		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-05
Client ID: 302-AJ03-C3-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 10/26/22 12:00
Date Received: 10/26/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.9		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-06
Client ID: 302-AJ03-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 12:00
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.9		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-07
Client ID: 302-AJ03-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/26/22 12:15
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-08
Client ID: 302-AJ03-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/26/22 12:15
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-09
Client ID: 302-AI04-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 14:15
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-10
Client ID: 302-AI04-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 14:15
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-11
Client ID: 302-AI04-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 14:30
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-12
Client ID: 302-AI04-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 14:30
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.4		%	0.100	NA	1	-	10/27/22 10:37	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-13
Client ID: 302-AI04-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 14:45
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	10/27/22 10:47	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-14
Client ID: 302-AI04-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 14:45
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	10/27/22 10:47	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-15
Client ID: 302-AI04-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 15:00
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	10/27/22 10:47	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2259963
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2259963-16
Client ID: 302-AI04-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/26/22 15:00
Date Received: 10/26/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.5		%	0.100	NA	1	-	10/27/22 10:47	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2259963

Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-12 QC Batch ID: WG1704764-1 QC Sample: L2256821-01 Client ID: DUP Sample						
Solids, Total	83.6	78.9	%	6		20
General Chemistry - Westborough Lab Associated sample(s): 13-16 QC Batch ID: WG1704769-1 QC Sample: L2260013-01 Client ID: DUP Sample						
Solids, Total	77.2	75.2	%	3		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259963
Report Date: 11/02/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2259963-01A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2259963-01B	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-01C	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-01D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2259963-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2259963-02B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2259963-03A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2259963-03B	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-03C	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-03D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2259963-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2259963-04B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2259963-05A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2259963-05B	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-05C	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-05D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2259963-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2259963-06B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2259963-07A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2259963-07B	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-07C	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-07D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2259963-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2259963
Report Date: 11/02/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2259963-08B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2259963-09A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2259963-09B	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-09C	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-09D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2259963-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2259963-10B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2259963-11A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2259963-11B	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-11C	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260HLW(14)
L2259963-11D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2259963-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2259963-12B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2259963-13A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2259963-13B	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260H(14),PA-8260HLW(14)
L2259963-13C	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260H(14),PA-8260HLW(14)
L2259963-13D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2259963-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2259963-14B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2259963-15A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2259963-15B	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260H(14),PA-8260HLW(14)
L2259963-15C	Vial water preserved	A	NA		2.3	Y	Absent	27-OCT-22 07:18	PA-8260H(14),PA-8260HLW(14)
L2259963-15D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2259963-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2259963-16B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259963
Project Number:	200.00135.006	**Report Date:**	11/02/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259963
Project Number:	200.00135.006	**Report Date:**	11/02/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259963
Project Number:	200.00135.006	**Report Date:**	11/02/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2259963
Project Number:	200.00135.006	**Report Date:**	11/02/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

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ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 10/27/22

ALPHA Job #: L2259963

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~17161~~ ~~17813~~ 18559

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
59963-01	302-AJ03-C1-VOC	10/26	1130	S	TS	☒	☐	☐		4
-02	302-AJ03-C1-Comp		1130			☐	☒	☒		2
-03	302-AJ03-C2-VOC		1145			☒	☐	☐		4
-04	302-AJ03-C2-Comp		1145			☐	☒	☒		2
-05	302-AJ03-C3-VOC		1200			☒	☐	☐		4
-06	302-AJ03-C3-Comp		1200			☐	☒	☒		2
-07	302-AJ03-C4-VOC		1215			☒	☐	☐		4
-08	302-AJ03-C4-Comp		1215			☐	☒	☒		2
						☒	☐	☐		4
						☐	☒	☒		2
					Container Type	G	G	G		
					Preservative	F	A	A		

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	10/26	[signature]	10/26/22
[signature]	10/26/22 1750	[signature]	10/26/22 1750
[signature]	10/26/22	[signature]	10-26-22 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

[signature] 10/27/22 0040

CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 10/27/22

ALPHA Job #: L2259963

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~17169~~ ~~17843~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
59963-09	302-AI04-C1-VOC	10/26	1115	S	TS	☑	☐	☐		4
-10	302-AI04-C1-COMP		1915			☐	☑	☑		2
-11	302-AI04-C2-VOC		1930			☑	☐	☐		4
-12	302-AI04-C2-COMP		1930			☐	☑	☑		2
-13 -14	302-AI04-C3-VOC		1945			☑	☐	☐		4
-14 -15	302-AI04-C3-COMP		1945			☐	☑	☑		2
-15 -16	302-AI04-C4-VOC		1500			☑	☐	☐		4
-16 -17	302-AI04-C4-COMP		1500			☐	☑	☑		2
	(EMW)					☑	☐	☐		4
	10/24					☐	☑	☑		2
	Container Type					G	G	G		
	Preservative					F	A	A		

Relinquished By:	Date/Time	Received By:	Date/Time
	10/26		10/26/22 1535
10/27/22 0040	10/26/22		10/26 1800
	10/26/22		10-26-22-2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

ANALYTICAL REPORT

Lab Number:	L2260275
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/03/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260275
Report Date: 11/03/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2260275-01	302-AI03-C1-VOC	SOIL	PHILADELPHIA, PA	10/27/22 11:30	10/27/22
L2260275-02	302-AI03-C1-COMP	SOIL	PHILADELPHIA, PA	10/27/22 11:30	10/27/22
L2260275-03	302-AI03-C2-VOC	SOIL	PHILADELPHIA, PA	10/27/22 11:45	10/27/22
L2260275-04	302-AI03-C2-COMP	SOIL	PHILADELPHIA, PA	10/27/22 11:45	10/27/22
L2260275-05	302-AI03-C3-VOC	SOIL	PHILADELPHIA, PA	10/27/22 12:00	10/27/22
L2260275-06	302-AI03-C3-COMP	SOIL	PHILADELPHIA, PA	10/27/22 12:00	10/27/22
L2260275-07	302-AI03-C4-VOC	SOIL	PHILADELPHIA, PA	10/27/22 12:15	10/27/22
L2260275-08	302-AI03-C4-COMP	SOIL	PHILADELPHIA, PA	10/27/22 12:15	10/27/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260275
Project Number:	200.00135.006	**Report Date:**	11/03/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260275
Project Number:	200.00135.006	**Report Date:**	11/03/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2260275-03: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 11/03/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-01
Client ID: 302-AI03-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 11:30
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/02/22 15:04
Analyst: LAC
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.064		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.066	0.017	1
Toluene	ND		mg/kg	0.066	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	0.059	J	mg/kg	0.066	0.0092	1
p/m-Xylene	0.60		mg/kg	0.13	0.037	1
o-Xylene	ND		mg/kg	0.066	0.019	1
Xylenes, Total	0.60		mg/kg	0.066	0.019	1
Isopropylbenzene	0.16		mg/kg	0.066	0.0071	1
1,3,5-Trimethylbenzene	4.6		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	2.8		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	130		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-03
Client ID: 302-AI03-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 11:45
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/01/22 12:28
Analyst: LAC
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	0.38	E	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00094		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	0.00074	J	mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	0.00018	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-03
Client ID: 302-AI03-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 11:45
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/02/22 15:25
Analyst: LAC
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	0.68		mg/kg	0.028	0.0092	1
1,2-Dichloroethane	ND		mg/kg	0.056	0.014	1
Toluene	ND		mg/kg	0.056	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	ND		mg/kg	0.056	0.0078	1
p/m-Xylene	ND		mg/kg	0.11	0.031	1
o-Xylene	ND		mg/kg	0.056	0.016	1
Xylenes, Total	ND		mg/kg	0.056	0.016	1
Isopropylbenzene	ND		mg/kg	0.056	0.0061	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-05
Client ID: 302-AI03-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 12:00
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/01/22 12:49
Analyst: LAC
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.0064		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-07
Client ID: 302-AI03-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 12:15
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/02/22 14:44
Analyst: LAC
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	0.0060		mg/kg	0.00080	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	ND		mg/kg	0.0016	0.00086	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	ND		mg/kg	0.0016	0.00022	1
p/m-Xylene	ND		mg/kg	0.0032	0.00089	1
o-Xylene	ND		mg/kg	0.0016	0.00046	1
Xylenes, Total	ND		mg/kg	0.0016	0.00046	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0032	0.00053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2260275

Project Number: 200.00135.006 **Report Date:** 11/03/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/01/22 08:36
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,05 Batch: WG1707120-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	126		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2260275

Project Number: 200.00135.006 **Report Date:** 11/03/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/02/22 08:23
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03 Batch: WG1707405-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/02/22 08:23
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07 Batch: WG1707407-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	103		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260275

Report Date: 11/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,05 Batch: WG1707120-3 WG1707120-4								
Methyl tert butyl ether	99		99		66-130	0		30
Benzene	103		103		70-130	0		30
1,2-Dichloroethane	106		109		70-130	3		30
Toluene	96		98		70-130	2		30
1,2-Dibromoethane	102		103		70-130	1		30
Ethylbenzene	100		101		70-130	1		30
p/m-Xylene	105		106		70-130	1		30
o-Xylene	100		103		70-130	3		30
Isopropylbenzene	93		96		70-130	3		30
1,3,5-Trimethylbenzene	97		98		70-130	1		30
1,2,4-Trimethylbenzene	95		99		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	112		109		70-130
Toluene-d8	98		101		70-130
4-Bromofluorobenzene	94		94		70-130
Dibromofluoromethane	102		103		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260275

Report Date: 11/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03 Batch: WG1707405-3 WG1707405-4								
Methyl tert butyl ether	94		93		66-130	1		30
Benzene	97		94		70-130	3		30
1,2-Dichloroethane	100		100		70-130	0		30
Toluene	95		93		70-130	2		30
1,2-Dibromoethane	97		98		70-130	1		30
Ethylbenzene	98		96		70-130	2		30
p/m-Xylene	104		101		70-130	3		30
o-Xylene	99		97		70-130	2		30
Isopropylbenzene	90		89		70-130	1		30
1,3,5-Trimethylbenzene	92		92		70-130	0		30
1,2,4-Trimethylbenzene	91		92		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	106		108		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	94		93		70-130
Dibromofluoromethane	99		100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260275

Report Date: 11/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07 Batch: WG1707407-3 WG1707407-4								
Methyl tert butyl ether	94		93		66-130	1		30
Benzene	97		94		70-130	3		30
1,2-Dichloroethane	100		100		70-130	0		30
Toluene	95		93		70-130	2		30
1,2-Dibromoethane	97		98		70-130	1		30
Ethylbenzene	98		96		70-130	2		30
p/m-Xylene	104		101		70-130	3		30
o-Xylene	99		97		70-130	2		30
Isopropylbenzene	90		89		70-130	1		30
1,3,5-Trimethylbenzene	92		92		70-130	0		30
1,2,4-Trimethylbenzene	91		92		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	106		108		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	94		93		70-130
Dibromofluoromethane	99		100		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-02
Client ID: 302-AI03-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 11:30
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/29/22 16:25
Analyst: IM
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 10/28/22 22:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	0.091	J	mg/kg	0.19	0.019	1
Phenanthrene	0.20		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	45		30-120
4-Terphenyl-d14	36		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-04
Client ID: 302-AI03-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 11:45
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/29/22 16:49
Analyst: IM
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 10/28/22 22:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	41		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-06
Client ID: 302-AI03-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 12:00
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/29/22 17:36
Analyst: IM
Percent Solids: 96%

Extraction Method: EPA 3546
Extraction Date: 10/28/22 22:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-08
Client ID: 302-AI03-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 12:15
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/29/22 17:12
Analyst: IM
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 10/28/22 22:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	43		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 10/28/22 08:27
Analyst: MG

Extraction Method: EPA 3546
Extraction Date: 10/28/22 02:06

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08 Batch: WG1705196-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	79		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260275
Report Date: 11/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08 Batch: WG1705196-2 WG1705196-3								
Naphthalene	73		71		40-140	3		50
Fluorene	87		79		40-140	10		50
Phenanthrene	73		71		40-140	3		50
Anthracene	85		70		40-140	19		50
Pyrene	86		82		35-142	5		50
Benzo(a)anthracene	81		79		40-140	3		50
Chrysene	80		81		40-140	1		50
Benzo(b)fluoranthene	74		76		40-140	3		50
Benzo(a)pyrene	80		86		40-140	7		50
Benzo(ghi)perylene	85		74		40-140	14		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	77		67		23-120
2-Fluorobiphenyl	82		81		30-120
4-Terphenyl-d14	98		86		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-02
Client ID: 302-AI03-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/27/22 11:30
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.89		mg/kg	2.23	0.120	1	10/29/22 08:55	10/31/22 13:56	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-04
Client ID: 302-AI03-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/27/22 11:45
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.00		mg/kg	2.24	0.120	1	10/29/22 08:55	10/31/22 13:46	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-06
Client ID: 302-AI03-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/27/22 12:00
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.88		mg/kg	2.03	0.109	1	10/29/22 08:55	10/31/22 13:49	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260275
Project Number: 200.00135.006
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-08
Client ID: 302-AI03-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/27/22 12:15
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.39		mg/kg	2.20	0.118	1	10/29/22 08:55	10/31/22 13:53	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08 Batch: WG1705717-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	10/29/22 08:55	10/31/22 13:39	1,6010D	NTB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260275

Report Date: 11/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 Batch: WG1705717-2 SRM Lot Number: D113-540								
Lead, Total	105		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260275
Report Date: 11/03/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1705717-3 QC Sample: L2260275-02 Client ID: 302-AI03-C1-COMP												
Lead, Total	6.89	47	51.7	95		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260275

Report Date: 11/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1705717-4 QC Sample: L2260275-02 Client ID: 302-AI03-C1-COMP						
Lead, Total	6.89	7.59	mg/kg	10		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-01
Client ID: 302-AI03-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/27/22 11:30
Date Received: 10/27/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.2		%	0.100	NA	1	-	10/31/22 11:55	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-02
Client ID: 302-AI03-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/27/22 11:30
Date Received: 10/27/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	10/29/22 07:47	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-03
Client ID: 302-AI03-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/27/22 11:45
Date Received: 10/27/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	10/31/22 11:55	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-04
Client ID: 302-AI03-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/27/22 11:45
Date Received: 10/27/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	10/29/22 07:47	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-05
Client ID: 302-AI03-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/27/22 12:00
Date Received: 10/27/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.9		%	0.100	NA	1	-	10/31/22 11:55	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-06
Client ID: 302-AI03-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 12:00
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.0		%	0.100	NA	1	-	10/29/22 07:47	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-07
Client ID: 302-AI03-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/27/22 12:15
Date Received: 10/27/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.8		%	0.100	NA	1	-	10/31/22 11:55	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260275
Report Date: 11/03/22

SAMPLE RESULTS

Lab ID: L2260275-08
Client ID: 302-AI03-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/27/22 12:15
Date Received: 10/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.3		%	0.100	NA	1	-	10/29/22 07:47	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260275

Report Date: 11/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1705720-1 QC Sample: L2260559-01 Client ID: DUP Sample						
Solids, Total	83.9	85.7	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07 QC Batch ID: WG1706240-1 QC Sample: L2260346-05 Client ID: DUP Sample						
Solids, Total	87.2	87.0	%	0		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260275
Report Date: 11/03/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2260275-01A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2260275-01B	Vial water preserved	A	NA		3.9	Y	Absent	28-OCT-22 13:13	PA-8260HLW(14)
L2260275-01C	Vial water preserved	A	NA		3.9	Y	Absent	28-OCT-22 13:13	PA-8260HLW(14)
L2260275-01D	Plastic 2oz unpreserved for TS	A	NA		3.9	Y	Absent		TS(7)
L2260275-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2260275-02B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2260275-03A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2260275-03B	Vial water preserved	A	NA		3.9	Y	Absent	28-OCT-22 13:13	PA-8260H(14),PA-8260HLW(14)
L2260275-03C	Vial water preserved	A	NA		3.9	Y	Absent	28-OCT-22 13:13	PA-8260H(14),PA-8260HLW(14)
L2260275-03D	Plastic 2oz unpreserved for TS	A	NA		3.9	Y	Absent		TS(7)
L2260275-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2260275-04B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2260275-05A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2260275-05B	Vial water preserved	A	NA		3.9	Y	Absent	28-OCT-22 13:13	PA-8260HLW(14)
L2260275-05C	Vial water preserved	A	NA		3.9	Y	Absent	28-OCT-22 13:13	PA-8260HLW(14)
L2260275-05D	Plastic 2oz unpreserved for TS	A	NA		3.9	Y	Absent		TS(7)
L2260275-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2260275-06B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2260275-07A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2260275-07B	Vial water preserved	A	NA		3.9	Y	Absent	28-OCT-22 13:13	PA-8260HLW(14)
L2260275-07C	Vial water preserved	A	NA		3.9	Y	Absent	28-OCT-22 13:13	PA-8260HLW(14)
L2260275-07D	Plastic 2oz unpreserved for TS	A	NA		3.9	Y	Absent		TS(7)
L2260275-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260275
Report Date: 11/03/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2260275-08B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260275
Project Number:	200.00135.006	**Report Date:**	11/03/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260275
Project Number:	200.00135.006	**Report Date:**	11/03/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260275
Project Number:	200.00135.006	**Report Date:**	11/03/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260275
Project Number:	200.00135.006	**Report Date:**	11/03/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 10/28/22

ALPHA Job #: L2260275

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~12161~~ ~~17433~~ 18559

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program
Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist, Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
60275-01	302-AI03-C1-VOC	10/27	1130	S	B	✓		✓		4
02	302-AI03-C1-Comp		1130				✓	✓		2
-03	302-AI03-C2-VOC		1145			✓		✓		4
-04	302-AI03-C2-Comp		1145				✓	✓		2
-05	302-AI03-C3-VOC		1200			✓		✓		4
-06	302-AI03-C3-Comp		1200				✓	✓		2
-07	302-AI03-C4-VOC		1215			✓		✓		4
-08	302-AI03-C4-Comp		1215				✓	✓		2
	~~3-1-202-C1-VOC~~		~~1330~~			✓		✓		~~4~~
	~~3-1-202-C1-Comp~~		~~1330~~				✓	✓		~~2~~

	VOCs (8260)	SVOCs (8270)	Lead
Container Type	G	G	G
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	10/27	[signature]	10/27/22 14:55
[signature]	10/27/22 1800	[signature]	10/27/22 1800
[signature]	10/27/22 2110	[signature]	10/27/22 2110

EA/dAA2 10/28/22 0028

10/28/22 0028

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

ANALYTICAL REPORT

Lab Number:	L2260619
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/04/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260619
Report Date: 11/04/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2260619-01	302-AE01-C1-VOC	SOIL	PHILADELPHIA, PA	10/28/22 14:00	10/28/22
L2260619-02	302-AE01-C1-COMP	SOIL	PHILADELPHIA, PA	10/28/22 14:00	10/28/22
L2260619-03	302-AE01-C2-VOC	SOIL	PHILADELPHIA, PA	10/28/22 14:15	10/28/22
L2260619-04	302-AE01-C2-COMP	SOIL	PHILADELPHIA, PA	10/28/22 14:15	10/28/22
L2260619-05	302-AE01-C3-VOC	SOIL	PHILADELPHIA, PA	10/28/22 14:30	10/28/22
L2260619-06	302-AE01-C3-COMP	SOIL	PHILADELPHIA, PA	10/28/22 14:30	10/28/22
L2260619-07	302-AE01-C4-VOC	SOIL	PHILADELPHIA, PA	10/28/22 14:45	10/28/22
L2260619-08	302-AE01-C4-COMP	SOIL	PHILADELPHIA, PA	10/28/22 14:45	10/28/22
L2260619-09	302-AE01-C5-VOC	SOIL	PHILADELPHIA, PA	10/28/22 15:00	10/28/22
L2260619-10	302-AE01-C5-COMP	SOIL	PHILADELPHIA, PA	10/28/22 15:00	10/28/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260619
Project Number:	200.00135.006	**Report Date:**	11/04/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260619
Project Number:	200.00135.006	**Report Date:**	11/04/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2260619-09: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2260619-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (144%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Walukevich

Caitlin Walukevich

Title: Technical Director/Representative

Date: 11/04/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-01
Client ID: 302-AE01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:00
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/03/22 13:15
Analyst: NLK
Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-03
Client ID: 302-AE01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:15
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/03/22 13:35
Analyst: NLK
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00026	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-05
Client ID: 302-AE01-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:30
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/03/22 13:54
Analyst: NLK
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-07
Client ID: 302-AE01-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:45
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/03/22 14:14
Analyst: NLK
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0031	0.00032	1
Benzene	ND		mg/kg	0.00079	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00040	1
Toluene	ND		mg/kg	0.0016	0.00085	1
1,2-Dibromoethane	ND		mg/kg	0.00079	0.00046	1
Ethylbenzene	ND		mg/kg	0.0016	0.00022	1
p/m-Xylene	ND		mg/kg	0.0031	0.00088	1
o-Xylene	ND		mg/kg	0.0016	0.00046	1
Xylenes, Total	ND		mg/kg	0.0016	0.00046	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0031	0.00030	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0031	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-09
Client ID: 302-AE01-C5-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 15:00
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/03/22 02:32
Analyst: NLK
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.57	0.057	4
Benzene	ND		mg/kg	0.14	0.047	4
1,2-Dichloroethane	ND		mg/kg	0.28	0.073	4
Toluene	ND		mg/kg	0.28	0.15	4
1,2-Dibromoethane	ND		mg/kg	0.14	0.083	4
Ethylbenzene	ND		mg/kg	0.28	0.040	4
p/m-Xylene	ND		mg/kg	0.57	0.16	4
o-Xylene	ND		mg/kg	0.28	0.083	4
Xylenes, Total	ND		mg/kg	0.28	0.083	4
Isopropylbenzene	2.6		mg/kg	0.28	0.031	4
1,3,5-Trimethylbenzene	ND		mg/kg	0.57	0.055	4
1,2,4-Trimethylbenzene	ND		mg/kg	0.57	0.095	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	**144**	Q	70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2260619

Project Number: 200.00135.006 **Report Date:** 11/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/02/22 17:14
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1707677-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/03/22 08:21
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07 Batch: WG1707795-5					
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
Isopropylbenzene	ND		ug/kg	1.0	0.11
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	95		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260619

Report Date: 11/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1707677-3 WG1707677-4								
Methyl tert butyl ether	101		100		66-130	1		30
Benzene	100		94		70-130	6		30
1,2-Dichloroethane	98		98		70-130	0		30
Toluene	97		92		70-130	5		30
1,2-Dibromoethane	90		90		70-130	0		30
Ethylbenzene	93		87		70-130	7		30
p/m-Xylene	91		86		70-130	6		30
o-Xylene	87		83		70-130	5		30
Isopropylbenzene	97		90		70-130	7		30
1,3,5-Trimethylbenzene	96		90		70-130	6		30
1,2,4-Trimethylbenzene	96		90		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	108		108		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	102		102		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260619

Report Date: 11/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07 Batch: WG1707795-3 WG1707795-4								
1,2-Dichloroethane	105		98		70-130	7		30
Benzene	110		102		70-130	8		30
Toluene	109		99		70-130	10		30
Ethylbenzene	114		104		70-130	9		30
Methyl tert butyl ether	106		100		66-130	6		30
p/m-Xylene	114		102		70-130	11		30
o-Xylene	114		103		70-130	10		30
1,2-Dibromoethane	113		103		70-130	9		30
Isopropylbenzene	112		104		70-130	7		30
1,3,5-Trimethylbenzene	110		103		70-130	7		30
1,2,4-Trimethylbenzene	109		101		70-130	8		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		97		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	92		93		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-02
Client ID: 302-AE01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:00
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/31/22 14:02
Analyst: MG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 10/30/22 00:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	65		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-04
Client ID: 302-AE01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:15
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/31/22 14:26
Analyst: MG
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 10/30/22 00:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.041	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-06
Client ID: 302-AE01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:30
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/31/22 14:50
Analyst: MG
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 10/30/22 00:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-08
Client ID: 302-AE01-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:45
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/31/22 15:14
Analyst: MG
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 10/30/22 00:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	76		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-10
Client ID: 302-AE01-C5-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 15:00
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 10/31/22 15:37
Analyst: MG
Percent Solids: 93%

Extraction Method: EPA 3546
Extraction Date: 10/30/22 00:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.068	J	mg/kg	0.18	0.022	1
Fluorene	0.32		mg/kg	0.18	0.017	1
Phenanthrene	0.78		mg/kg	0.11	0.022	1
Anthracene	0.092	J	mg/kg	0.11	0.035	1
Pyrene	0.089	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 10/31/22 14:00
Analyst: MG

Extraction Method: EPA 3546
Extraction Date: 10/29/22 10:33

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10 Batch: WG1705790-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	75		25-120
Phenol-d6	74		10-120
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	76		30-120
2,4,6-Tribromophenol	63		10-136
4-Terphenyl-d14	78		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260619
Report Date: 11/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10 Batch: WG1705790-2 WG1705790-3								
Naphthalene	70		64		40-140	9		50
Fluorene	71		65		40-140	9		50
Phenanthrene	70		64		40-140	9		50
Anthracene	72		64		40-140	12		50
Pyrene	73		66		35-142	10		50
Benzo(a)anthracene	70		64		40-140	9		50
Chrysene	73		67		40-140	9		50
Benzo(b)fluoranthene	78		69		40-140	12		50
Benzo(a)pyrene	79		73		40-140	8		50
Benzo(ghi)perylene	70		66		40-140	6		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	78		68		25-120
Phenol-d6	73		64		10-120
Nitrobenzene-d5	67		58		23-120
2-Fluorobiphenyl	75		67		30-120
2,4,6-Tribromophenol	75		67		10-136
4-Terphenyl-d14	75		67		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-02
Client ID: 302-AE01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/28/22 14:00
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.75		mg/kg	2.32	0.125	1	11/01/22 07:50	11/01/22 13:57	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-04
Client ID: 302-AE01-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/28/22 14:15
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.75		mg/kg	2.57	0.138	1	11/01/22 07:50	11/01/22 14:35	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-06
Client ID: 302-AE01-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/28/22 14:30
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.67		mg/kg	2.39	0.128	1	11/01/22 07:50	11/01/22 14:40	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-08
Client ID: 302-AE01-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/28/22 14:45
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.43		mg/kg	2.41	0.129	1	11/01/22 07:50	11/01/22 14:44	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260619
Project Number: 200.00135.006
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-10
Client ID: 302-AE01-C5-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/28/22 15:00
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.20		mg/kg	2.04	0.110	1	11/01/22 07:50	11/01/22 14:49	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10 Batch: WG1705919-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/01/22 07:50	11/01/22 11:51	1,6010D	DMB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260619

Report Date: 11/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 Batch: WG1705919-2 SRM Lot Number: D113-540								
Lead, Total	96		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260619
Report Date: 11/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1705919-3 QC Sample: L2260454-01 Client ID: MS Sample												
Lead, Total	2.62	40.8	39.2	90		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260619

Report Date: 11/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1705919-4 QC Sample: L2260454-01 Client ID: DUP Sample						
Lead, Total	2.62	3.04	mg/kg	15		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-01
Client ID: 302-AE01-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/28/22 14:00
Date Received: 10/28/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.7		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-02
Client ID: 302-AE01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:00
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-03
Client ID: 302-AE01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:15
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-04
Client ID: 302-AE01-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 10/28/22 14:15
Date Received: 10/28/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.5		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-05
Client ID: 302-AE01-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/28/22 14:30
Date Received: 10/28/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-06
Client ID: 302-AE01-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/28/22 14:30
Date Received: 10/28/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.9		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-07
Client ID: 302-AE01-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/28/22 14:45
Date Received: 10/28/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.3		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-08
Client ID: 302-AE01-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/28/22 14:45
Date Received: 10/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-09
Client ID: 302-AE01-C5-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/28/22 15:00
Date Received: 10/28/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.5		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260619
Report Date: 11/04/22

SAMPLE RESULTS

Lab ID: L2260619-10
Client ID: 302-AE01-C5-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 10/28/22 15:00
Date Received: 10/28/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.2		%	0.100	NA	1	-	10/29/22 09:32	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260619

Report Date: 11/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10 QC Batch ID: WG1705759-1 QC Sample: L2260280-01 Client ID: DUP Sample						
Solids, Total	88.1	89.0	%	1		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260619
Report Date: 11/04/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2260619-01A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2260619-01B	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-01C	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-01D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2260619-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2260619-02B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2260619-03A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2260619-03B	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-03C	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-03D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2260619-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2260619-04B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2260619-05A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2260619-05B	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-05C	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-05D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2260619-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2260619-06B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2260619-07A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2260619-07B	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-07C	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-07D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2260619-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260619
Report Date: 11/04/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2260619-08B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2260619-09A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2260619-09B	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-09C	Vial water preserved	A	NA		2.2	Y	Absent	29-OCT-22 07:45	PA-8260HLW(14)
L2260619-09D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2260619-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2260619-10B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260619
Project Number:	200.00135.006	**Report Date:**	11/04/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260619
Project Number:	200.00135.006	**Report Date:**	11/04/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260619
Project Number:	200.00135.006	**Report Date:**	11/04/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260619
Project Number:	200.00135.006	**Report Date:**	11/04/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE | OF |

Date Rec'd in Lab: 10/29/22

ALPHA Job #: L2240619

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com
☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~13191~~ D7823 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)
Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
60619-01	302-AE01-C1-VOC	10/28	1400	S	TS	☒	☐	☐		4
02	302-AE01-C1-Comp		1400			☐	☐	☐		2
03	302-AE01-C2-VOC		1415			☐	☐	☐		4
04	302-AE01-C2-Comp		1415			☐	☐	☐		2
05	302-AE01-C3-VOC		1430			☐	☐	☐		4
06	302-AE01-C3-Comp		1430			☐	☐	☐		2
07	302-AE01-C4-VOC		1445			☐	☐	☐		4
08	302-AE01-C4-Comp		1445			☐	☐	☐		2
09	302-AE01-C5-VOC		1500			☐	☐	☐		4
10	302-AE01-C5-Comp		1500			☐	☐	☐		2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	

Relinquished By:	Date/Time	Received By:	Date/Time
SBrant AAL	10/28 1500	SBrant AAL	10/28 15:00
SBrant AAL	10/28 16:00		10/28 16:00
	10/28 21:00		10/28/22 21:00

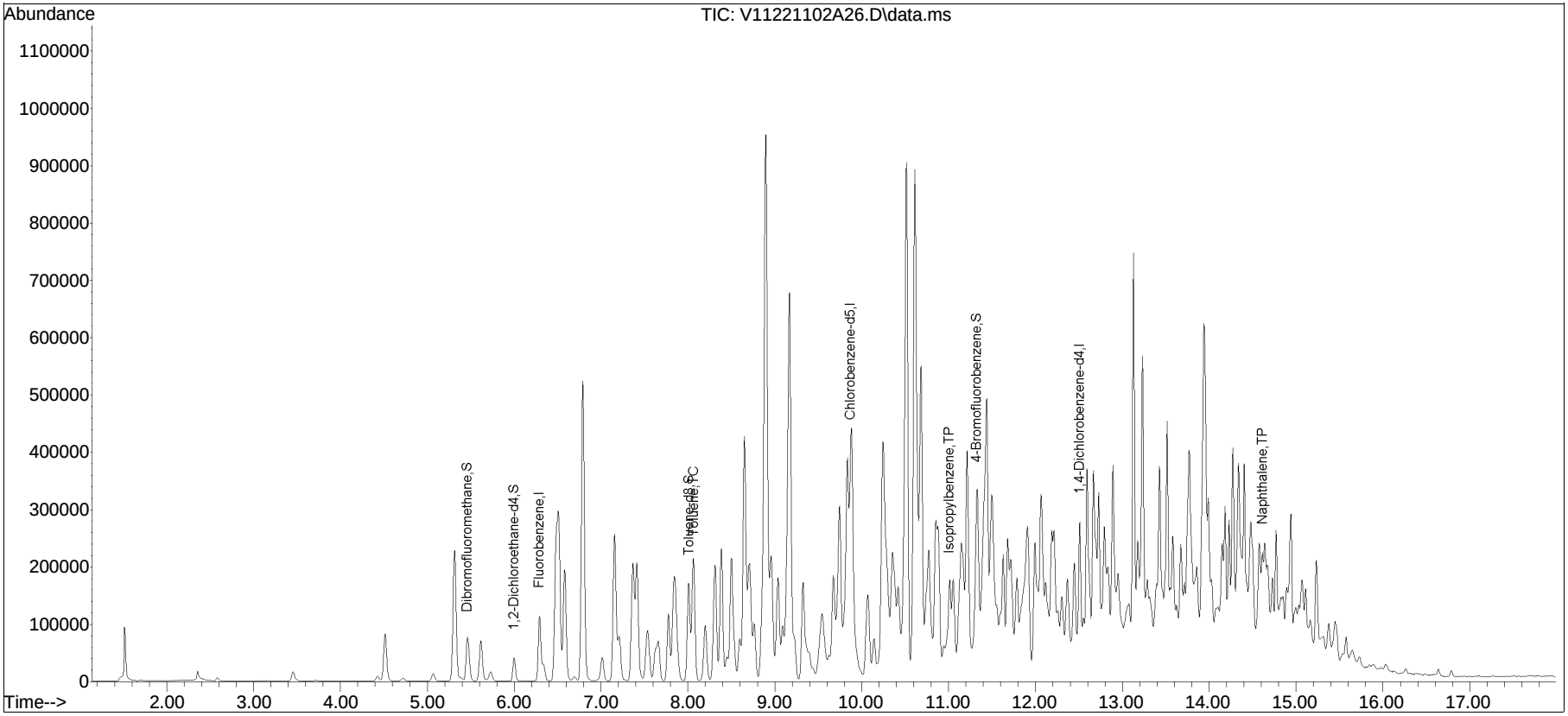
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\221102A\
Data File : V11221102A26.D
Acq On : 03 Nov 2022 02:32 am
Operator : VOA111:NLK
Sample : L2260619-09,31H,4.20,5,0.025,,A,R2F
Misc : WG1707677,ICAL19286
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Nov 03 06:47:48 2022
Quant Method : I:\VOLATILES\VOA111\2022\221102A\V111_220824N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Aug 25 09:55:07 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list02A\V11221102A01.D•



ANALYTICAL REPORT

Lab Number:	L2260828
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/07/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260828
Report Date: 11/07/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2260828-01	302-AF01-C1-VOC	SOIL	PHILADELPHIA, PA	10/31/22 13:00	10/31/22
L2260828-02	302-AF01-C1-COMP	SOIL	PHILADELPHIA, PA	10/31/22 13:00	10/31/22
L2260828-03	302-AF01-C2-VOC	SOIL	PHILADELPHIA, PA	10/31/22 13:30	10/31/22
L2260828-04	302-AF01-C2-COMP	SOIL	PHILADELPHIA, PA	10/31/22 13:30	10/31/22
L2260828-05	302-AF01-C3-VOC	SOIL	PHILADELPHIA, PA	10/31/22 14:00	10/31/22
L2260828-06	302-AF01-C3-COMP	SOIL	PHILADELPHIA, PA	10/31/22 14:00	10/31/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260828
Project Number:	200.00135.006	**Report Date:**	11/07/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260828
Project Number:	200.00135.006	**Report Date:**	11/07/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2260828-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (177%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 11/07/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260828
Project Number: 200.00135.006
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-01
Client ID: 302-AF01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 13:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/04/22 13:52
Analyst: JIC
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00067	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00073	1
1,2-Dibromoethane	ND		mg/kg	0.00067	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00075	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260828
Project Number: 200.00135.006
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-03
Client ID: 302-AF01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 13:30
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/07/22 09:52
Analyst: NLK
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	ND		mg/kg	0.027	0.0091	1
1,2-Dichloroethane	ND		mg/kg	0.055	0.014	1
Toluene	ND		mg/kg	0.055	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	ND		mg/kg	0.055	0.0077	1
p/m-Xylene	ND		mg/kg	0.11	0.031	1
o-Xylene	ND		mg/kg	0.055	0.016	1
Xylenes, Total	ND		mg/kg	0.055	0.016	1
Isopropylbenzene	4.6		mg/kg	0.055	0.0060	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	**177**	Q	70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260828
Project Number: 200.00135.006
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-05
Client ID: 302-AF01-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 14:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/04/22 14:34
Analyst: JIC
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	0.0030		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260828
Report Date: 11/07/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/04/22 08:29
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,05 Batch: WG1709032-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2260828

Project Number: 200.00135.006 **Report Date:** 11/07/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/07/22 08:33
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 03 Batch: WG1709055-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260828

Report Date: 11/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,05 Batch: WG1709032-3 WG1709032-4								
Methyl tert butyl ether	101		99		66-130	2		30
Benzene	100		104		70-130	4		30
1,2-Dichloroethane	104		108		70-130	4		30
Toluene	98		100		70-130	2		30
1,2-Dibromoethane	101		104		70-130	3		30
Ethylbenzene	102		102		70-130	0		30
p/m-Xylene	106		108		70-130	2		30
o-Xylene	103		104		70-130	1		30
Isopropylbenzene	96		97		70-130	1		30
1,3,5-Trimethylbenzene	100		100		70-130	0		30
1,2,4-Trimethylbenzene	99		99		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		106		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	93		93		70-130
Dibromofluoromethane	99		97		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260828

Report Date: 11/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 03 Batch: WG1709055-3 WG1709055-4								
Methyl tert butyl ether	94		89		66-130	5		30
Benzene	102		94		70-130	8		30
1,2-Dichloroethane	100		92		70-130	8		30
Toluene	96		91		70-130	5		30
1,2-Dibromoethane	98		94		70-130	4		30
Ethylbenzene	101		94		70-130	7		30
p/m-Xylene	100		94		70-130	6		30
o-Xylene	100		94		70-130	6		30
Isopropylbenzene	100		92		70-130	8		30
1,3,5-Trimethylbenzene	99		90		70-130	10		30
1,2,4-Trimethylbenzene	98		90		70-130	9		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		99		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	100		99		70-130
Dibromofluoromethane	95		96		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260828
Project Number: 200.00135.006
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-02
Client ID: 302-AF01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 13:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/03/22 14:10
Analyst: MG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 11/02/22 18:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260828
Project Number: 200.00135.006
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-04
Client ID: 302-AF01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 13:30
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/03/22 14:34
Analyst: MG
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 11/02/22 18:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260828
Project Number: 200.00135.006
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-06
Client ID: 302-AF01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 14:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/03/22 14:57
Analyst: MG
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 11/02/22 18:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.029	J	mg/kg	0.18	0.022	1
Fluorene	0.25		mg/kg	0.18	0.018	1
Phenanthrene	0.58		mg/kg	0.11	0.022	1
Anthracene	0.085	J	mg/kg	0.11	0.036	1
Pyrene	0.053	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	63		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260828
Report Date: 11/07/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/02/22 21:27
Analyst: LJG

Extraction Method: EPA 3546
Extraction Date: 11/02/22 09:26

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06 Batch: WG1707110-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	52		25-120
Phenol-d6	51		10-120
Nitrobenzene-d5	45		23-120
2-Fluorobiphenyl	56		30-120
2,4,6-Tribromophenol	57		10-136
4-Terphenyl-d14	58		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260828

Report Date: 11/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06 Batch: WG1707110-2 WG1707110-3								
Naphthalene	51		62		40-140	19		50
Fluorene	53		68		40-140	25		50
Phenanthrene	52		66		40-140	24		50
Anthracene	53		67		40-140	23		50
Pyrene	55		70		35-142	24		50
Benzo(a)anthracene	51		65		40-140	24		50
Chrysene	52		66		40-140	24		50
Benzo(b)fluoranthene	54		67		40-140	21		50
Benzo(a)pyrene	54		69		40-140	24		50
Benzo(ghi)perylene	49		62		40-140	23		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	54		66		25-120
Phenol-d6	53		67		10-120
Nitrobenzene-d5	48		59		23-120
2-Fluorobiphenyl	57		70		30-120
2,4,6-Tribromophenol	58		73		10-136
4-Terphenyl-d14	56		70		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260828
Project Number: 200.00135.006
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-02
Client ID: 302-AF01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/31/22 13:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.80		mg/kg	2.28	0.122	1	11/01/22 10:10	11/02/22 10:47	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260828
Project Number: 200.00135.006
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-04
Client ID: 302-AF01-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/31/22 13:30
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.30		mg/kg	2.25	0.121	1	11/01/22 10:10	11/02/22 10:50	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2260828
Project Number: 200.00135.006
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-06
Client ID: 302-AF01-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 10/31/22 14:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.41		mg/kg	2.11	0.113	1	11/01/22 10:10	11/02/22 10:54	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2260828
Report Date: 11/07/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06 Batch: WG1706520-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/01/22 10:10	11/02/22 09:36	1,6010D	NTB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260828

Report Date: 11/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 Batch: WG1706520-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260828
Report Date: 11/07/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 QC Batch ID: WG1706520-3 QC Sample: L2260895-01 Client ID: MS Sample												
Lead, Total	2.91J	42.3	42.7	101		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260828

Report Date: 11/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 QC Batch ID: WG1706520-4 QC Sample: L2260895-01 Client ID: DUP Sample						
Lead, Total	2.91J	1.62J	mg/kg	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260828
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-01
Client ID: 302-AF01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 13:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.5		%	0.100	NA	1	-	11/01/22 15:39	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260828
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-02
Client ID: 302-AF01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 13:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	11/01/22 15:57	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260828
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-03
Client ID: 302-AF01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 13:30
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	11/01/22 15:39	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260828
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-04
Client ID: 302-AF01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 13:30
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.3		%	0.100	NA	1	-	11/01/22 15:57	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260828
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-05
Client ID: 302-AF01-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 14:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.3		%	0.100	NA	1	-	11/01/22 15:39	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260828
Report Date: 11/07/22

SAMPLE RESULTS

Lab ID: L2260828-06
Client ID: 302-AF01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 10/31/22 14:00
Date Received: 10/31/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.8		%	0.100	NA	1	-	11/01/22 15:57	121,2540G	WM

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2260828

Report Date: 11/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05 QC Batch ID: WG1706785-1 QC Sample: L2258957-01 Client ID: DUP Sample						
Solids, Total	94.0	94.7	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06 QC Batch ID: WG1706793-1 QC Sample: L2258957-03 Client ID: DUP Sample						
Solids, Total	91.0	91.1	%	0		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2260828
Report Date: 11/07/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2260828-01A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2260828-01B	Vial water preserved	A	NA		3.6	Y	Absent	01-NOV-22 03:36	PA-8260HLW(14)
L2260828-01C	Vial water preserved	A	NA		3.6	Y	Absent	01-NOV-22 03:36	PA-8260HLW(14)
L2260828-01D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2260828-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2260828-02B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2260828-03A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2260828-03B	Vial water preserved	A	NA		3.6	Y	Absent	01-NOV-22 03:36	PA-8260HLW(14)
L2260828-03C	Vial water preserved	A	NA		3.6	Y	Absent	01-NOV-22 03:36	PA-8260HLW(14)
L2260828-03D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2260828-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2260828-04B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2260828-05A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2260828-05B	Vial water preserved	A	NA		3.6	Y	Absent	01-NOV-22 03:36	PA-8260HLW(14)
L2260828-05C	Vial water preserved	A	NA		3.6	Y	Absent	01-NOV-22 03:36	PA-8260HLW(14)
L2260828-05D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2260828-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2260828-06B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260828
Project Number:	200.00135.006	**Report Date:**	11/07/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260828
Project Number:	200.00135.006	**Report Date:**	11/07/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260828
Project Number:	200.00135.006	**Report Date:**	11/07/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2260828
Project Number:	200.00135.006	**Report Date:**	11/07/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 10/31/22

ALPHA Job #: L2260828

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193

Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~13161~~ ~~17883~~ 18559

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
0828-01	302-AF01-C1-VOC	10/31	1300	S	TS	☑	☐	☐		4
02	302-AF01-C1-Comp		1300			☐	☑	☑		2
03	302-AF01-C2-VOC		1330			☐	☐	☐		4
04	302-AF01-C2-Comp		1330			☐	☑	☑		2
05	302-AF01-C3-VOC		1400			☐	☐	☐		4
06	302-AF01-C3-Comp		1400			☐	☑	☑		2
						☐	☐	☐		4
						☐	☐	☐		2
						☐	☐	☐		4
						☐	☐	☐		2
						☐	☐	☐		2
Container Type						G	G	G		
Preservative						F	A	A		

Relinquished By:	Date/Time	Received By:	Date/Time
	10/31 1415	D. Robinson AAL	10/31 1415
D. Robinson AAL	10/31/22 1800		10/31 1800
	10/31 2100		10/31 22 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

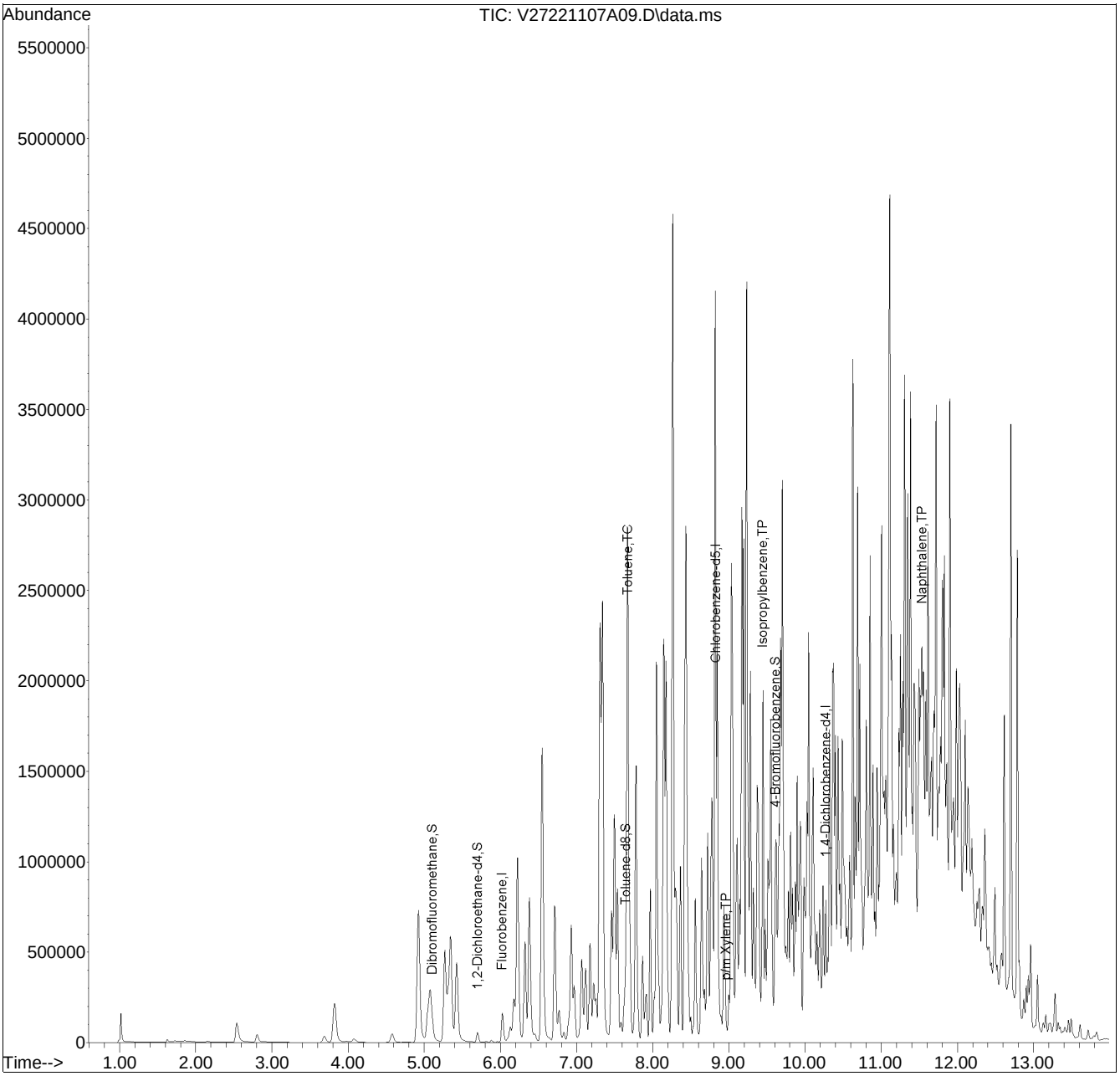
Not received 10/31/22 23:50

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221107A\
Data File : V27221107A09.D
Acq On : 07 Nov 2022 09:52 am
Operator : VOA127:NLK
Sample : L2260828-03,31H,5.85,5,0.100,,A,R2F
Misc : WG1709055,ICAL19419
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 07 11:47:14 2022
Quant Method : I:\VOLATILES\VOA127\2022\221107A\V127_221020N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Fri Oct 21 13:17:54 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list07A\V27221107A01.D•



ANALYTICAL REPORT

Lab Number:	L2261133
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/08/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261133
Report Date: 11/08/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2261133-01	302-AG02-C1-VOC	SOIL	PHILADELPHIA, PA	11/01/22 13:30	11/01/22
L2261133-02	302-AG02-C1-COMP	SOIL	PHILADELPHIA, PA	11/01/22 13:30	11/01/22
L2261133-03	302-AG02-C2-VOC	SOIL	PHILADELPHIA, PA	11/01/22 13:45	11/01/22
L2261133-04	302-AG02-C2-COMP	SOIL	PHILADELPHIA, PA	11/01/22 13:45	11/01/22
L2261133-05	302-AG02-C3-VOC	SOIL	PHILADELPHIA, PA	11/01/22 14:00	11/01/22
L2261133-06	302-AG02-C3-COMP	SOIL	PHILADELPHIA, PA	11/01/22 14:00	11/01/22
L2261133-07	302-AG02-C4-VOC	SOIL	PHILADELPHIA, PA	11/01/22 14:15	11/01/22
L2261133-08	302-AG02-C4-COMP	SOIL	PHILADELPHIA, PA	11/01/22 14:15	11/01/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261133
Project Number:	200.00135.006	**Report Date:**	11/08/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261133
Project Number:	200.00135.006	**Report Date:**	11/08/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2261133-07: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (143%) and 4-bromofluorobenzene (176%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 11/08/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-01
Client ID: 302-AG02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 13:30
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/06/22 15:41
Analyst: JIC
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-03
Client ID: 302-AG02-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 13:45
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/06/22 16:08
Analyst: JIC
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00019	J	mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	118		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-05
Client ID: 302-AG02-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 14:00
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/06/22 16:35
Analyst: JIC
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-07
Client ID: 302-AG02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 14:15
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/08/22 09:47
Analyst: NLK
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	0.098		mg/kg	0.028	0.0094	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.014	1
Toluene	0.038	J	mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.017	1
Ethylbenzene	0.048	J	mg/kg	0.057	0.0080	1
p/m-Xylene	0.31		mg/kg	0.11	0.032	1
o-Xylene	ND		mg/kg	0.057	0.016	1
Xylenes, Total	0.31		mg/kg	0.057	0.016	1
Isopropylbenzene	4.2		mg/kg	0.057	0.0062	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	0.36		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	**143**	Q	70-130
4-Bromofluorobenzene	**176**	Q	70-130
Dibromofluoromethane	82		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2261133

Project Number: 200.00135.006 **Report Date:** 11/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/06/22 08:52
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05 Batch: WG1709469-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	116		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2261133

Project Number: 200.00135.006 **Report Date:** 11/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/08/22 08:48
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07 Batch: WG1709579-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	96		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261133

Report Date: 11/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05 Batch: WG1709469-3 WG1709469-4								
Methyl tert butyl ether	122		106		66-130	14		30
Benzene	111		110		70-130	1		30
1,2-Dichloroethane	108		107		70-130	1		30
Toluene	102		100		70-130	2		30
1,2-Dibromoethane	99		100		70-130	1		30
Ethylbenzene	103		101		70-130	2		30
p/m-Xylene	106		103		70-130	3		30
o-Xylene	101		100		70-130	1		30
Isopropylbenzene	94		97		70-130	3		30
1,3,5-Trimethylbenzene	100		101		70-130	1		30
1,2,4-Trimethylbenzene	99		100		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		110		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	88		90		70-130
Dibromofluoromethane	109		107		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261133

Report Date: 11/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07 Batch: WG1709579-3 WG1709579-4								
Methyl tert butyl ether	98		104		66-130	6		30
Benzene	107		109		70-130	2		30
1,2-Dichloroethane	104		107		70-130	3		30
Toluene	104		105		70-130	1		30
1,2-Dibromoethane	108		112		70-130	4		30
Ethylbenzene	109		109		70-130	0		30
p/m-Xylene	108		108		70-130	0		30
o-Xylene	107		107		70-130	0		30
Isopropylbenzene	112		106		70-130	6		30
1,3,5-Trimethylbenzene	111		105		70-130	6		30
1,2,4-Trimethylbenzene	109		104		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		98		70-130
Toluene-d8	100		98		70-130
4-Bromofluorobenzene	101		98		70-130
Dibromofluoromethane	95		93		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-02
Client ID: 302-AG02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 13:30
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/03/22 10:31
Analyst: CMM
Percent Solids: 70%

Extraction Method: EPA 3546
Extraction Date: 11/02/22 09:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.23	0.028	1
Fluorene	ND		mg/kg	0.23	0.023	1
Phenanthrene	ND		mg/kg	0.14	0.028	1
Anthracene	ND		mg/kg	0.14	0.045	1
Pyrene	ND		mg/kg	0.14	0.023	1
Benzo(a)anthracene	ND		mg/kg	0.14	0.026	1
Chrysene	ND		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	ND		mg/kg	0.14	0.039	1
Benzo(a)pyrene	ND		mg/kg	0.19	0.057	1
Benzo(ghi)perylene	ND		mg/kg	0.19	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	74		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-04
Client ID: 302-AG02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 13:45
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/03/22 05:46
Analyst: LJG
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 11/02/22 09:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-06
Client ID: 302-AG02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 14:00
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/03/22 06:10
Analyst: LJG
Percent Solids: 93%

Extraction Method: EPA 3546
Extraction Date: 11/02/22 09:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.021	1
Anthracene	ND		mg/kg	0.11	0.034	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-08
Client ID: 302-AG02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 14:15
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/03/22 06:34
Analyst: LJG
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 11/02/22 09:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	6.0		mg/kg	0.19	0.023	1
Fluorene	4.5		mg/kg	0.19	0.018	1
Phenanthrene	10.	E	mg/kg	0.11	0.023	1
Anthracene	1.5		mg/kg	0.11	0.037	1
Pyrene	0.83		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.022	J	mg/kg	0.11	0.021	1
Chrysene	0.035	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**127**	Q	23-120
2-Fluorobiphenyl	97		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-08 D
Client ID: 302-AG02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 14:15
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/03/22 17:54
Analyst: CMM
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 11/02/22 09:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenanthrene	12.		mg/kg	1.1	0.23	10

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261133
Report Date: 11/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/02/22 21:27
Analyst: LJG

Extraction Method: EPA 3546
Extraction Date: 11/02/22 09:26

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08 Batch: WG1707110-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	52		25-120
Phenol-d6	51		10-120
Nitrobenzene-d5	45		23-120
2-Fluorobiphenyl	56		30-120
2,4,6-Tribromophenol	57		10-136
4-Terphenyl-d14	58		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261133

Report Date: 11/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08 Batch: WG1707110-2 WG1707110-3								
Naphthalene	51		62		40-140	19		50
Fluorene	53		68		40-140	25		50
Phenanthrene	52		66		40-140	24		50
Anthracene	53		67		40-140	23		50
Pyrene	55		70		35-142	24		50
Benzo(a)anthracene	51		65		40-140	24		50
Chrysene	52		66		40-140	24		50
Benzo(b)fluoranthene	54		67		40-140	21		50
Benzo(a)pyrene	54		69		40-140	24		50
Benzo(ghi)perylene	49		62		40-140	23		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	54		66		25-120
Phenol-d6	53		67		10-120
Nitrobenzene-d5	48		59		23-120
2-Fluorobiphenyl	57		70		30-120
2,4,6-Tribromophenol	58		73		10-136
4-Terphenyl-d14	56		70		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-02
Client ID: 302-AG02-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/01/22 13:30
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.95		mg/kg	2.77	0.148	1	11/02/22 22:20	11/03/22 10:28	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-04
Client ID: 302-AG02-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/01/22 13:45
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.85	J	mg/kg	2.38	0.128	1	11/02/22 22:20	11/03/22 13:13	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-06
Client ID: 302-AG02-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/01/22 14:00
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.81		mg/kg	2.06	0.111	1	11/02/22 22:20	11/03/22 13:16	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261133
Project Number: 200.00135.006
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-08
Client ID: 302-AG02-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/01/22 14:15
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.99		mg/kg	2.20	0.118	1	11/02/22 22:20	11/03/22 13:20	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261133
Report Date: 11/08/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08 Batch: WG1707164-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/02/22 22:20	11/03/22 10:11	1,6010D	NTB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261133

Report Date: 11/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 Batch: WG1707164-2 SRM Lot Number: D113-540								
Lead, Total	91		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261133
Report Date: 11/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1707164-3 QC Sample: L2261133-02 Client ID: 302-AG02-C1-COMP												
Lead, Total	8.95	57	64.4	97		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261133

Report Date: 11/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1707164-4 QC Sample: L2261133-02 Client ID: 302-AG02-C1-COMP						
Lead, Total	8.95	8.59	mg/kg	4		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261133
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-01
Client ID: 302-AG02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 13:30
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.8		%	0.100	NA	1	-	11/02/22 12:06	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261133
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-02
Client ID: 302-AG02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/01/22 13:30
Date Received: 11/01/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.8		%	0.100	NA	1	-	11/02/22 12:06	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261133
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-03
Client ID: 302-AG02-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/01/22 13:45
Date Received: 11/01/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.6		%	0.100	NA	1	-	11/02/22 12:06	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261133
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-04
Client ID: 302-AG02-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/01/22 13:45
Date Received: 11/01/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.8		%	0.100	NA	1	-	11/02/22 12:06	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261133
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-05
Client ID: 302-AG02-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/01/22 14:00
Date Received: 11/01/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.4		%	0.100	NA	1	-	11/02/22 12:06	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261133
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-06
Client ID: 302-AG02-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/01/22 14:00
Date Received: 11/01/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.6		%	0.100	NA	1	-	11/02/22 12:06	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261133
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-07
Client ID: 302-AG02-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/01/22 14:15
Date Received: 11/01/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	11/02/22 12:06	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261133
Report Date: 11/08/22

SAMPLE RESULTS

Lab ID: L2261133-08
Client ID: 302-AG02-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/01/22 14:15
Date Received: 11/01/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.0		%	0.100	NA	1	-	11/02/22 12:06	121,2540G	CG

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261133

Report Date: 11/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1707123-1 QC Sample: L2259884-08 Client ID: DUP Sample						
Solids, Total	90.1	87.8	%	3		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261133
Report Date: 11/08/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2261133-01A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2261133-01B	Vial water preserved	A	NA		4.0	Y	Absent	02-NOV-22 07:25	PA-8260HLW(14)
L2261133-01C	Vial water preserved	A	NA		4.0	Y	Absent	02-NOV-22 07:25	PA-8260HLW(14)
L2261133-01D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2261133-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2261133-02B	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)
L2261133-03A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2261133-03B	Vial water preserved	A	NA		4.0	Y	Absent	02-NOV-22 07:25	PA-8260HLW(14)
L2261133-03C	Vial water preserved	A	NA		4.0	Y	Absent	02-NOV-22 07:25	PA-8260HLW(14)
L2261133-03D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2261133-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2261133-04B	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)
L2261133-05A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2261133-05B	Vial water preserved	A	NA		4.0	Y	Absent	02-NOV-22 07:25	PA-8260HLW(14)
L2261133-05C	Vial water preserved	A	NA		4.0	Y	Absent	02-NOV-22 07:25	PA-8260HLW(14)
L2261133-05D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2261133-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2261133-06B	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)
L2261133-07A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2261133-07B	Vial water preserved	A	NA		4.0	Y	Absent	02-NOV-22 07:25	PA-8260HLW(14)
L2261133-07C	Vial water preserved	A	NA		4.0	Y	Absent	02-NOV-22 07:25	PA-8260HLW(14)
L2261133-07D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2261133-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261133
Report Date: 11/08/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2261133-08B	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261133
Project Number:	200.00135.006	**Report Date:**	11/08/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261133
Project Number:	200.00135.006	**Report Date:**	11/08/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261133
Project Number:	200.00135.006	**Report Date:**	11/08/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261133
Project Number:	200.00135.006	**Report Date:**	11/08/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 11/1/22

ALPHA Job #: L22 61133

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~12161 12823~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)
Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
61133 -01	302-AGOZ-C1-VOC	11/1	1330	S	TS	☑	☐	☑		4
-02	302-AGOZ-C1-Comp		1330			☐	☐	☑		2
-03	302-AGOZ-C2-VOC		1345			☑	☐	☑		4
-04	302-AGOZ-C2-Comp		1345			☐	☑	☑		2
-05	302-AGOZ-C3-VOC		1400			☑	☐	☐		4
-06	302-AGOZ-C3-Comp		1400			☐	☑	☑		2
-07	302-AGOZ-C4-VOC		1415			☑	☐	☐		4
-08	302-AGOZ-C4-Comp	↓	1415	↓	↓	☐	☑	☑		2
						☐	☐	☐		4
						☐	☐	☐		2
Container Type						G	G	G		
Preservative						F	A	A		

AWT 11/2/22 0D:40

Relinquished By:	Date/Time	Received By:	Date/Time
	11/1	STONES HAUL	11.1.22 1456
STONES HAUL	11.1.22 1800	LMC	11/1/1800
	11-1 2000		11.1.22 2100

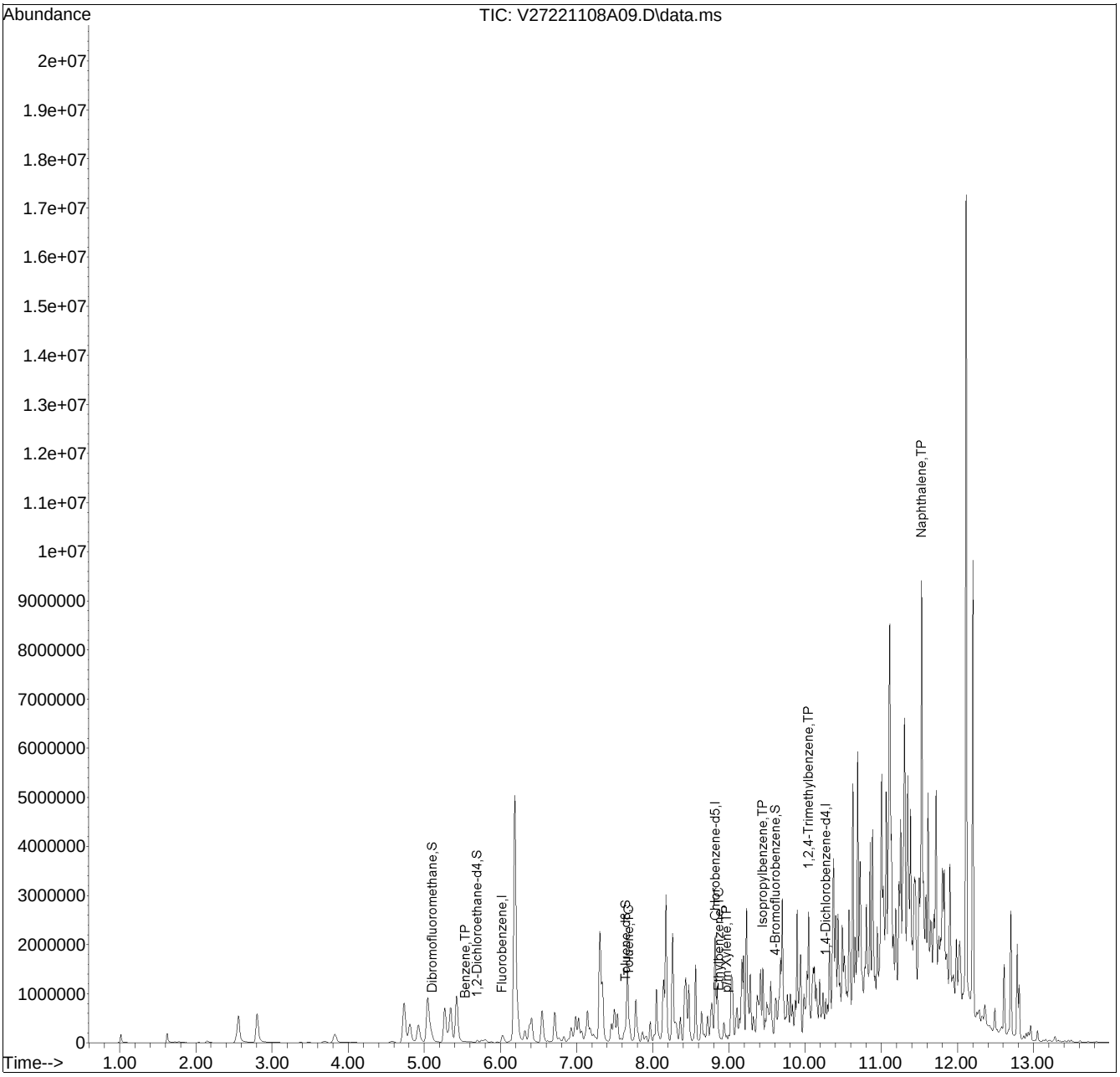
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221108A\
Data File : V27221108A09.D
Acq On : 08 Nov 2022 09:47 am
Operator : VOA127:NLK
Sample : L2261133-07,31H,6.03,5,0.100,,A,R2F
Misc : WG1709579,ICAL19419
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 08 12:34:58 2022
Quant Method : I:\VOLATILES\VOA127\2022\221108A\V127_221020N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Fri Oct 21 13:17:54 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list08A\V27221108A01.D•



ANALYTICAL REPORT

Lab Number:	L2261828
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/10/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261828
Report Date: 11/10/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2261828-01	302-AG01-C1-VOC	SOIL	PHILADELPHIA, PA	11/02/22 13:15	11/03/22
L2261828-02	302-AG01-C1-COMP	SOIL	PHILADELPHIA, PA	11/02/22 13:15	11/03/22
L2261828-03	302-AG01-C2-VOC	SOIL	PHILADELPHIA, PA	11/02/22 13:30	11/03/22
L2261828-04	302-AG01-C2-COMP	SOIL	PHILADELPHIA, PA	11/02/22 13:30	11/03/22
L2261828-05	302-AG01-C3-VOC	SOIL	PHILADELPHIA, PA	11/02/22 13:45	11/03/22
L2261828-06	302-AG01-C3-COMP	SOIL	PHILADELPHIA, PA	11/02/22 13:45	11/03/22
L2261828-07	302-AG01-C4-VOC	SOIL	PHILADELPHIA, PA	11/02/22 14:00	11/03/22
L2261828-08	302-AG01-C4-COMP	SOIL	PHILADELPHIA, PA	11/02/22 14:00	11/03/22
L2261828-09	302-AG01-C5-VOC	SOIL	PHILADELPHIA, PA	11/02/22 14:15	11/03/22
L2261828-10	302-AG01-C5-COMP	SOIL	PHILADELPHIA, PA	11/02/22 14:15	11/03/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261828
Project Number:	200.00135.006	**Report Date:**	11/10/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261828
Project Number:	200.00135.006	**Report Date:**	11/10/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1708264-3 MS recovery for lead (1290%), performed on L2261828-02, does not apply because the sample concentration is greater than four times the spike amount added.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 11/10/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-01
Client ID: 302-AG01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 13:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/06/22 13:05
Analyst: MKS
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-03
Client ID: 302-AG01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/06/22 13:26
Analyst: MKS
Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0031	0.00031	1
Benzene	ND		mg/kg	0.00078	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00040	1
Toluene	ND		mg/kg	0.0016	0.00084	1
1,2-Dibromoethane	ND		mg/kg	0.00078	0.00046	1
Ethylbenzene	ND		mg/kg	0.0016	0.00022	1
p/m-Xylene	ND		mg/kg	0.0031	0.00087	1
o-Xylene	ND		mg/kg	0.0016	0.00045	1
Xylenes, Total	ND		mg/kg	0.0016	0.00045	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0031	0.00030	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0031	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-05
Client ID: 302-AG01-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/06/22 13:47
Analyst: MKS
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-07
Client ID: 302-AG01-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/06/22 14:08
Analyst: MKS
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-09
Client ID: 302-AG01-C5-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/06/22 14:28
Analyst: MKS
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2261828

Project Number: 200.00135.006 **Report Date:** 11/10/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/06/22 10:54
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09 Batch: WG1709675-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261828

Report Date: 11/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09 Batch: WG1709675-3 WG1709675-4								
Methyl tert butyl ether	86		84		66-130	2		30
Benzene	88		85		70-130	3		30
1,2-Dichloroethane	90		88		70-130	2		30
Toluene	87		84		70-130	4		30
1,2-Dibromoethane	89		89		70-130	0		30
Ethylbenzene	89		87		70-130	2		30
p/m-Xylene	94		92		70-130	2		30
o-Xylene	92		89		70-130	3		30
Isopropylbenzene	82		81		70-130	1		30
1,3,5-Trimethylbenzene	85		84		70-130	1		30
1,2,4-Trimethylbenzene	85		84		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		104		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	94		94		70-130
Dibromofluoromethane	98		98		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-02
Client ID: 302-AG01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 13:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/05/22 10:45
Analyst: MG
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 11/04/22 22:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.24	0.030	1
Fluorene	ND		mg/kg	0.24	0.024	1
Phenanthrene	ND		mg/kg	0.14	0.029	1
Anthracene	ND		mg/kg	0.14	0.047	1
Pyrene	ND		mg/kg	0.14	0.024	1
Benzo(a)anthracene	ND		mg/kg	0.14	0.027	1
Chrysene	ND		mg/kg	0.14	0.025	1
Benzo(b)fluoranthene	ND		mg/kg	0.14	0.041	1
Benzo(a)pyrene	ND		mg/kg	0.19	0.059	1
Benzo(ghi)perylene	ND		mg/kg	0.19	0.028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-04
Client ID: 302-AG01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/05/22 11:01
Analyst: MG
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 11/04/22 22:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	52		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-06
Client ID: 302-AG01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/05/22 11:18
Analyst: MG
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 11/04/22 22:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	52		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-08
Client ID: 302-AG01-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/05/22 11:34
Analyst: MG
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 11/04/22 22:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	49		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-10
Client ID: 302-AG01-C5-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/05/22 11:51
Analyst: MG
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 11/04/22 22:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.029	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.033	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.024	J	mg/kg	0.11	0.021	1
Chrysene	0.025	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.042	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.035	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/09/22 21:19
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 11/04/22 22:06

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10 Batch: WG1708364-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	92		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261828

Report Date: 11/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10 Batch: WG1708364-2 WG1708364-3								
Naphthalene	76		65		40-140	16		50
Fluorene	76		67		40-140	13		50
Phenanthrene	77		66		40-140	15		50
Anthracene	79		68		40-140	15		50
Pyrene	80		68		35-142	16		50
Benzo(a)anthracene	79		68		40-140	15		50
Chrysene	78		66		40-140	17		50
Benzo(b)fluoranthene	88		69		40-140	24		50
Benzo(a)pyrene	91		71		40-140	25		50
Benzo(ghi)perylene	85		66		40-140	25		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	67		62		23-120
2-Fluorobiphenyl	75		66		30-120
4-Terphenyl-d14	76		64		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-02
Client ID: 302-AG01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/02/22 13:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	336		mg/kg	2.90	0.156	1	11/04/22 23:22	11/08/22 12:28	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-04
Client ID: 302-AG01-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/02/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	451		mg/kg	2.18	0.117	1	11/04/22 23:22	11/08/22 12:18	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-06
Client ID: 302-AG01-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/02/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	424		mg/kg	2.31	0.124	1	11/04/22 23:22	11/08/22 12:21	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-08
Client ID: 302-AG01-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/02/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.32		mg/kg	2.22	0.119	1	11/04/22 23:22	11/08/22 12:24	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261828
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-10
Client ID: 302-AG01-C5-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/02/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.23		mg/kg	2.16	0.116	1	11/04/22 23:22	11/08/22 13:04	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10 Batch: WG1708264-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/04/22 23:22	11/08/22 12:11	1,6010D	NTB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261828

Report Date: 11/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 Batch: WG1708264-2 SRM Lot Number: D113-540								
Lead, Total	94		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261828
Report Date: 11/10/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1708264-3 QC Sample: L2261828-02 Client ID: 302-AG01-C1-COMP												
Lead, Total	336	60.1	1110	**1290**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261828

Report Date: 11/10/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1708264-4 QC Sample: L2261828-02 Client ID: 302-AG01-C1-COMP						
Lead, Total	336	403	mg/kg	18		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-01
Client ID: 302-AG01-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/02/22 13:15
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.1		%	0.100	NA	1	-	11/04/22 07:36	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-02
Client ID: 302-AG01-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/02/22 13:15
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	68.4		%	0.100	NA	1	-	11/04/22 07:36	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-03
Client ID: 302-AG01-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/02/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.3		%	0.100	NA	1	-	11/04/22 07:36	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-04
Client ID: 302-AG01-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/02/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.0		%	0.100	NA	1	-	11/04/22 07:36	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-05
Client ID: 302-AG01-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.8		%	0.100	NA	1	-	11/04/22 07:36	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-06
Client ID: 302-AG01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/02/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	11/04/22 07:36	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-07
Client ID: 302-AG01-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/02/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.0		%	0.100	NA	1	-	11/04/22 07:36	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-08
Client ID: 302-AG01-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/02/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.9		%	0.100	NA	1	-	11/04/22 07:36	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-09
Client ID: 302-AG01-C5-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/02/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.8		%	0.100	NA	1	-	11/04/22 08:52	121,2540G	CG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261828
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261828-10
Client ID: 302-AG01-C5-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/02/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.8		%	0.100	NA	1	-	11/04/22 08:52	121,2540G	CG

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261828

Report Date: 11/10/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1708053-1 QC Sample: L2261828-01 Client ID: 302-AG01-C1-VOC						
Solids, Total	84.1	84.4	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 09-10 QC Batch ID: WG1708125-1 QC Sample: L2261928-32 Client ID: DUP Sample						
Solids, Total	97.3	97.3	%	0		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261828
Report Date: 11/10/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2261828-01A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2261828-01B	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-01C	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-01D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)
L2261828-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2261828-02B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2261828-03A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2261828-03B	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-03C	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-03D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)
L2261828-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2261828-04B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2261828-05A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2261828-05B	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-05C	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-05D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)
L2261828-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2261828-06B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2261828-07A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2261828-07B	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-07C	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-07D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)
L2261828-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261828
Report Date: 11/10/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2261828-08B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2261828-09A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2261828-09B	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-09C	Vial water preserved	A	NA		2.8	Y	Absent	04-NOV-22 07:21	PA-8260HLW(14)
L2261828-09D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)
L2261828-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2261828-10B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261828
Project Number:	200.00135.006	**Report Date:**	11/10/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261828
Project Number:	200.00135.006	**Report Date:**	11/10/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261828
Project Number:	200.00135.006	**Report Date:**	11/10/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261828
Project Number:	200.00135.006	**Report Date:**	11/10/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 11/4/22

ALPHA Job #: L2261828

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~17161 17823~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
61828-01	302-AG01-C1-VOC	11/2	1315	S	TS	☑	☐	☐		4
02	302-AG01-C1-Comp		1315			☐	☑	☑		2
03	302-AG01-C2-VOC		1330			☑	☐	☑		4
04	302-AG01-C2-Comp		1330			☐	☑	☑		2
05	302-AG01-C3-VOC		1345			☑	☐	☐		4
06	302-AG01-C3-Comp		1345			☐	☑	☑		2
07	302-AG01-C4-VOC		1400			☑	☐	☐		4
08	302-AG01-C4-Comp		1400			☐	☑	☑		2
09	302-AG01-C5-VOC		1415			☑	☐	☐		4
10	302-AG01-C5-Comp		1415			☐	☑	☑		2
	Container Type					G	G	G		
	Preservative					F	A	A		

SAMPLE
11/4/22
0130

11/4/22 0130

Relinquished By:	Date/Time	Received By:	Date/Time
	11/3 1530	D. Robinson AAL	11/3/22 1530
D. Robinson AAL	11/3/22 1800		11/3 1800
			11-3-22 2140

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

ANALYTICAL REPORT

Lab Number:	L2261829
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/10/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2261829-01	302-AF02-C1-VOC	SOIL	PHILADELPHIA, PA	11/03/22 13:30	11/03/22
L2261829-02	302-AF02-C1-COMP	SOIL	PHILADELPHIA, PA	11/03/22 13:30	11/03/22
L2261829-03	302-AF02-C2-VOC	SOIL	PHILADELPHIA, PA	11/03/22 13:45	11/03/22
L2261829-04	302-AF02-C2-COMP	SOIL	PHILADELPHIA, PA	11/03/22 13:45	11/03/22
L2261829-05	302-AF02-C3-VOC	SOIL	PHILADELPHIA, PA	11/03/22 14:00	11/03/22
L2261829-06	302-AF02-C3-COMP	SOIL	PHILADELPHIA, PA	11/03/22 14:00	11/03/22
L2261829-07	302-AF02-C4-VOC	SOIL	PHILADELPHIA, PA	11/03/22 14:15	11/03/22
L2261829-08	302-AF02-C4-COMP	SOIL	PHILADELPHIA, PA	11/03/22 14:15	11/03/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261829
Project Number:	200.00135.006	**Report Date:**	11/10/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261829
Project Number:	200.00135.006	**Report Date:**	11/10/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2261829-01 and -02: The collection date and time on the chain of custody was 03-NOV-22 13:30; however, the collection date/time on the container label was 03-NOV-22 13:00. At the client's request, the collection date/time is reported as 03-NOV-22 13:30.

Volatile Organics

L2261829-07D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2261829-07D: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (147%) and 4-bromofluorobenzene (186%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 11/10/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-01
Client ID: 302-AF02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/08/22 14:44
Analyst: AJK
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-03
Client ID: 302-AF02-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/08/22 15:03
Analyst: AJK
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-05
Client ID: 302-AF02-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/08/22 15:23
Analyst: AJK
Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-07 D
Client ID: 302-AF02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/08/22 15:42
Analyst: AJK
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.21	0.021	2
Benzene	ND		mg/kg	0.053	0.018	2
1,2-Dichloroethane	ND		mg/kg	0.11	0.027	2
Toluene	ND		mg/kg	0.11	0.058	2
1,2-Dibromoethane	ND		mg/kg	0.053	0.031	2
Ethylbenzene	ND		mg/kg	0.11	0.015	2
p/m-Xylene	ND		mg/kg	0.21	0.060	2
o-Xylene	ND		mg/kg	0.11	0.031	2
Xylenes, Total	ND		mg/kg	0.11	0.031	2
Isopropylbenzene	10.		mg/kg	0.11	0.012	2
1,3,5-Trimethylbenzene	ND		mg/kg	0.21	0.020	2
1,2,4-Trimethylbenzene	0.042	J	mg/kg	0.21	0.036	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	**147**	Q	70-130
4-Bromofluorobenzene	**186**	Q	70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261829
Report Date: 11/10/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/08/22 08:48
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05 Batch: WG1710106-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2261829

Project Number: 200.00135.006 **Report Date:** 11/10/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/08/22 08:48
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07 Batch: WG1710111-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	96		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261829

Report Date: 11/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05 Batch: WG1710106-3 WG1710106-4								
Methyl tert butyl ether	98		104		66-130	6		30
Benzene	107		109		70-130	2		30
1,2-Dichloroethane	104		107		70-130	3		30
Toluene	104		105		70-130	1		30
1,2-Dibromoethane	108		112		70-130	4		30
Ethylbenzene	109		109		70-130	0		30
p/m-Xylene	108		108		70-130	0		30
o-Xylene	107		107		70-130	0		30
Isopropylbenzene	112		106		70-130	6		30
1,3,5-Trimethylbenzene	111		105		70-130	6		30
1,2,4-Trimethylbenzene	109		104		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		97		70-130
Toluene-d8	100		98		70-130
4-Bromofluorobenzene	101		98		70-130
Dibromofluoromethane	95		93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261829

Report Date: 11/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07 Batch: WG1710111-3 WG1710111-4								
Methyl tert butyl ether	98		104		66-130	6		30
Benzene	107		109		70-130	2		30
1,2-Dichloroethane	104		107		70-130	3		30
Toluene	104		105		70-130	1		30
1,2-Dibromoethane	108		112		70-130	4		30
Ethylbenzene	109		109		70-130	0		30
p/m-Xylene	108		108		70-130	0		30
o-Xylene	107		107		70-130	0		30
Isopropylbenzene	112		106		70-130	6		30
1,3,5-Trimethylbenzene	111		105		70-130	6		30
1,2,4-Trimethylbenzene	109		104		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		98		70-130
Toluene-d8	100		98		70-130
4-Bromofluorobenzene	101		98		70-130
Dibromofluoromethane	95		93		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-02
Client ID: 302-AF02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/08/22 00:55
Analyst: MG
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 11/06/22 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-04
Client ID: 302-AF02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/08/22 02:56
Analyst: MG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 11/06/22 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	76		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-06
Client ID: 302-AF02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/08/22 01:19
Analyst: MG
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 11/06/22 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-08
Client ID: 302-AF02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/08/22 01:44
Analyst: MG
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 11/06/22 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	0.031	J	mg/kg	0.18	0.018	1
Phenanthrene	0.080	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261829
Report Date: 11/10/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/06/22 14:57
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 11/05/22 09:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08 Batch: WG1708501-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	75		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261829

Report Date: 11/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08 Batch: WG1708501-2 WG1708501-3								
Naphthalene	63		52		40-140	19		50
Fluorene	67		54		40-140	21		50
Phenanthrene	63		51		40-140	21		50
Anthracene	65		53		40-140	20		50
Pyrene	67		54		35-142	21		50
Benzo(a)anthracene	64		52		40-140	21		50
Chrysene	63		51		40-140	21		50
Benzo(b)fluoranthene	73		58		40-140	23		50
Benzo(a)pyrene	75		61		40-140	21		50
Benzo(ghi)perylene	71		57		40-140	22		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	88		72		23-120
2-Fluorobiphenyl	71		58		30-120
4-Terphenyl-d14	72		58		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-02
Client ID: 302-AF02-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/03/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.06		mg/kg	2.22	0.119	1	11/07/22 22:09	11/08/22 10:43	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-04
Client ID: 302-AF02-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/03/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.37		mg/kg	2.38	0.127	1	11/07/22 22:09	11/08/22 09:39	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-06
Client ID: 302-AF02-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/03/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.46		mg/kg	2.32	0.124	1	11/07/22 22:09	11/08/22 09:43	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2261829
Project Number: 200.00135.006
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-08
Client ID: 302-AF02-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/03/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.04		mg/kg	2.14	0.115	1	11/07/22 22:09	11/08/22 09:46	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261829
Report Date: 11/10/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08 Batch: WG1708639-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/07/22 22:09	11/08/22 08:38	1,6010D	NTB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261829

Report Date: 11/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 Batch: WG1708639-2 SRM Lot Number: D113-540								
Lead, Total	99		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1708639-3 QC Sample: L2261914-07 Client ID: MS Sample												
Lead, Total	3.28	47.6	52.7	104		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261829

Report Date: 11/10/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1708639-4 QC Sample: L2261914-07 Client ID: DUP Sample						
Lead, Total	3.28	2.88	mg/kg	13		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-01
Client ID: 302-AF02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.0		%	0.100	NA	1	-	11/05/22 18:18	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-02
Client ID: 302-AF02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 13:30
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.8		%	0.100	NA	1	-	11/05/22 19:54	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261829
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-03
Client ID: 302-AF02-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/03/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	11/05/22 18:18	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-04
Client ID: 302-AF02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 13:45
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	11/05/22 19:54	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-05
Client ID: 302-AF02-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.7		%	0.100	NA	1	-	11/05/22 18:18	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2261829
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-06
Client ID: 302-AF02-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/03/22 14:00
Date Received: 11/03/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	11/05/22 19:54	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-07
Client ID: 302-AF02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	11/05/22 18:18	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

SAMPLE RESULTS

Lab ID: L2261829-08
Client ID: 302-AF02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/03/22 14:15
Date Received: 11/03/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.4		%	0.100	NA	1	-	11/05/22 19:54	121,2540G	WM

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2261829

Report Date: 11/10/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07 QC Batch ID: WG1708589-1 QC Sample: L2261829-01 Client ID: 302-AF02-C1-VOC						
Solids, Total	88.0	88.3	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1708593-1 QC Sample: L2261829-08 Client ID: 302-AF02-C4-COMP						
Solids, Total	89.4	89.9	%	1		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2261829-01A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2261829-01B	Vial water preserved	A	NA		2.3	Y	Absent	04-NOV-22 20:50	PA-8260HLW(14)
L2261829-01C	Vial water preserved	A	NA		2.3	Y	Absent	04-NOV-22 20:50	PA-8260HLW(14)
L2261829-01D	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		TS(7)
L2261829-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2261829-02B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2261829-03A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2261829-03B	Vial water preserved	A	NA		2.3	Y	Absent	04-NOV-22 20:50	PA-8260HLW(14)
L2261829-03C	Vial water preserved	A	NA		2.3	Y	Absent	04-NOV-22 20:50	PA-8260HLW(14)
L2261829-03D	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		TS(7)
L2261829-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2261829-04B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2261829-05A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2261829-05B	Vial water preserved	A	NA		2.3	Y	Absent	04-NOV-22 20:50	PA-8260HLW(14)
L2261829-05C	Vial water preserved	A	NA		2.3	Y	Absent	04-NOV-22 20:50	PA-8260HLW(14)
L2261829-05D	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		TS(7)
L2261829-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2261829-06B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2261829-07A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2261829-07B	Vial water preserved	A	NA		2.3	Y	Absent	04-NOV-22 20:50	PA-8260HLW(14)
L2261829-07C	Vial water preserved	A	NA		2.3	Y	Absent	04-NOV-22 20:50	PA-8260HLW(14)
L2261829-07D	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		TS(7)
L2261829-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2261829
Report Date: 11/10/22

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L2261829-08B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261829
Project Number:	200.00135.006	**Report Date:**	11/10/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261829
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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261829
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Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2261829
Project Number:	200.00135.006	**Report Date:**	11/10/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

11/4/22 (KJC 11/4/22)

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

Date Rec'd in Lab: 11/3/22

ALPHA Job #: L2261829

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~13161~~ ~~17843~~ 18559

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info

PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program

Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
61829-01	302-AF02-C1-VOC	11/3	1330	S	TS	☑	☐	☐		4
-02	302-AF02-C1-Comp	↓	1330	↓	↓	☐	☑	☑		2
-03	302-AF02-C2-VOC		1345			☑	☐	☐		4
-04	302-AF02-C2-Comp		1345			☐	☑	☑		2
-05	302-AF02-C3-VOC		1400			☑	☐	☐		4
-06	302-AF02-C3-Comp		1400			☐	☑	☑		2
-07	302-AF02-C4-VOC		1415			☑	☐	☐		4
-08	302-AF02-C4-Comp	↓	1415	↓	↓	☐	☑	☑		2
						☐	☐	☐		4
						☐	☐	☐		2

	VOCs (8260)	SVOCs (8270)	Lead
Container Type	G	G	G
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/3 1530	[signature] AAL	11/3/22 1530
[signature] AAL	11/3/22 1800	[signature]	11/3/22 1800
[signature]	11/3/22 2100	[signature]	11-3-22 2100

[signature] 11/4/22 0130

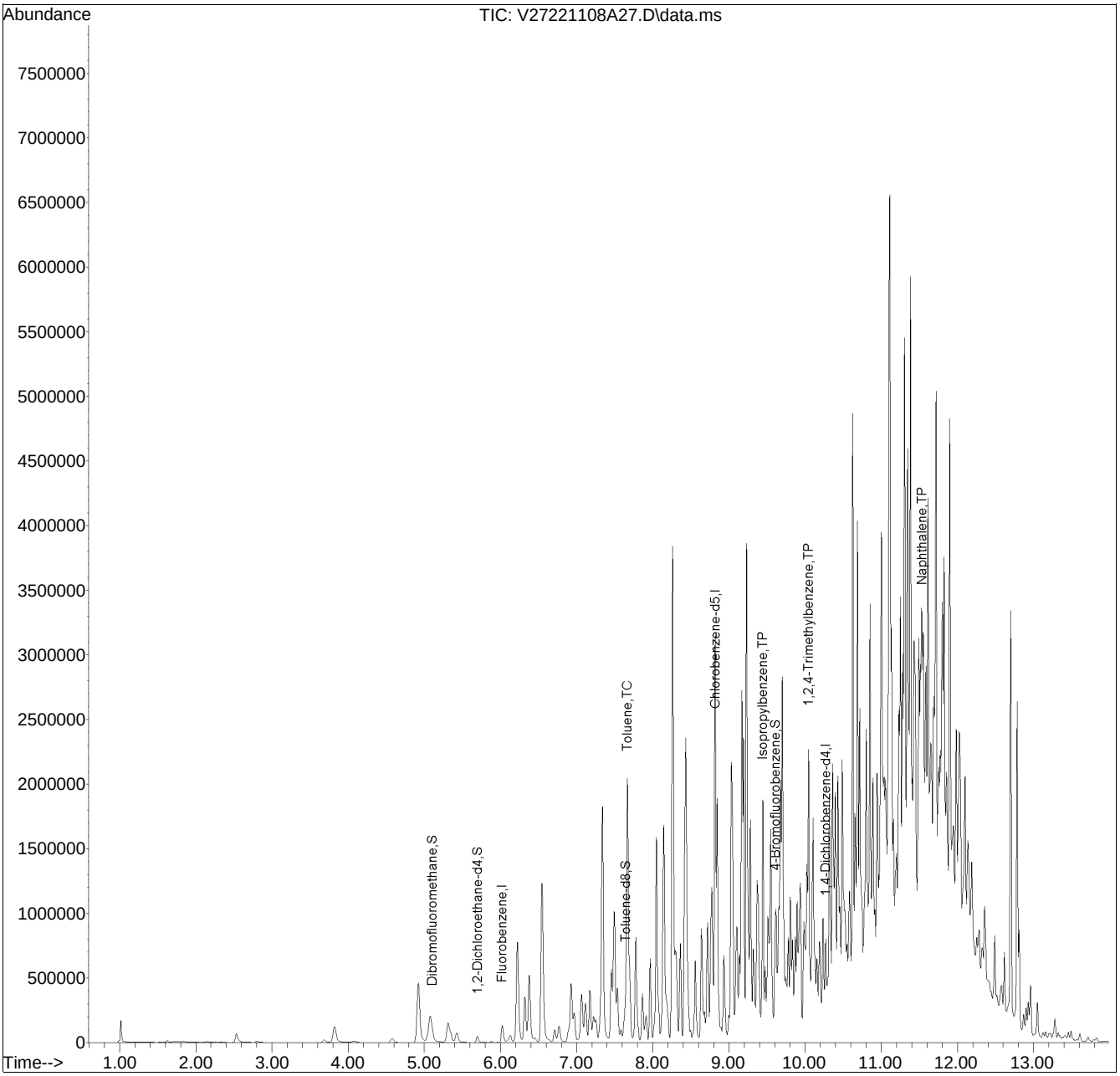
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221108A\
Data File : V27221108A27.D
Acq On : 08 Nov 2022 03:42 pm
Operator : VOA127:AJK
Sample : L2261829-07D,31H,5.88,5,0.05,,A,R2F
Misc : WG1710111,ICAL19419
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Nov 09 13:27:16 2022
Quant Method : I:\VOLATILES\VOA127\2022\221108A\V127_221020N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Fri Oct 21 13:17:54 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list08A\V27221108A01.D•



ANALYTICAL REPORT

Lab Number:	L2262133
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/11/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262133
Report Date: 11/11/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2262133-01	301-AC01-C1-VOC	SOIL	PHILADELPHIA, PA	11/04/22 13:00	11/04/22
L2262133-02	301-AC01-C1-COMP	SOIL	PHILADELPHIA, PA	11/04/22 13:00	11/04/22
L2262133-03	301-AC01-C2-VOC	SOIL	PHILADELPHIA, PA	11/04/22 13:30	11/04/22
L2262133-04	301-AC01-C2-COMP	SOIL	PHILADELPHIA, PA	11/04/22 13:30	11/04/22
L2262133-05	302-AD01-C1-VOC	SOIL	PHILADELPHIA, PA	11/04/22 14:10	11/04/22
L2262133-06	302-AD01-C1-COMP	SOIL	PHILADELPHIA, PA	11/04/22 14:10	11/04/22
L2262133-07	302-AD01-C2-VOC	SOIL	PHILADELPHIA, PA	11/04/22 14:20	11/04/22
L2262133-08	302-AD01-C2-COMP	SOIL	PHILADELPHIA, PA	11/04/22 14:20	11/04/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262133
Project Number:	200.00135.006	**Report Date:**	11/11/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262133
Project Number:	200.00135.006	**Report Date:**	11/11/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1708735-3 MS recovery, performed on L2262133-02, is outside the acceptance criteria for lead (72%). A post digestion spike was performed and was within acceptance criteria.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker

Title: Technical Director/Representative Date: 11/11/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-01
Client ID: 301-AC01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 13:00
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 10:52
Analyst: AJK
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.00023	J	mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-03
Client ID: 301-AC01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 13:30
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 11:31
Analyst: AJK
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	86		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-05
Client ID: 302-AD01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 14:10
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 12:09
Analyst: AJK
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.00024	J	mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-07
Client ID: 302-AD01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 14:20
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 12:48
Analyst: AJK
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262133
Report Date: 11/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/09/22 09:35
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07 Batch: WG1710673-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262133

Report Date: 11/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07 Batch: WG1710673-3 WG1710673-4								
Methyl tert butyl ether	87		87		66-130	0		30
Benzene	96		98		70-130	2		30
1,2-Dichloroethane	91		92		70-130	1		30
Toluene	87		89		70-130	2		30
1,2-Dibromoethane	90		91		70-130	1		30
Ethylbenzene	88		90		70-130	2		30
p/m-Xylene	90		91		70-130	1		30
o-Xylene	85		86		70-130	1		30
Isopropylbenzene	86		89		70-130	3		30
1,3,5-Trimethylbenzene	85		87		70-130	2		30
1,2,4-Trimethylbenzene	86		88		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	90		90		70-130
Toluene-d8	91		91		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	100		101		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-02
Client ID: 301-AC01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 13:00
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/06/22 20:56
Analyst: LJG
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 11/05/22 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.078	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.17		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.11		mg/kg	0.11	0.021	1
Chrysene	0.11		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.16		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.13	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.078	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-04
Client ID: 301-AC01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 13:30
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/06/22 20:32
Analyst: LJG
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 11/05/22 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-06
Client ID: 302-AD01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 14:10
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/06/22 19:44
Analyst: LJG
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 11/05/22 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.31		mg/kg	0.20	0.025	1
Fluorene	0.28		mg/kg	0.20	0.020	1
Phenanthrene	1.9		mg/kg	0.12	0.025	1
Anthracene	0.50		mg/kg	0.12	0.040	1
Pyrene	2.3		mg/kg	0.12	0.020	1
Benzo(a)anthracene	1.4		mg/kg	0.12	0.023	1
Chrysene	1.4		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	1.9		mg/kg	0.12	0.034	1
Benzo(a)pyrene	1.6		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.94		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	53		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-08
Client ID: 302-AD01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 14:20
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/06/22 20:08
Analyst: LJG
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 11/05/22 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.051	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.081	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.055	J	mg/kg	0.12	0.023	1
Chrysene	0.047	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.071	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.064	J	mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.039	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262133
Report Date: 11/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/06/22 14:57
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 11/05/22 09:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08 Batch: WG1708501-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	75		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262133

Report Date: 11/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08 Batch: WG1708501-2 WG1708501-3								
Naphthalene	63		52		40-140	19		50
Fluorene	67		54		40-140	21		50
Phenanthrene	63		51		40-140	21		50
Anthracene	65		53		40-140	20		50
Pyrene	67		54		35-142	21		50
Benzo(a)anthracene	64		52		40-140	21		50
Chrysene	63		51		40-140	21		50
Benzo(b)fluoranthene	73		58		40-140	23		50
Benzo(a)pyrene	75		61		40-140	21		50
Benzo(ghi)perylene	71		57		40-140	22		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	88		72		23-120
2-Fluorobiphenyl	71		58		30-120
4-Terphenyl-d14	72		58		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-02
Client ID: 301-AC01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/04/22 13:00
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	130		mg/kg	2.27	0.122	1	11/07/22 20:50	11/09/22 07:31	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-04
Client ID: 301-AC01-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/04/22 13:30
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.41		mg/kg	2.36	0.126	1	11/07/22 20:50	11/09/22 07:55	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-06
Client ID: 302-AD01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/04/22 14:10
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1350		mg/kg	2.42	0.130	1	11/07/22 20:50	11/09/22 07:58	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262133
Project Number: 200.00135.006
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-08
Client ID: 302-AD01-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/04/22 14:20
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	53.4		mg/kg	2.38	0.128	1	11/07/22 20:50	11/09/22 08:02	EPA 3050B	1,6010D	NTB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262133
Report Date: 11/11/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08 Batch: WG1708735-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/07/22 20:50	11/09/22 07:14	1,6010D	NTB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262133

Report Date: 11/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 Batch: WG1708735-2 SRM Lot Number: D113-540								
Lead, Total	106		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262133
Report Date: 11/11/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1708735-3 QC Sample: L2262133-02 Client ID: 301-AC01-C1-COMP												
Lead, Total	130	46.9	164	**72**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262133

Report Date: 11/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1708735-4 QC Sample: L2262133-02 Client ID: 301-AC01-C1-COMP						
Lead, Total	130	109	mg/kg	18		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262133
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-01
Client ID: 301-AC01-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/04/22 13:00
Date Received: 11/04/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	11/05/22 18:34	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262133
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-02
Client ID: 301-AC01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 13:00
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	11/06/22 15:49	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262133
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-03
Client ID: 301-AC01-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/04/22 13:30
Date Received: 11/04/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	11/05/22 18:34	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262133
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-04
Client ID: 301-AC01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 13:30
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	11/06/22 15:49	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262133
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-05
Client ID: 302-AD01-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/04/22 14:10
Date Received: 11/04/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	11/05/22 18:34	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262133
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-06
Client ID: 302-AD01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 14:10
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	11/06/22 15:49	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262133
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-07
Client ID: 302-AD01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 14:20
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	11/05/22 18:34	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262133
Report Date: 11/11/22

SAMPLE RESULTS

Lab ID: L2262133-08
Client ID: 302-AD01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/04/22 14:20
Date Received: 11/04/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.5		%	0.100	NA	1	-	11/06/22 15:49	121,2540G	MF

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262133

Report Date: 11/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07 QC Batch ID: WG1708590-1 QC Sample: L2262186-03 Client ID: DUP Sample						
Solids, Total	89.8	90.2	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1708772-1 QC Sample: L2261437-01 Client ID: DUP Sample						
Solids, Total	84.9	83.8	%	1		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262133
Report Date: 11/11/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2262133-01A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2262133-01B	Vial water preserved	A	NA		2.7	Y	Absent	05-NOV-22 08:23	PA-8260HLW(14)
L2262133-01C	Vial water preserved	A	NA		2.7	Y	Absent	05-NOV-22 08:23	PA-8260HLW(14)
L2262133-01D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2262133-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2262133-02B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2262133-03A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2262133-03B	Vial water preserved	A	NA		2.7	Y	Absent	05-NOV-22 08:23	PA-8260HLW(14)
L2262133-03C	Vial water preserved	A	NA		2.7	Y	Absent	05-NOV-22 08:23	PA-8260HLW(14)
L2262133-03D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2262133-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2262133-04B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2262133-05A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2262133-05B	Vial water preserved	A	NA		2.7	Y	Absent	05-NOV-22 08:23	PA-8260HLW(14)
L2262133-05C	Vial water preserved	A	NA		2.7	Y	Absent	05-NOV-22 08:23	PA-8260HLW(14)
L2262133-05D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2262133-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2262133-06B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2262133-07A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2262133-07B	Vial water preserved	A	NA		2.7	Y	Absent	05-NOV-22 08:23	PA-8260HLW(14)
L2262133-07C	Vial water preserved	A	NA		2.7	Y	Absent	05-NOV-22 08:23	PA-8260HLW(14)
L2262133-07D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2262133-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262133
Report Date: 11/11/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2262133-08B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262133
Project Number:	200.00135.006	**Report Date:**	11/11/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262133
Project Number:	200.00135.006	**Report Date:**	11/11/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262133
Project Number:	200.00135.006	**Report Date:**	11/11/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262133
Project Number:	200.00135.006	**Report Date:**	11/11/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 11/05/22

ALPHA Job #: L2262133

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193

Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~17461~~ ~~17853~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
62133-01	301-AC01-C1-VOC	11/1	1300	S	TS	☑	☐	☐		4
-02	301-AC01-C1-Comp		1300			☐	☑	☑		2
-03	301-AC01-C2-VOC		1330			☑	☐	☐		4
-04	301-AC01-C2-Comp		1330			☐	☑	☑		2
-05	302-AD01-C1-VOC		1410			☑	☐	☐		4
-06	302-AD01-C1-Comp		1410			☐	☑	☑		2
-07	302-AD01-C2-VOC		1420			☑	☐	☐		4
-08	302-AD01-C2-Comp	↓	1420	↓	↓	☐	☑	☑		2
						☐	☐	☐		4
						☐	☐	☐		2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
	11/4		
	11/4 1811		11-4-22 1811
	11.4		11.4.22 21

11/5/22 0235

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

ANALYTICAL REPORT

Lab Number:	L2262428
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/14/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262428
Report Date: 11/14/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2262428-01	301-AC01-C3-VOC	SOIL	PHILADELPHIA, PA	11/07/22 11:30	11/07/22
L2262428-02	301-AC01-C3-COMP	SOIL	PHILADELPHIA, PA	11/07/22 11:30	11/07/22
L2262428-03	301-AC01-C4-VOC	SOIL	PHILADELPHIA, PA	11/07/22 11:45	11/07/22
L2262428-04	301-AC01-C4-COMP	SOIL	PHILADELPHIA, PA	11/07/22 11:45	11/07/22
L2262428-05	301-AC01-C5-VOC	SOIL	PHILADELPHIA, PA	11/07/22 12:00	11/07/22
L2262428-06	301-AC01-C5-COMP	SOIL	PHILADELPHIA, PA	11/07/22 12:00	11/07/22
L2262428-07	302-AD02-C1-VOC	SOIL	PHILADELPHIA, PA	11/07/22 14:00	11/07/22
L2262428-08	302-AD02-C1-COMP	SOIL	PHILADELPHIA, PA	11/07/22 14:00	11/07/22
L2262428-09	302-AD02-C2-VOC	SOIL	PHILADELPHIA, PA	11/07/22 14:15	11/07/22
L2262428-10	302-AD02-C2-COMP	SOIL	PHILADELPHIA, PA	11/07/22 14:15	11/07/22
L2262428-11	302-AD02-C3-VOC	SOIL	PHILADELPHIA, PA	11/07/22 14:30	11/07/22
L2262428-12	302-AD02-C3-COMP	SOIL	PHILADELPHIA, PA	11/07/22 14:30	11/07/22
L2262428-13	302-AD02-C4-VOC	SOIL	PHILADELPHIA, PA	11/07/22 14:45	11/07/22
L2262428-14	302-AD02-C4-COMP	SOIL	PHILADELPHIA, PA	11/07/22 14:45	11/07/22
L2262428-15	302-AD02-C5-VOC	SOIL	PHILADELPHIA, PA	11/07/22 15:00	11/07/22
L2262428-16	302-AD02-C5-COMP	SOIL	PHILADELPHIA, PA	11/07/22 15:00	11/07/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262428
Project Number:	200.00135.006	**Report Date:**	11/14/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262428
Project Number:	200.00135.006	**Report Date:**	11/14/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2262428-11 through -16: The analyses performed were specified by the client.

Volatile Organics

L2262428-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (230%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2262428-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (413%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 11/14/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-01
Client ID: 301-AC01-C3-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 11:30
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 13:26
Analyst: AJK
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-03
Client ID: 301-AC01-C4-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 11:45
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 14:05
Analyst: AJK
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00018	J	mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	0.00045	J	mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-05
Client ID: 301-AC01-C5-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 12:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/11/22 17:22
Analyst: NLK
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.029	0.0097	1
1,2-Dichloroethane	ND		mg/kg	0.058	0.015	1
Toluene	ND		mg/kg	0.058	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	ND		mg/kg	0.058	0.0082	1
p/m-Xylene	ND		mg/kg	0.12	0.033	1
o-Xylene	ND		mg/kg	0.058	0.017	1
Xylenes, Total	ND		mg/kg	0.058	0.017	1
Isopropylbenzene	3.0		mg/kg	0.058	0.0064	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	**230**	Q	70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-07
Client ID: 302-AD02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 14:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 15:22
Analyst: AJK
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0030	0.00030	1
Benzene	ND		mg/kg	0.00074	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00038	1
Toluene	ND		mg/kg	0.0015	0.00080	1
1,2-Dibromoethane	ND		mg/kg	0.00074	0.00043	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0030	0.00083	1
o-Xylene	ND		mg/kg	0.0015	0.00043	1
Xylenes, Total	ND		mg/kg	0.0015	0.00043	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0030	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0030	0.00049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-09
Client ID: 302-AD02-C2-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 14:15
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 16:01
Analyst: AJK
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-11
Client ID: 302-AD02-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 14:30
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 16:39
Analyst: AJK
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-13
Client ID: 302-AD02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 14:45
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/10/22 15:47
Analyst: AJK
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	ND		mg/kg	0.025	0.0083	1
1,2-Dichloroethane	ND		mg/kg	0.050	0.013	1
Toluene	ND		mg/kg	0.050	0.027	1
1,2-Dibromoethane	ND		mg/kg	0.025	0.014	1
Ethylbenzene	0.011	J	mg/kg	0.050	0.0070	1
p/m-Xylene	ND		mg/kg	0.10	0.028	1
o-Xylene	0.040	J	mg/kg	0.050	0.014	1
Xylenes, Total	0.040	J	mg/kg	0.050	0.014	1
Isopropylbenzene	10.		mg/kg	0.050	0.0054	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096	1
1,2,4-Trimethylbenzene	0.048	J	mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	**413**	Q	70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-15
Client ID: 302-AD02-C5-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 15:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/09/22 17:56
Analyst: AJK
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.013		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/09/22 09:35
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,07,09,11,15 Batch: WG1710673-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2262428

Project Number: 200.00135.006 **Report Date:** 11/14/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/10/22 08:55
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13 Batch: WG1711213-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2262428

Project Number: 200.00135.006 **Report Date:** 11/14/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/11/22 10:44
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05 Batch: WG1711666-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	101		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262428
Report Date: 11/14/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,07,09,11,15 Batch: WG1710673-3 WG1710673-4								
Methyl tert butyl ether	87		87		66-130	0		30
Benzene	96		98		70-130	2		30
1,2-Dichloroethane	91		92		70-130	1		30
Toluene	87		89		70-130	2		30
1,2-Dibromoethane	90		91		70-130	1		30
Ethylbenzene	88		90		70-130	2		30
p/m-Xylene	90		91		70-130	1		30
o-Xylene	85		86		70-130	1		30
Isopropylbenzene	86		89		70-130	3		30
1,3,5-Trimethylbenzene	85		87		70-130	2		30
1,2,4-Trimethylbenzene	86		88		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	90		90		70-130
Toluene-d8	91		91		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	100		101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262428

Report Date: 11/14/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13 Batch: WG1711213-3 WG1711213-4								
Methyl tert butyl ether	104		102		66-130	2		30
Benzene	108		106		70-130	2		30
1,2-Dichloroethane	102		101		70-130	1		30
Toluene	98		98		70-130	0		30
1,2-Dibromoethane	95		96		70-130	1		30
Ethylbenzene	98		99		70-130	1		30
p/m-Xylene	101		102		70-130	1		30
o-Xylene	96		97		70-130	1		30
Isopropylbenzene	92		92		70-130	0		30
1,3,5-Trimethylbenzene	96		95		70-130	1		30
1,2,4-Trimethylbenzene	96		95		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		105		70-130
Toluene-d8	99		101		70-130
4-Bromofluorobenzene	90		90		70-130
Dibromofluoromethane	107		104		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262428

Report Date: 11/14/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05 Batch: WG1711666-3 WG1711666-4								
Methyl tert butyl ether	97		96		66-130	1		30
Benzene	99		100		70-130	1		30
1,2-Dichloroethane	102		104		70-130	2		30
Toluene	100		100		70-130	0		30
1,2-Dibromoethane	111		110		70-130	1		30
Ethylbenzene	98		98		70-130	0		30
p/m-Xylene	93		93		70-130	0		30
o-Xylene	91		90		70-130	1		30
Isopropylbenzene	91		92		70-130	1		30
1,3,5-Trimethylbenzene	90		91		70-130	1		30
1,2,4-Trimethylbenzene	91		92		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	100		100		70-130
Toluene-d8	102		100		70-130
4-Bromofluorobenzene	109		110		70-130
Dibromofluoromethane	99		98		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-02
Client ID: 301-AC01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 11:30
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/09/22 05:12
Analyst: CMM
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 11/08/22 12:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	0.032	J	mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	0.022	J	mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	0.037	J	mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-04
Client ID: 301-AC01-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 11:45
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/09/22 04:24
Analyst: CMM
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 11/08/22 12:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	50		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-06
Client ID: 301-AC01-C5-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 12:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/09/22 01:36
Analyst: CMM
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 11/08/22 12:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-08
Client ID: 302-AD02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 14:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/09/22 02:00
Analyst: CMM
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 11/08/22 12:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-10
Client ID: 302-AD02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 14:15
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/09/22 07:12
Analyst: CMM
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 11/08/22 12:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-12
Client ID: 302-AD02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 14:30
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/09/22 01:12
Analyst: CMM
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 11/08/22 12:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	53		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-14
Client ID: 302-AD02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 14:45
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/09/22 06:25
Analyst: CMM
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 11/08/22 12:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.97		mg/kg	0.19	0.019	1
Phenanthrene	1.9		mg/kg	0.12	0.023	1
Anthracene	0.32		mg/kg	0.12	0.037	1
Pyrene	0.23		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.022	J	mg/kg	0.12	0.022	1
Chrysene	0.024	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-16
Client ID: 302-AD02-C5-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 15:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/09/22 04:48
Analyst: CMM
Percent Solids: 90%

Extraction Method: EPA 3546
Extraction Date: 11/08/22 12:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	0.21		mg/kg	0.18	0.018	1
Phenanthrene	0.42		mg/kg	0.11	0.022	1
Anthracene	0.079	J	mg/kg	0.11	0.036	1
Pyrene	0.045	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/08/22 23:36
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 11/08/22 12:41

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1709573-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	73		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262428

Report Date: 11/14/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1709573-2 WG1709573-3								
Naphthalene	61		66		40-140	8		50
Fluorene	67		70		40-140	4		50
Phenanthrene	62		65		40-140	5		50
Anthracene	64		68		40-140	6		50
Pyrene	63		64		35-142	2		50
Benzo(a)anthracene	65		68		40-140	5		50
Chrysene	66		68		40-140	3		50
Benzo(b)fluoranthene	70		69		40-140	1		50
Benzo(a)pyrene	71		75		40-140	5		50
Benzo(ghi)perylene	60		63		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	60		67		23-120
2-Fluorobiphenyl	69		76		30-120
4-Terphenyl-d14	73		77		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-02
Client ID: 301-AC01-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 11:30
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.79		mg/kg	2.50	0.134	1	11/09/22 00:03	11/09/22 13:43	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-04
Client ID: 301-AC01-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 11:45
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.55		mg/kg	2.27	0.122	1	11/09/22 00:03	11/09/22 14:48	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-06
Client ID: 301-AC01-C5-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 12:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.54		mg/kg	2.17	0.116	1	11/09/22 00:03	11/09/22 14:53	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-08
Client ID: 302-AD02-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 14:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	29.0		mg/kg	2.30	0.123	1	11/09/22 00:03	11/09/22 14:58	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-10
Client ID: 302-AD02-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 14:15
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.06		mg/kg	2.21	0.118	1	11/09/22 00:03	11/09/22 15:03	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-12
Client ID: 302-AD02-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 14:30
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.01		mg/kg	2.27	0.122	1	11/09/22 00:03	11/09/22 15:07	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-14
Client ID: 302-AD02-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 14:45
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	120		mg/kg	2.17	0.116	1	11/09/22 00:03	11/09/22 15:12	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262428
Project Number: 200.00135.006
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-16
Client ID: 302-AD02-C5-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/07/22 15:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.57		mg/kg	2.13	0.114	1	11/09/22 00:03	11/09/22 15:17	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1709450-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/09/22 00:03	11/09/22 13:20	1,6010D	DMB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262428

Report Date: 11/14/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1709450-2 SRM Lot Number: D113-540								
Lead, Total	106		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262428
Report Date: 11/14/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1709450-3 QC Sample: L2262428-02 Client ID: 301-AC01-C3-COMP												
Lead, Total	7.79	53.1	58.7	96		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262428

Report Date: 11/14/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1709450-4 QC Sample: L2262428-02 Client ID: 301-AC01-C3-COMP						
Lead, Total	7.79	7.85	mg/kg	1		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-01
Client ID: 301-AC01-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/07/22 11:30
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-02
Client ID: 301-AC01-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/07/22 11:30
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.3		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-03
Client ID: 301-AC01-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/07/22 11:45
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.3		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-04
Client ID: 301-AC01-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/07/22 11:45
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.8		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-05
Client ID: 301-AC01-C5-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 12:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.9		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-06
Client ID: 301-AC01-C5-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 12:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.2		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-07
Client ID: 302-AD02-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/07/22 14:00
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.1		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-08
Client ID: 302-AD02-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/07/22 14:00
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-09
Client ID: 302-AD02-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/07/22 14:15
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.3		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-10
Client ID: 302-AD02-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/07/22 14:15
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.5		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-11
Client ID: 302-AD02-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/07/22 14:30
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.4		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-12
Client ID: 302-AD02-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/07/22 14:30
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-13
Client ID: 302-AD02-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/07/22 14:45
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-14
Client ID: 302-AD02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 14:45
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.3		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-15
Client ID: 302-AD02-C5-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/07/22 15:00
Date Received: 11/07/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262428
Report Date: 11/14/22

SAMPLE RESULTS

Lab ID: L2262428-16
Client ID: 302-AD02-C5-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/07/22 15:00
Date Received: 11/07/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.2		%	0.100	NA	1	-	11/09/22 01:54	121,2540G	JD

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262428

Report Date: 11/14/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-16 QC Batch ID: WG1709802-1 QC Sample: L2262428-01 Client ID: 301-AC01-C3-VOC						
Solids, Total	85.7	84.8	%	1		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262428
Report Date: 11/14/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2262428-01A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2262428-01B	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-01C	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-01D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2262428-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2262428-02B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2262428-03A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2262428-03B	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-03C	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-03D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2262428-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2262428-04B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2262428-05A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2262428-05B	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-05C	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-05D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2262428-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2262428-06B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2262428-07A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2262428-07B	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-07C	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-07D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2262428-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262428
Report Date: 11/14/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2262428-08B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2262428-09A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2262428-09B	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-09C	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-09D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2262428-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2262428-10B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2262428-11A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2262428-11B	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-11C	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-11D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2262428-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2262428-12B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2262428-13A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2262428-13B	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-13C	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-13D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2262428-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2262428-14B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2262428-15A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2262428-15B	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-15C	Vial water preserved	A	NA		2.4	Y	Absent	08-NOV-22 08:51	PA-8260HLW(14)
L2262428-15D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2262428-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2262428-16B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262428
Project Number:	200.00135.006	**Report Date:**	11/14/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262428
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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

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Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262428
Project Number:	200.00135.006	**Report Date:**	11/14/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 11/8/22

ALPHA Job #: L2262428

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: 13161 ~~[illegible]~~ 18559

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
62428-01	301-AC01-C3-VOC	11/7	1130	S	TS	☑	☐	☐		4
-02	301-AC01-C3-Comp	↓	1130	↓	↓	☐	☑	☑		2
-03	301-AC01-C4-VOC		1145			☑	☐	☐		4
-04	301-AC01-C4-Comp		1145			☐	☑	☑		2
-05	301-AC01-C5-VOC		1200			☑	☐	☐		4
-06	301-AC01-C5-Comp		1200			☐	☑	☑		2
-07	302-AD02-C1-VOC		1400			☑	☐	☐		4
-08	302-AD02-C1-Comp		1400			☐	☑	☑		2
-09	302-AD02-C2-VOC		1415			☑	☐	☐		4
-10	302-AD02-C2-Comp	↓	1415	↓	↓	☐	☑	☑		2

	VOCs (8260)	SVOCs (8270)	Lead
Container Type	G	G	G
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/7	[signature]	11/7/22 15:20
[signature]	11/7/22 1800	[signature]	11-7 1800
[signature]	11/7 [illegible]	[illegible]	11-7-22 2140

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

11/08/22 02:20 11/8/22 0220

FORM NO: 01-01(I) (rev. 5-JAN-12)

CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 11/8/22

ALPHA Job #: L2262428

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~17961~~ ~~17963~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:
~~***Report only project-specific analyte list*** of PADEP Leaded/Unleaded~~ Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection ~~Time~~ Date	Collection ~~Time~~ DATE	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead										Sample Specific Comments	TOTAL # BOTTLES
62428 -11	302-ADO2-C3-VOC	1430	11/7	S	TS	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		4
-12	302-ADO2-C3-Comp	1430	↓	↓	↓	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		2
-13	302-ADO2-C4-VOC	1445				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		4
-14	302-ADO2-C4-Comp	1445				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		2
-15	302-ADO2-C5-VOC	1500				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		4
-16	302-ADO2-C5-Comp	1500				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		2
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		4
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		2
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		4
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		2
					Container Type	G	G	G	-	-	-	-	-	-	-	-	-		
					Preservative	F	A	A	-	-	-	-	-	-	-	-	-		

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/7	[signature]	11/7/22 1320
[signature]	11/7/22 1800	[signature]	11-7 1800
[signature]	11-7 2100	[signature]	11-7-22-2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

[signature] 11/08/22 02:20

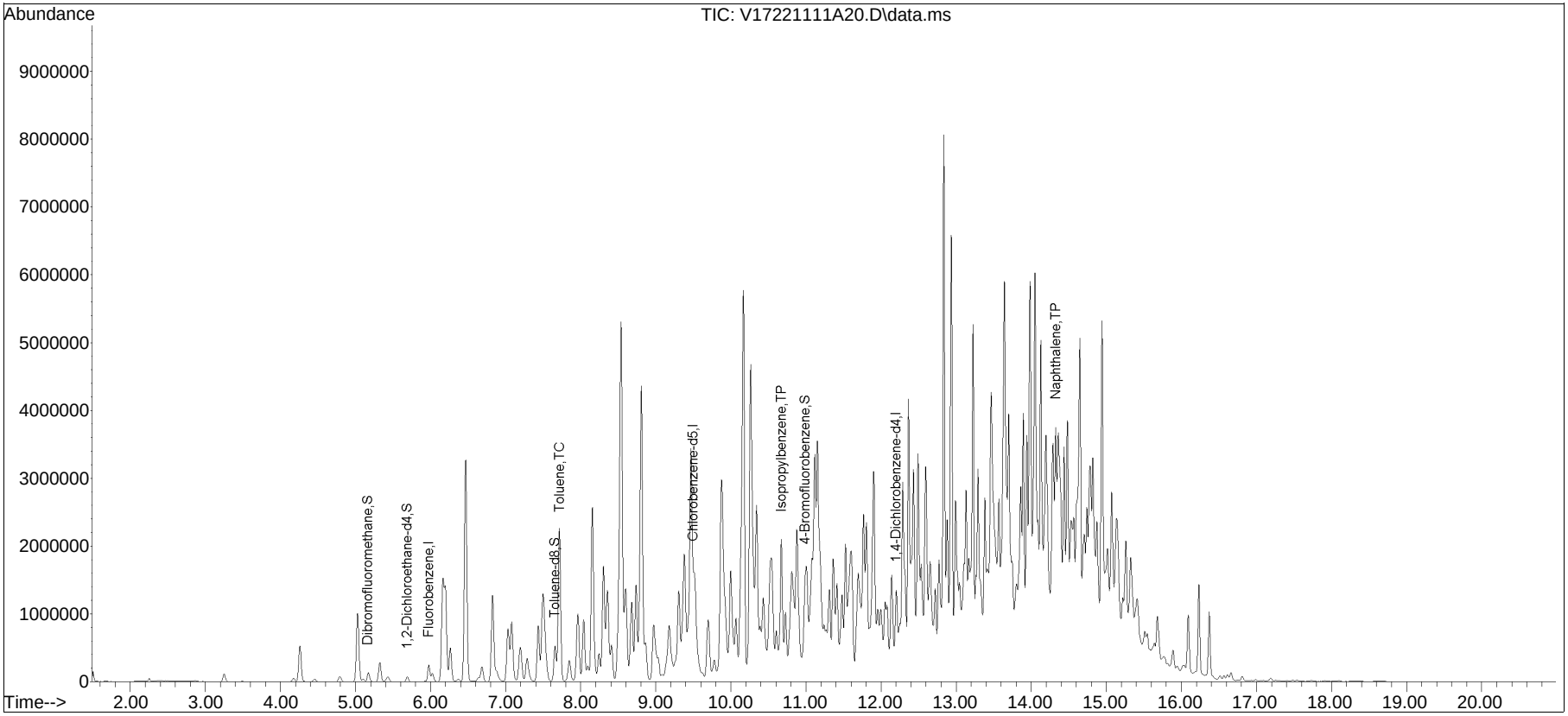
[signature] 11/8/22 0220

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA117\2022\221111A\
Data File : V17221111A20.D
Acq On : 11 Nov 2022 05:22 pm
Operator : VOA117:NLK
Sample : L2262428-05,31H,5.40,5,0.100,,A,R2F
Misc : WG1711666,ICAL19363
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Nov 13 11:05:09 2022
Quant Method : I:\VOLATILES\VOA117\2022\221111A\V117_220923N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Sep 28 06:22:25 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list11A\V17221111A01.D•

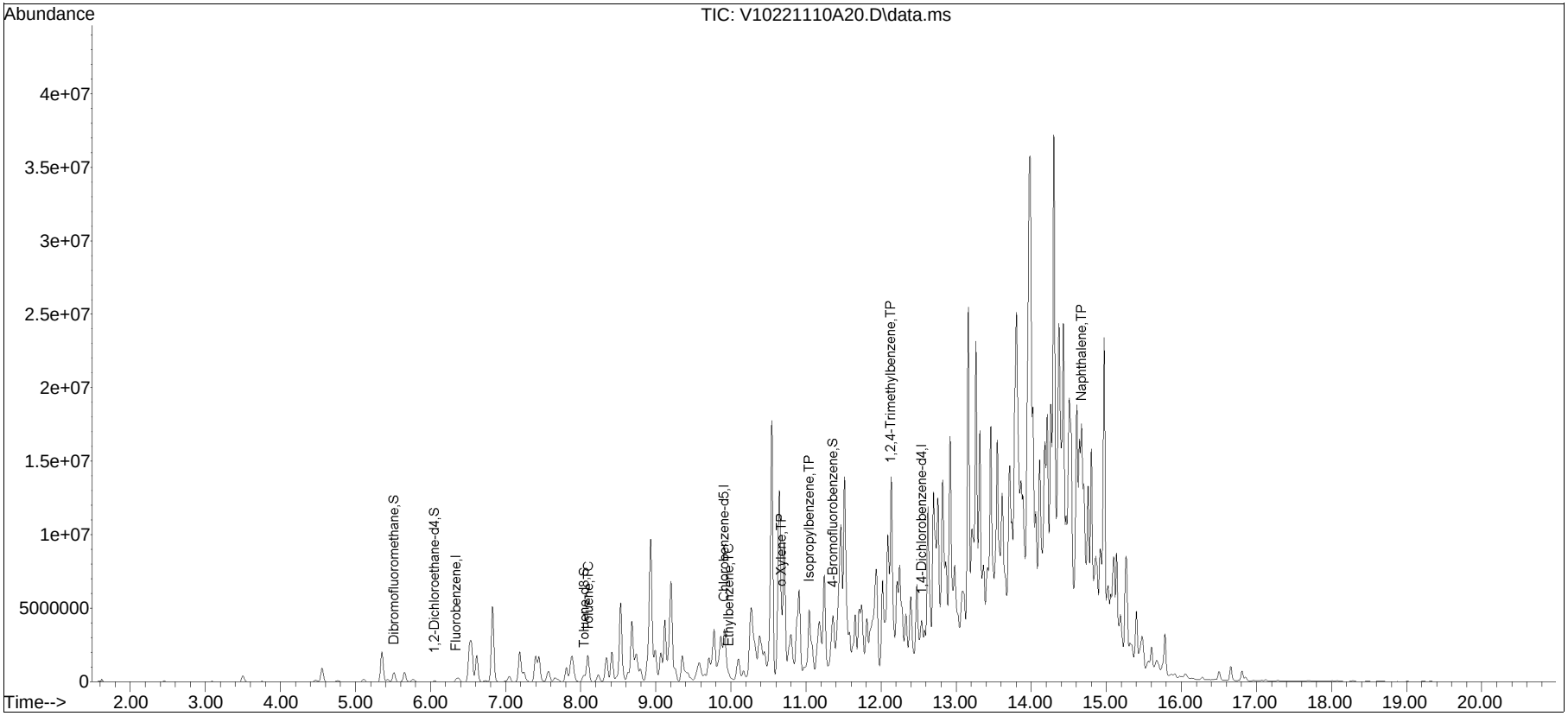


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\221110A\
Data File : V10221110A20.D
Acq On : 10 Nov 2022 3:47 pm
Operator : VOA110:AJK
Sample : l2262428-13,31h,6.13,5,0.100,,a,r2f
Misc : WG1711213,ICAL19281
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Nov 10 17:11:15 2022
Quant Method : I:\VOLATILES\VOA110\2022\221110A\V110_220822N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Aug 23 09:34:28 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list10A\V10221110A01.D•



ANALYTICAL REPORT

Lab Number:	L2262688
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/15/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262688
Report Date: 11/15/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2262688-01	302-AD01-C3-VOC	SOIL	PHILADELPHIA, PA	11/08/22 10:20	11/08/22
L2262688-02	302-AD01-C3-COMP	SOIL	PHILADELPHIA, PA	11/08/22 10:20	11/08/22
L2262688-03	302-AE02-C1-VOC	SOIL	PHILADELPHIA, PA	11/08/22 13:00	11/08/22
L2262688-04	302-AE02-C1-COMP	SOIL	PHILADELPHIA, PA	11/08/22 13:00	11/08/22
L2262688-05	302-AE02-C2-VOC	SOIL	PHILADELPHIA, PA	11/08/22 13:10	11/08/22
L2262688-06	302-AE02-C2-COMP	SOIL	PHILADELPHIA, PA	11/08/22 13:10	11/08/22
L2262688-07	302-AE02-C3-VOC	SOIL	PHILADELPHIA, PA	11/08/22 13:20	11/08/22
L2262688-08	302-AE02-C3-COMP	SOIL	PHILADELPHIA, PA	11/08/22 13:20	11/08/22
L2262688-09	302-AE02-C4-VOC	SOIL	PHILADELPHIA, PA	11/08/22 13:30	11/08/22
L2262688-10	302-AE02-C4-COMP	SOIL	PHILADELPHIA, PA	11/08/22 13:30	11/08/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262688
Project Number:	200.00135.006	**Report Date:**	11/15/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262688
Project Number:	200.00135.006	**Report Date:**	11/15/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2262688-01: The sample identified as "302-AD03-C3-VOC" on the chain of custody was identified as "302-AD01-C3-VOC" on the container label. At the client's request, the sample is reported as "302-AD01-C3-VOC".

L2262688-02: The sample identified as "302-AD03-C3-COMP" on the chain of custody was identified as "302-AD01-C3-COMP" on the container label. At the client's request, the sample is reported as "302-AD01-C3-COMP".

L2262688-10: The sample identified as "302-AE03-C4-COMP" on the chain of custody was identified as "302-AE02-C4-COMP" on the container label. At the client's request, the sample is reported as "302-AE02-C4-COMP".

Volatile Organics

L2262688-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (314%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 11/15/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-01
Client ID: 302-AD01-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 10:20
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/10/22 09:42
Analyst: JIC
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0014	0.00015	1
Benzene	ND		mg/kg	0.00036	0.00012	1
1,2-Dichloroethane	ND		mg/kg	0.00073	0.00019	1
Toluene	ND		mg/kg	0.00073	0.00040	1
1,2-Dibromoethane	ND		mg/kg	0.00036	0.00021	1
Ethylbenzene	ND		mg/kg	0.00073	0.00010	1
p/m-Xylene	ND		mg/kg	0.0014	0.00041	1
o-Xylene	ND		mg/kg	0.00073	0.00021	1
Xylenes, Total	ND		mg/kg	0.00073	0.00021	1
Isopropylbenzene	ND		mg/kg	0.00073	0.00007	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0014	0.00014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0014	0.00024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-03
Client ID: 302-AE02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:00
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/10/22 10:08
Analyst: JIC
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	130		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-05
Client ID: 302-AE02-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:10
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/10/22 10:34
Analyst: JIC
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00065	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00065	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00073	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	128		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-07
Client ID: 302-AE02-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:20
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/10/22 11:00
Analyst: JIC
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	126		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-09
Client ID: 302-AE02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:30
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/15/22 11:53
Analyst: NLK
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	ND		mg/kg	0.027	0.0089	1
1,2-Dichloroethane	ND		mg/kg	0.053	0.014	1
Toluene	ND		mg/kg	0.053	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	1.5		mg/kg	0.053	0.0075	1
p/m-Xylene	0.25		mg/kg	0.11	0.030	1
o-Xylene	ND		mg/kg	0.053	0.016	1
Xylenes, Total	0.25		mg/kg	0.053	0.016	1
Isopropylbenzene	13.		mg/kg	0.053	0.0058	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	4.9		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	**314**	Q	70-130
Dibromofluoromethane	84		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2262688

Project Number: 200.00135.006 **Report Date:** 11/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/10/22 09:15
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07 Batch: WG1711188-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	126		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2262688

Project Number: 200.00135.006 **Report Date:** 11/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/15/22 11:34
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1712538-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262688

Report Date: 11/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07 Batch: WG1711188-3 WG1711188-4								
Methyl tert butyl ether	124		114		66-130	8		30
Benzene	118		104		70-130	13		30
1,2-Dichloroethane	121		111		70-130	9		30
Toluene	108		97		70-130	11		30
1,2-Dibromoethane	105		97		70-130	8		30
Ethylbenzene	112		101		70-130	10		30
p/m-Xylene	106		95		70-130	11		30
o-Xylene	102		92		70-130	10		30
Isopropylbenzene	108		96		70-130	12		30
1,3,5-Trimethylbenzene	109		97		70-130	12		30
1,2,4-Trimethylbenzene	108		97		70-130	11		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	123		123		70-130
Toluene-d8	104		105		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	100		101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262688

Report Date: 11/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1712538-3 WG1712538-4								
Methyl tert butyl ether	87		95		66-130	9		30
Benzene	91		97		70-130	6		30
1,2-Dichloroethane	93		99		70-130	6		30
Toluene	89		94		70-130	5		30
1,2-Dibromoethane	92		100		70-130	8		30
Ethylbenzene	94		99		70-130	5		30
p/m-Xylene	92		98		70-130	6		30
o-Xylene	92		99		70-130	7		30
Isopropylbenzene	94		96		70-130	2		30
1,3,5-Trimethylbenzene	94		96		70-130	2		30
1,2,4-Trimethylbenzene	93		96		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		104		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	100		97		70-130
Dibromofluoromethane	95		98		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-02
Client ID: 302-AD01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 10:20
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 02:34
Analyst: CMM
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 00:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.022	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-04
Client ID: 302-AE02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:00
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 09:28
Analyst: CMM
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 00:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.086	J	mg/kg	0.19	0.023	1
Fluorene	0.12	J	mg/kg	0.19	0.018	1
Phenanthrene	0.86		mg/kg	0.11	0.023	1
Anthracene	0.22		mg/kg	0.11	0.037	1
Pyrene	0.67		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.51		mg/kg	0.11	0.021	1
Chrysene	0.49		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.51		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.40		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.22		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	63		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-06
Client ID: 302-AE02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:10
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/10/22 22:34
Analyst: CMM
Percent Solids: 95%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 00:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-08
Client ID: 302-AE02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:20
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 02:38
Analyst: CMM
Percent Solids: 95%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 00:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	0.037	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-10
Client ID: 302-AE02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:30
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 06:15
Analyst: CMM
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 00:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	11.	E	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	6.8		mg/kg	0.12	0.025	1
Anthracene	0.84		mg/kg	0.12	0.040	1
Pyrene	0.82		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.048	J	mg/kg	0.12	0.023	1
Chrysene	0.059	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	51		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-10 D
Client ID: 302-AE02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:30
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/13/22 20:56
Analyst: CMM
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 00:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	9.1		mg/kg	1.0	0.12	5

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/10/22 20:10
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 11/10/22 00:18

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10 Batch: WG1710325-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	73		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262688
Report Date: 11/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10 Batch: WG1710325-2 WG1710325-3								
Naphthalene	74		75		40-140	1		50
Fluorene	79		79		40-140	0		50
Phenanthrene	74		73		40-140	1		50
Anthracene	75		77		40-140	3		50
Pyrene	76		75		35-142	1		50
Benzo(a)anthracene	76		78		40-140	3		50
Chrysene	78		78		40-140	0		50
Benzo(b)fluoranthene	82		83		40-140	1		50
Benzo(a)pyrene	88		91		40-140	3		50
Benzo(ghi)perylene	76		77		40-140	1		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	64		67		23-120
2-Fluorobiphenyl	72		74		30-120
4-Terphenyl-d14	79		77		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-02
Client ID: 302-AD01-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/08/22 10:20
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.90		mg/kg	2.19	0.117	1	11/09/22 20:47	11/11/22 15:11	EPA 3050B	1,6010D	NB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-04
Client ID: 302-AE02-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/08/22 13:00
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	103		mg/kg	2.26	0.121	1	11/09/22 20:47	11/11/22 15:16	EPA 3050B	1,6010D	NB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-06
Client ID: 302-AE02-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/08/22 13:10
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.13		mg/kg	2.06	0.110	1	11/09/22 20:47	11/11/22 15:21	EPA 3050B	1,6010D	NB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-08
Client ID: 302-AE02-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/08/22 13:20
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.08		mg/kg	2.09	0.112	1	11/09/22 20:47	11/11/22 15:26	EPA 3050B	1,6010D	NB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262688
Project Number: 200.00135.006
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-10
Client ID: 302-AE02-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/08/22 13:30
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.44		mg/kg	2.41	0.129	1	11/09/22 20:47	11/11/22 15:31	EPA 3050B	1,6010D	NB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10 Batch: WG1710095-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/09/22 20:47	11/10/22 10:41	1,6010D	JMF

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262688

Report Date: 11/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 Batch: WG1710095-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262688
Report Date: 11/15/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1710095-3 QC Sample: L2262612-14 Client ID: MS Sample												
Lead, Total	278	47.2	130	**0**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262688

Report Date: 11/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1710095-4 QC Sample: L2262612-14 Client ID: DUP Sample						
Lead, Total	278	87.3	mg/kg	**104**	Q	20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Serial Dilution Analysis
Batch Quality Control

Lab Number: L2262688
Report Date: 11/15/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1710095-6 QC Sample: L2262612-14 Client ID: DUP Sample						
Lead, Total	278	278	mg/kg	0		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-01
Client ID: 302-AD01-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/08/22 10:20
Date Received: 11/08/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.4		%	0.100	NA	1	-	11/10/22 06:02	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-02
Client ID: 302-AD01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 10:20
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.7		%	0.100	NA	1	-	11/10/22 19:38	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-03
Client ID: 302-AE02-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/08/22 13:00
Date Received: 11/08/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	11/10/22 06:02	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-04
Client ID: 302-AE02-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/08/22 13:00
Date Received: 11/08/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.5		%	0.100	NA	1	-	11/10/22 19:38	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-05
Client ID: 302-AE02-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/08/22 13:10
Date Received: 11/08/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	11/10/22 06:02	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-06
Client ID: 302-AE02-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/08/22 13:10
Date Received: 11/08/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.0		%	0.100	NA	1	-	11/10/22 19:38	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-07
Client ID: 302-AE02-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/08/22 13:20
Date Received: 11/08/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.0		%	0.100	NA	1	-	11/10/22 06:02	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-08
Client ID: 302-AE02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/08/22 13:20
Date Received: 11/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.6		%	0.100	NA	1	-	11/10/22 19:38	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-09
Client ID: 302-AE02-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/08/22 13:30
Date Received: 11/08/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.2		%	0.100	NA	1	-	11/10/22 06:02	121,2540G	JD

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262688
Report Date: 11/15/22

SAMPLE RESULTS

Lab ID: L2262688-10
Client ID: 302-AE02-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/08/22 13:30
Date Received: 11/08/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.5		%	0.100	NA	1	-	11/10/22 19:38	121,2540G	MF

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262688

Report Date: 11/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09 QC Batch ID: WG1710371-2 QC Sample: L2262688-01 Client ID: 302-AD01-C3-VOC						
Solids, Total	89.4	90.4	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1710826-1 QC Sample: L2262688-02 Client ID: 302-AD01-C3-COMP						
Solids, Total	90.7	91.7	%	1		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262688
Report Date: 11/15/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2262688-01A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2262688-01B	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-01C	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-01D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2262688-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2262688-02B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)
L2262688-03A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2262688-03B	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-03C	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-03D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2262688-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2262688-04B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)
L2262688-05A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2262688-05B	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-05C	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-05D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2262688-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2262688-06B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)
L2262688-07A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2262688-07B	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-07C	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-07D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2262688-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262688
Report Date: 11/15/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2262688-08B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)
L2262688-09A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2262688-09B	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-09C	Vial water preserved	A	NA		4.2	Y	Absent	09-NOV-22 08:14	PA-8260HLW(14)
L2262688-09D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2262688-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2262688-10B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262688
Project Number:	200.00135.006	**Report Date:**	11/15/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262688
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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262688
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Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262688
Project Number:	200.00135.006	**Report Date:**	11/15/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

N

CHAIN OF CUSTODY

PAGE OF

Date Rec'd in Lab: 11/09/22

ALPHA Job #: L2302688

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~13761~~ ~~17853~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
~~L2302688~~ -01	302-AD03-C3-VOC	11/8/22	1020	S	WK	☒	☐	☐		4
-02	302-AD03-C3-Comp		1020			☐	☒	☒		2
-03	302-AE02-C1-VOC		1300			☒	☐	☐		4
-04	302-AE02-C1-Comp		1300			☐	☒	☒		2
-05	302-AE02-C2-VOC		1310			☒	☐	☐		4
-06	302-AE02-C2-Comp		1310			☐	☒	☒		2
-07	302-AE02-C3-VOC		1320			☒	☒	☐		4
-08	302-AE02-C3-Comp		1320			☐	☒	☒		2
-09	302-AE02-C4-VOC		1330			☒	☐	☐		4
-10	302-AE03-C4-Comp	↓	1330	↓	↓	☐	☒	☒		2
	Container Type					G	G	G		
	Preservative					F	A	A		

Relinquished By:	Date/Time	Received By:	Date/Time
	11/8/22 1520		11/8/22 1520
	11/8/22 1800		11-8 1800
	11/9/22 0150		11-8-22 2100
	11/9/22 0150		

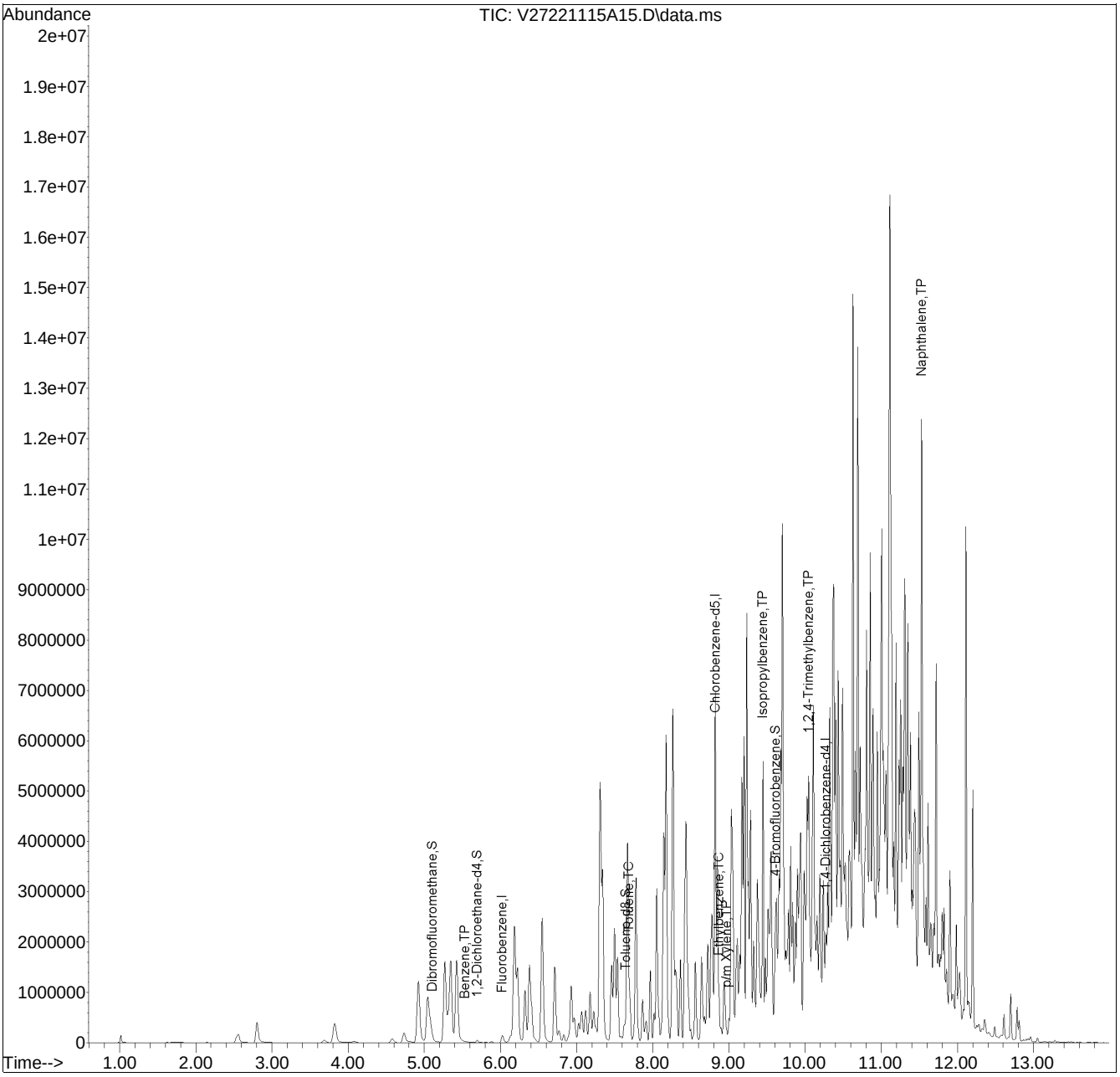
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221115A\
Data File : V27221115A15.D
Acq On : 15 Nov 2022 11:53 am
Operator : VOA127:NLK
Sample : L2262688-09,31H,5.91,5,0.100,,A,R2F
Misc : WG1712538,ICAL19419
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Nov 15 12:40:17 2022
Quant Method : I:\VOLATILES\VOA127\2022\221115A\V127_221020N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Fri Oct 21 13:17:54 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V27221115A01.D•



ANALYTICAL REPORT

Lab Number:	L2262976
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/16/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262976
Report Date: 11/16/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2262976-01	302-AH02-C1-VOC	SOIL	PHILADELPHIA, PA	11/09/22 11:20	11/09/22
L2262976-02	302-AH02-C1-COMP	SOIL	PHILADELPHIA, PA	11/09/22 11:20	11/09/22
L2262976-03	302-AH02-C2-VOC	SOIL	PHILADELPHIA, PA	11/09/22 11:30	11/09/22
L2262976-04	302-AH02-C2-COMP	SOIL	PHILADELPHIA, PA	11/09/22 11:30	11/09/22
L2262976-05	302-AH02-C3-VOC	SOIL	PHILADELPHIA, PA	11/09/22 11:40	11/09/22
L2262976-06	302-AH02-C3-COMP	SOIL	PHILADELPHIA, PA	11/09/22 11:40	11/09/22
L2262976-07	302-AH02-C4-VOC	SOIL	PHILADELPHIA, PA	11/09/22 11:50	11/09/22
L2262976-08	302-AH02-C4-COMP	SOIL	PHILADELPHIA, PA	11/09/22 11:50	11/09/22
L2262976-09	302-AH03-C1-VOC	SOIL	PHILADELPHIA, PA	11/09/22 13:40	11/09/22
L2262976-10	302-AH03-C1-COMP	SOIL	PHILADELPHIA, PA	11/09/22 13:40	11/09/22
L2262976-11	302-AH03-C2-VOC	SOIL	PHILADELPHIA, PA	11/09/22 13:50	11/09/22
L2262976-12	302-AH03-C2-COMP	SOIL	PHILADELPHIA, PA	11/09/22 13:50	11/09/22
L2262976-13	302-AH03-C3-VOC	SOIL	PHILADELPHIA, PA	11/09/22 14:00	11/09/22
L2262976-14	302-AH03-C3-COMP	SOIL	PHILADELPHIA, PA	11/09/22 14:00	11/09/22
L2262976-15	302-AH03-C4-VOC	SOIL	PHILADELPHIA, PA	11/09/22 14:10	11/09/22
L2262976-16	302-AH03-C4-COMP	SOIL	PHILADELPHIA, PA	11/09/22 14:10	11/09/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262976
Project Number:	200.00135.006	**Report Date:**	11/16/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262976
Project Number:	200.00135.006	**Report Date:**	11/16/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2262976-13D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (133%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 11/16/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-01
Client ID: 302-AH02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:20
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 11:13
Analyst: AJK
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.023		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	0.00062	J	mg/kg	0.0011	0.00029	1
Toluene	0.0024		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-03
Client ID: 302-AH02-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:30
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 11:51
Analyst: AJK
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.0030		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-05
Client ID: 302-AH02-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:40
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 12:30
Analyst: AJK
Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	0.00025	J	mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-07 D2
Client ID: 302-AH02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:50
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 15:04
Analyst: AJK
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	2800		mg/kg	13	4.4	500
Toluene	2000		mg/kg	26	14.	500

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-07 D
Client ID: 302-AH02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:50
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 09:16
Analyst: NLK
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	10	1.0	100
Benzene	3000	E	mg/kg	2.6	0.87	100
1,2-Dichloroethane	ND		mg/kg	5.3	1.4	100
Toluene	2500	E	mg/kg	5.3	2.8	100
1,2-Dibromoethane	ND		mg/kg	2.6	1.5	100
Ethylbenzene	6.6		mg/kg	5.3	0.74	100
p/m-Xylene	17.		mg/kg	10	2.9	100
o-Xylene	3.5	J	mg/kg	5.3	1.5	100
Xylenes, Total	20.	J	mg/kg	5.3	1.5	100
Isopropylbenzene	7.2		mg/kg	5.3	0.57	100
1,3,5-Trimethylbenzene	ND		mg/kg	10	1.0	100
1,2,4-Trimethylbenzene	3.2	J	mg/kg	10	1.8	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-09
Client ID: 302-AH03-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 13:40
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 13:08
Analyst: AJK
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.0029		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	87		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-11
Client ID: 302-AH03-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 13:50
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 13:47
Analyst: AJK
Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	0.0011		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-13 D2
Client ID: 302-AH03-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 14:00
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 15:43
Analyst: AJK
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	220		mg/kg	1.6	0.53	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-13 D
Client ID: 302-AH03-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 14:00
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 09:55
Analyst: NLK
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	1.3	0.13	10
Benzene	200	E	mg/kg	0.32	0.11	10
1,2-Dichloroethane	ND		mg/kg	0.64	0.16	10
Toluene	0.53	J	mg/kg	0.64	0.35	10
1,2-Dibromoethane	ND		mg/kg	0.32	0.19	10
Ethylbenzene	9.7		mg/kg	0.64	0.090	10
p/m-Xylene	2.0		mg/kg	1.3	0.36	10
o-Xylene	ND		mg/kg	0.64	0.18	10
Xylenes, Total	2.0		mg/kg	0.64	0.18	10
Isopropylbenzene	14.		mg/kg	0.64	0.070	10
1,3,5-Trimethylbenzene	4.8		mg/kg	1.3	0.12	10
1,2,4-Trimethylbenzene	95.		mg/kg	1.3	0.21	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	119		70-130
4-Bromofluorobenzene	**133**	Q	70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-15
Client ID: 302-AH03-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 14:10
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 15:38
Analyst: JIC
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	0.068		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	0.0022		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.0013		mg/kg	0.00093	0.00013	1
p/m-Xylene	0.00052	J	mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	0.00052	J	mg/kg	0.00093	0.00027	1
Isopropylbenzene	0.0022		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	0.0010	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.015		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/13/22 08:51
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,13 Batch: WG1711886-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2262976

Project Number: 200.00135.006 **Report Date:** 11/16/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/13/22 08:59
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 15 Batch: WG1712038-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	**137**	Q	70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2262976

Project Number: 200.00135.006 **Report Date:** 11/16/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/14/22 09:55
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,09,11 Batch: WG1712395-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/14/22 09:55
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,13 Batch: WG1712396-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	102		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262976

Report Date: 11/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,13 Batch: WG1711886-3 WG1711886-4								
Methyl tert butyl ether	99		97		66-130	2		30
Benzene	103		100		70-130	3		30
1,2-Dichloroethane	100		98		70-130	2		30
Toluene	101		97		70-130	4		30
1,2-Dibromoethane	104		102		70-130	2		30
Ethylbenzene	105		102		70-130	3		30
p/m-Xylene	102		101		70-130	1		30
o-Xylene	102		100		70-130	2		30
Isopropylbenzene	104		104		70-130	0		30
1,3,5-Trimethylbenzene	103		102		70-130	1		30
1,2,4-Trimethylbenzene	101		102		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		98		70-130
Toluene-d8	102		100		70-130
4-Bromofluorobenzene	100		98		70-130
Dibromofluoromethane	94		95		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262976

Report Date: 11/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 15 Batch: WG1712038-3 WG1712038-4								
Methyl tert butyl ether	90		91		66-130	1		30
Benzene	97		96		70-130	1		30
1,2-Dichloroethane	108		111		70-130	3		30
Toluene	96		96		70-130	0		30
1,2-Dibromoethane	94		94		70-130	0		30
Ethylbenzene	97		99		70-130	2		30
p/m-Xylene	100		102		70-130	2		30
o-Xylene	96		98		70-130	2		30
Isopropylbenzene	95		91		70-130	4		30
1,3,5-Trimethylbenzene	97		94		70-130	3		30
1,2,4-Trimethylbenzene	96		92		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	115		117		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	100		97		70-130
Dibromofluoromethane	95		96		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262976

Report Date: 11/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,09,11 Batch: WG1712395-3 WG1712395-4								
Methyl tert butyl ether	93		97		66-130	4		30
Benzene	102		104		70-130	2		30
1,2-Dichloroethane	96		98		70-130	2		30
Toluene	89		90		70-130	1		30
1,2-Dibromoethane	93		95		70-130	2		30
Ethylbenzene	90		90		70-130	0		30
p/m-Xylene	91		91		70-130	0		30
o-Xylene	87		88		70-130	1		30
Isopropylbenzene	87		90		70-130	3		30
1,3,5-Trimethylbenzene	86		89		70-130	3		30
1,2,4-Trimethylbenzene	87		89		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	89		92		70-130
Toluene-d8	88		88		70-130
4-Bromofluorobenzene	96		98		70-130
Dibromofluoromethane	101		101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262976

Report Date: 11/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,13 Batch: WG1712396-3 WG1712396-4								
Methyl tert butyl ether	93		97		66-130	4		30
Benzene	102		104		70-130	2		30
1,2-Dichloroethane	96		98		70-130	2		30
Toluene	89		90		70-130	1		30
1,2-Dibromoethane	93		95		70-130	2		30
Ethylbenzene	90		90		70-130	0		30
p/m-Xylene	91		91		70-130	0		30
o-Xylene	87		88		70-130	1		30
Isopropylbenzene	87		90		70-130	3		30
1,3,5-Trimethylbenzene	86		89		70-130	3		30
1,2,4-Trimethylbenzene	87		89		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	89		92		70-130
Toluene-d8	89		88		70-130
4-Bromofluorobenzene	96		98		70-130
Dibromofluoromethane	101		101		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-02
Client ID: 302-AH02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:20
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 03:50
Analyst: JG
Percent Solids: 76%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.22	0.027	1
Fluorene	ND		mg/kg	0.22	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.027	1
Anthracene	ND		mg/kg	0.13	0.043	1
Pyrene	ND		mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.025	1
Chrysene	ND		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.037	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.053	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	75		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-04
Client ID: 302-AH02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:30
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 05:27
Analyst: JG
Percent Solids: 90%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-06
Client ID: 302-AH02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:40
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 04:14
Analyst: JG
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-08
Client ID: 302-AH02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:50
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 05:51
Analyst: JG
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	7.5		mg/kg	0.21	0.026	1
Fluorene	3.8		mg/kg	0.21	0.020	1
Phenanthrene	9.2	E	mg/kg	0.12	0.025	1
Anthracene	0.82		mg/kg	0.12	0.041	1
Pyrene	0.77		mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.031	J	mg/kg	0.12	0.024	1
Chrysene	0.061	J	mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-08 D
Client ID: 302-AH02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 11:50
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/12/22 01:42
Analyst: IM
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenanthrene	8.6		mg/kg	1.2	0.25	10

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-10
Client ID: 302-AH03-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 13:40
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 07:28
Analyst: JG
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.048	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.078	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.13		mg/kg	0.11	0.021	1
Chrysene	0.11		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.27		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.29		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.19		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-12
Client ID: 302-AH03-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 13:50
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 07:04
Analyst: JG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	79		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-14
Client ID: 302-AH03-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 14:00
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/11/22 06:40
Analyst: IM
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	16.	E	mg/kg	0.19	0.023	1
Fluorene	4.6		mg/kg	0.19	0.018	1
Phenanthrene	15.	E	mg/kg	0.11	0.023	1
Anthracene	1.0		mg/kg	0.11	0.037	1
Pyrene	1.6		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.054	J	mg/kg	0.11	0.021	1
Chrysene	0.083	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-14 D
Client ID: 302-AH03-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 14:00
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/12/22 02:06
Analyst: IM
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	18.		mg/kg	0.95	0.12	5
Phenanthrene	18.		mg/kg	0.57	0.12	5

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-16 D2
Client ID: 302-AH03-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 14:10
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/16/22 01:59
Analyst: IM
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	13.		mg/kg	1.8	0.22	10
Phenanthrene	15.		mg/kg	1.1	0.22	10

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-16 D
Client ID: 302-AH03-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 14:10
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/16/22 12:24
Analyst: IM
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 11/10/22 10:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	15.	E	mg/kg	0.36	0.044	2
Fluorene	6.7		mg/kg	0.36	0.035	2
Phenanthrene	16.	E	mg/kg	0.22	0.044	2
Anthracene	2.0		mg/kg	0.22	0.071	2
Pyrene	1.5		mg/kg	0.22	0.036	2
Benzo(a)anthracene	0.042	J	mg/kg	0.22	0.041	2
Chrysene	0.064	J	mg/kg	0.22	0.038	2
Benzo(b)fluoranthene	ND		mg/kg	0.22	0.061	2
Benzo(a)pyrene	ND		mg/kg	0.29	0.088	2
Benzo(ghi)perylene	ND		mg/kg	0.29	0.043	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	90		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/10/22 20:10
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 11/10/22 00:18

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1710325-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	73		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262976

Report Date: 11/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1710325-2 WG1710325-3								
Naphthalene	74		75		40-140	1		50
Fluorene	79		79		40-140	0		50
Phenanthrene	74		73		40-140	1		50
Anthracene	75		77		40-140	3		50
Pyrene	76		75		35-142	1		50
Benzo(a)anthracene	76		78		40-140	3		50
Chrysene	78		78		40-140	0		50
Benzo(b)fluoranthene	82		83		40-140	1		50
Benzo(a)pyrene	88		91		40-140	3		50
Benzo(ghi)perylene	76		77		40-140	1		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	64		67		23-120
2-Fluorobiphenyl	72		74		30-120
4-Terphenyl-d14	79		77		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-02
Client ID: 302-AH02-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/09/22 11:20
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.82		mg/kg	2.63	0.141	1	11/10/22 19:23	11/10/22 22:50	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-04
Client ID: 302-AH02-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/09/22 11:30
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.06		mg/kg	2.17	0.116	1	11/10/22 19:23	11/10/22 22:54	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-06
Client ID: 302-AH02-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/09/22 11:40
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.86		mg/kg	2.25	0.121	1	11/10/22 19:23	11/10/22 22:59	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-08
Client ID: 302-AH02-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/09/22 11:50
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.19		mg/kg	2.38	0.127	1	11/10/22 19:23	11/10/22 23:37	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-10
Client ID: 302-AH03-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/09/22 13:40
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.40		mg/kg	2.31	0.124	1	11/10/22 19:23	11/10/22 23:41	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Lab Number: L2262976
Project Number: 200.00135.006
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-12
Client ID: 302-AH03-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/09/22 13:50
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.71		mg/kg	2.29	0.123	1	11/10/22 19:23	11/10/22 23:46	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-14
Client ID: 302-AH03-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/09/22 14:00
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.99		mg/kg	2.28	0.122	1	11/10/22 19:23	11/10/22 23:51	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-16
Client ID: 302-AH03-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/09/22 14:10
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.58		mg/kg	2.10	0.113	1	11/10/22 19:23	11/10/22 23:55	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1710638-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/10/22 19:23	11/10/22 22:40	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262976

Report Date: 11/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1710638-2 SRM Lot Number: D113-540								
Lead, Total	97		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262976
Report Date: 11/16/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1710638-3 QC Sample: L2263044-01 Client ID: MS Sample												
Lead, Total	17.0	47.8	66.8	104		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262976

Report Date: 11/16/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1710638-4 QC Sample: L2263044-01 Client ID: DUP Sample						
Lead, Total	17.0	17.4	mg/kg	2		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-01
Client ID: 302-AH02-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/09/22 11:20
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-02
Client ID: 302-AH02-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/09/22 11:20
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.7		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-03
Client ID: 302-AH02-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/09/22 11:30
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.7		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-04
Client ID: 302-AH02-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/09/22 11:30
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.0		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-05
Client ID: 302-AH02-C3-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 11/09/22 11:40
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.6		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-06
Client ID: 302-AH02-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/09/22 11:40
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-07
Client ID: 302-AH02-C4-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/09/22 11:50
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-08
Client ID: 302-AH02-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/09/22 11:50
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.5		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-09
Client ID: 302-AH03-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/09/22 13:40
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.3		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-10
Client ID: 302-AH03-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/09/22 13:40
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-11
Client ID: 302-AH03-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/09/22 13:50
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.0		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-12
Client ID: 302-AH03-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/09/22 13:50
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.3		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-13
Client ID: 302-AH03-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/09/22 14:00
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-14
Client ID: 302-AH03-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 14:00
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.5		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-15
Client ID: 302-AH03-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/09/22 14:10
Date Received: 11/09/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.1		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2262976
Report Date: 11/16/22

SAMPLE RESULTS

Lab ID: L2262976-16
Client ID: 302-AH03-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/09/22 14:10
Date Received: 11/09/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.3		%	0.100	NA	1	-	11/10/22 20:52	121,2540G	MF

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2262976

Report Date: 11/16/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-16 QC Batch ID: WG1710849-1 QC Sample: L2261452-02 Client ID: DUP Sample						
Solids, Total	86.2	86.2	%	0		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262976
Report Date: 11/16/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2262976-01A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2262976-01B	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-01C	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-01D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2262976-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2262976-02B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2262976-03A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2262976-03B	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-03C	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-03D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2262976-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2262976-04B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2262976-05A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2262976-05B	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-05C	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-05D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2262976-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2262976-06B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2262976-07A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2262976-07B	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-07C	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-07D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2262976-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2262976
Report Date: 11/16/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2262976-08B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2262976-09A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2262976-09B	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-09C	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-09D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2262976-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2262976-10B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2262976-11A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2262976-11B	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-11C	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-11D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2262976-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2262976-12B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2262976-13A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2262976-13B	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-13C	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-13D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2262976-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2262976-14B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2262976-15A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2262976-15B	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-15C	Vial water preserved	A	NA		2.6	Y	Absent	10-NOV-22 07:46	PA-8260HLW(14)
L2262976-15D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2262976-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2262976-16B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262976
Project Number:	200.00135.006	**Report Date:**	11/16/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262976
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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262976
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Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2262976
Project Number:	200.00135.006	**Report Date:**	11/16/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 11/10/22

ALPHA Job #: L2262976

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~17161~~ ~~17972~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
62976-01	302-AH02-C1-VOC	11/9	1120	S	TS	☑	☐	☐		4
-02	302-AH02-C1-Comp	↓	1120	↓	↓	☐	☑	☑		2
-03	302-AH02-C2-VOC	↓	1130	↓	↓	☑	☐	☐		4
-04	302-AH02-C2-Comp	↓	1130	↓	↓	☐	☑	☑		2
-05	302-AH02-C3-VOC	↓	1140	↓	↓	☑	☐	☐		4
-06	302-AH02-C3-Comp	↓	1140	↓	↓	☐	☑	☑		2
-07	302-AH02-C4-VOC	↓	1150	↓	↓	☑	☐	☐		4
-08	302-AH02-C4-Comp	↓	1150	↓	↓	☐	☑	☑		2
-09	302-AH03-C1-VOC	↓	1340	↓	↓	☑	☐	☐		4
-10	302-AH03-C1-Comp	↓	1340	↓	↓	☐	☑	☑		2
	Container Type					G	G	G		
	Preservative					F	A	A		

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/9 1445	[signature] AAL	11/9/22 1445
[signature] AAL	11/9/22 1800	[signature]	11-9 1800
[signature]	11-9 2150	[signature]	11-9-22 2150

[signature] 11/10/22 0200

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 11/10/22

ALPHA Job #: L2262976

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~13161~~ ~~17823~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
62976-11	302-AH03-C2-VOC	11/9	1350	S	TS	☑	☐	☐		4
-12	302-AH03-C2-Comp		1350			☐	☑	☑		2
-13	302-AH03-C3-VOC		1400			☑	☐	☐		4
-14	302-AH03-C3-Comp		1400			☐	☑	☑		2
-15	302-AH03-C4-VOC		1410			☐	☐	☐		4
-16	302-AH03-C4-Comp		1410			☐	☑	☑		2
						☐	☐	☐		4
						☐	☐	☐		2
						☐	☐	☐		4
						☐	☐	☐		2

Container Type	G	G	G
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
	11/9 1445		11/9/22 1445
	11/9/22 1700		11-9 1700
11/10/22 0200	11/9 2100		11-9-22 2100

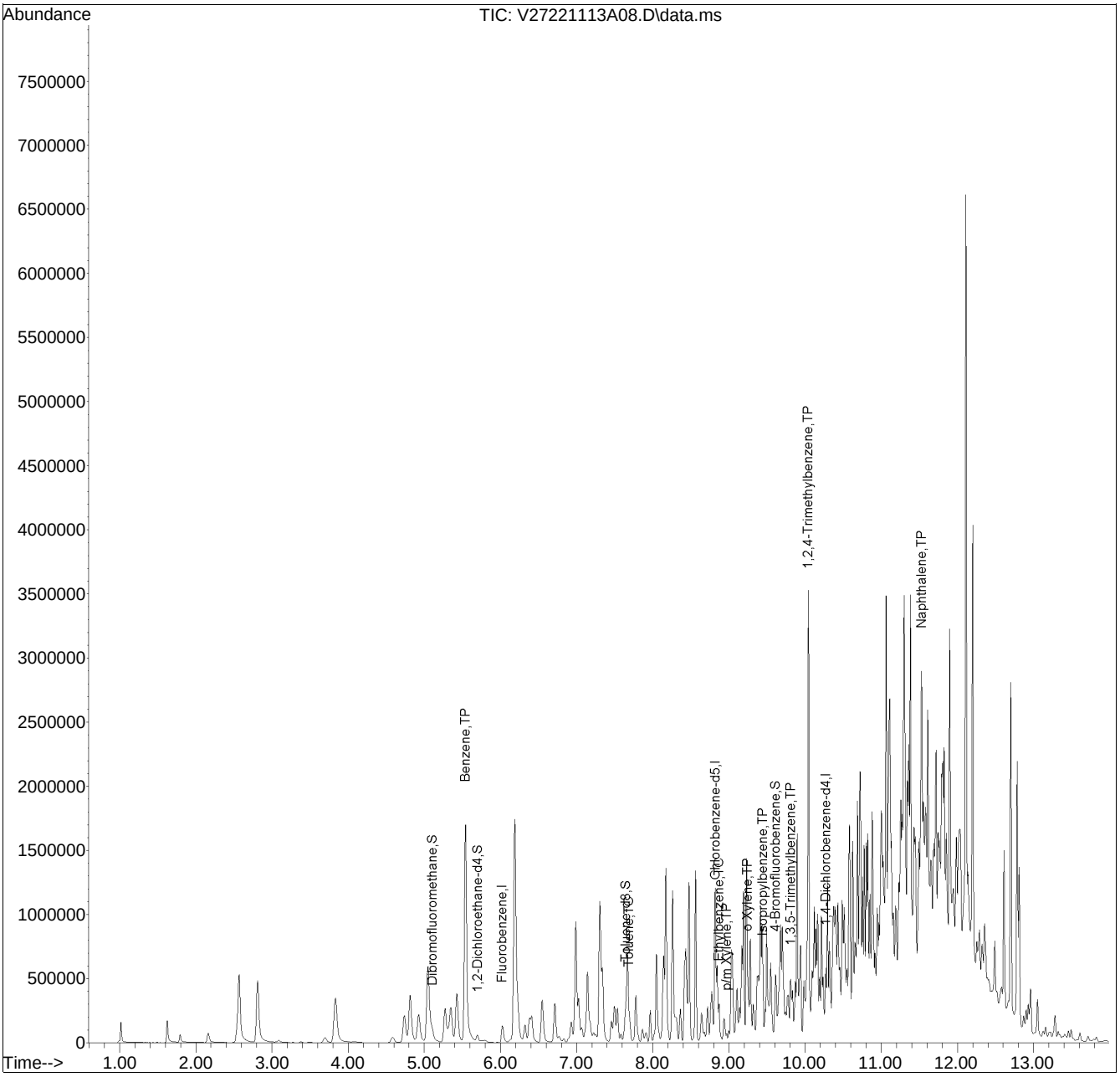
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221113A\
Data File : V27221113A08.D
Acq On : 13 Nov 2022 09:55 am
Operator : VOA127:NLK
Sample : L2262976-13D,31H,4.92,5,0.01,,A,R2F
Misc : WG1711886,ICAL19419
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 13 13:37:34 2022
Quant Method : I:\VOLATILES\VOA127\2022\221113A\V127_221020N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Fri Oct 21 13:17:54 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V27221113A01.D•



ANALYTICAL REPORT

Lab Number:	L2263290
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/17/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263290
Report Date: 11/17/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2263290-01	302-AH01-C1-VOC	SOIL	PHILADELPHIA, PA	11/10/22 10:00	11/10/22
L2263290-02	302-AH01-C1-COMP	SOIL	PHILADELPHIA, PA	11/10/22 10:00	11/10/22
L2263290-03	302-AH01-C2-VOC	SOIL	PHILADELPHIA, PA	11/10/22 10:20	11/10/22
L2263290-04	302-AH01-C2-COMP	SOIL	PHILADELPHIA, PA	11/10/22 10:20	11/10/22
L2263290-05	302-AH01-C3-VOC	SOIL	PHILADELPHIA, PA	11/10/22 10:30	11/10/22
L2263290-06	302-AH01-C3-COMP	SOIL	PHILADELPHIA, PA	11/10/22 10:30	11/10/22
L2263290-07	302-AI02-C1-VOC	SOIL	PHILADELPHIA, PA	11/10/22 12:30	11/10/22
L2263290-08	302-AI02-C1-COMP	SOIL	PHILADELPHIA, PA	11/10/22 12:30	11/10/22
L2263290-09	302-AI02-C2-VOC	SOIL	PHILADELPHIA, PA	11/10/22 12:40	11/10/22
L2263290-10	302-AI02-C2-COMP	SOIL	PHILADELPHIA, PA	11/10/22 12:40	11/10/22
L2263290-11	302-AI02-C3-VOC	SOIL	PHILADELPHIA, PA	11/10/22 12:50	11/10/22
L2263290-12	302-AI02-C3-COMP	SOIL	PHILADELPHIA, PA	11/10/22 12:50	11/10/22
L2263290-13	302-AI02-C4-VOC	SOIL	PHILADELPHIA, PA	11/10/22 13:00	11/10/22
L2263290-14	302-AI02-C4-COMP	SOIL	PHILADELPHIA, PA	11/10/22 13:00	11/10/22
L2263290-15	302-AI02-C5-VOC	SOIL	PHILADELPHIA, PA	11/10/22 13:10	11/10/22
L2263290-16	302-AI02-C5-COMP	SOIL	PHILADELPHIA, PA	11/10/22 13:10	11/10/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263290
Project Number:	200.00135.006	**Report Date:**	11/17/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263290
Project Number:	200.00135.006	**Report Date:**	11/17/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2263290-13: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 11/17/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-01
Client ID: 302-AH01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 10:00
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 18:53
Analyst: JIC
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-03
Client ID: 302-AH01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 10:20
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 19:20
Analyst: JIC
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00021	J	mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-05
Client ID: 302-AH01-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 10:30
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 19:47
Analyst: JIC
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.0014		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00029	1
Xylenes, Total	ND		mg/kg	0.00098	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-07
Client ID: 302-AI02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 12:30
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 20:14
Analyst: JIC
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-09
Client ID: 302-AI02-C2-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 12:40
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 09:22
Analyst: JIC
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-11
Client ID: 302-AI02-C3-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 12:50
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 20:42
Analyst: JIC
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00032	J	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-13
Client ID: 302-AI02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 13:00
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 21:09
Analyst: JIC
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.46	E	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	0.31	E	mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00098		mg/kg	0.00092	0.00013	1
p/m-Xylene	0.0028		mg/kg	0.0018	0.00052	1
o-Xylene	0.00049	J	mg/kg	0.00092	0.00027	1
Xylenes, Total	0.0033	J	mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-13
Client ID: 302-AI02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 13:00
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 16:21
Analyst: AJK
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	0.46		mg/kg	0.026	0.0086	1
1,2-Dichloroethane	0.013	J	mg/kg	0.052	0.013	1
Toluene	0.20		mg/kg	0.052	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	ND		mg/kg	0.052	0.0073	1
p/m-Xylene	ND		mg/kg	0.10	0.029	1
o-Xylene	ND		mg/kg	0.052	0.015	1
Xylenes, Total	ND		mg/kg	0.052	0.015	1
Isopropylbenzene	ND		mg/kg	0.052	0.0056	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-15 D2
Client ID: 302-AI02-C5-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 13:10
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 14:25
Analyst: AJK
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.53	0.053	5
Benzene	81.	E	mg/kg	0.13	0.044	5
1,2-Dichloroethane	2.3		mg/kg	0.26	0.068	5
Toluene	140	E	mg/kg	0.26	0.14	5
1,2-Dibromoethane	ND		mg/kg	0.13	0.077	5
Ethylbenzene	0.69		mg/kg	0.26	0.037	5
p/m-Xylene	2.1		mg/kg	0.53	0.15	5
o-Xylene	0.31		mg/kg	0.26	0.077	5
Xylenes, Total	2.4		mg/kg	0.26	0.077	5
Isopropylbenzene	ND		mg/kg	0.26	0.029	5
1,3,5-Trimethylbenzene	ND		mg/kg	0.53	0.051	5
1,2,4-Trimethylbenzene	ND		mg/kg	0.53	0.088	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-15 D
Client ID: 302-AI02-C5-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 13:10
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/13/22 23:53
Analyst: JIC
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	94.		mg/kg	2.6	0.87	100
Toluene	190		mg/kg	5.3	2.9	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/13/22 15:15
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,11,13 Batch: WG1711877-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/13/22 15:15
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15 Batch: WG1711880-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/14/22 09:55
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13,15 Batch: WG1712396-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/14/22 08:56
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09 Batch: WG1712495-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	102		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263290

Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,11,13 Batch: WG1711877-3 WG1711877-4								
Methyl tert butyl ether	105		96		66-130	9		30
Benzene	95		94		70-130	1		30
1,2-Dichloroethane	90		91		70-130	1		30
Toluene	88		88		70-130	0		30
1,2-Dibromoethane	87		89		70-130	2		30
Ethylbenzene	88		87		70-130	1		30
p/m-Xylene	90		89		70-130	1		30
o-Xylene	87		87		70-130	0		30
Isopropylbenzene	85		86		70-130	1		30
1,3,5-Trimethylbenzene	86		87		70-130	1		30
1,2,4-Trimethylbenzene	86		87		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		100		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	99		101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263290

Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15 Batch: WG1711880-3 WG1711880-4								
Methyl tert butyl ether	105		96		66-130	9		30
Benzene	95		94		70-130	1		30
1,2-Dichloroethane	90		91		70-130	1		30
Toluene	88		88		70-130	0		30
1,2-Dibromoethane	87		89		70-130	2		30
Ethylbenzene	88		87		70-130	1		30
p/m-Xylene	90		89		70-130	1		30
o-Xylene	87		87		70-130	0		30
Isopropylbenzene	85		86		70-130	1		30
1,3,5-Trimethylbenzene	86		87		70-130	1		30
1,2,4-Trimethylbenzene	86		87		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		100		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	99		101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263290

Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13,15 Batch: WG1712396-3 WG1712396-4								
Methyl tert butyl ether	93		97		66-130	4		30
Benzene	102		104		70-130	2		30
1,2-Dichloroethane	96		98		70-130	2		30
Toluene	89		90		70-130	1		30
1,2-Dibromoethane	93		95		70-130	2		30
Ethylbenzene	90		90		70-130	0		30
p/m-Xylene	91		91		70-130	0		30
o-Xylene	87		88		70-130	1		30
Isopropylbenzene	87		90		70-130	3		30
1,3,5-Trimethylbenzene	86		89		70-130	3		30
1,2,4-Trimethylbenzene	87		89		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	89		92		70-130
Toluene-d8	89		88		70-130
4-Bromofluorobenzene	96		98		70-130
Dibromofluoromethane	101		101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263290

Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09 Batch: WG1712495-3 WG1712495-4								
Methyl tert butyl ether	96		99		66-130	3		30
Benzene	99		98		70-130	1		30
1,2-Dichloroethane	102		105		70-130	3		30
Toluene	101		102		70-130	1		30
1,2-Dibromoethane	113		118		70-130	4		30
Ethylbenzene	101		101		70-130	0		30
p/m-Xylene	95		95		70-130	0		30
o-Xylene	93		93		70-130	0		30
Isopropylbenzene	94		92		70-130	2		30
1,3,5-Trimethylbenzene	96		94		70-130	2		30
1,2,4-Trimethylbenzene	97		95		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		101		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	108		107		70-130
Dibromofluoromethane	99		99		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-02
Client ID: 302-AH01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 10:00
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 14:54
Analyst: MG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.21		mg/kg	0.20	0.024	1
Fluorene	0.38		mg/kg	0.20	0.019	1
Phenanthrene	3.0		mg/kg	0.12	0.024	1
Anthracene	0.28		mg/kg	0.12	0.039	1
Pyrene	1.7		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.96		mg/kg	0.12	0.022	1
Chrysene	1.1		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	1.0		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.77		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.30		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-04
Client ID: 302-AH01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 10:20
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 15:18
Analyst: MG
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	94		30-120
4-Terphenyl-d14	74		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-06
Client ID: 302-AH01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 10:30
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 15:42
Analyst: MG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	39		23-120
2-Fluorobiphenyl	49		30-120
4-Terphenyl-d14	41		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-08
Client ID: 302-AI02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 12:30
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 16:06
Analyst: MG
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.10	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.13		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.12		mg/kg	0.12	0.022	1
Chrysene	0.10	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.13		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.12	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.057	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	53		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-10
Client ID: 302-AI02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 12:40
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 16:30
Analyst: MG
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-12
Client ID: 302-AI02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 12:50
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 16:54
Analyst: MG
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-14
Client ID: 302-AI02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 13:00
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 17:18
Analyst: MG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	116		30-120
4-Terphenyl-d14	90		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-16
Client ID: 302-AI02-C5-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 13:10
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 17:42
Analyst: MG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/16/22 23:08
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1711366-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	75		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263290
Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1711366-2 WG1711366-3								
Naphthalene	74		69		40-140	7		50
Fluorene	76		70		40-140	8		50
Phenanthrene	73		68		40-140	7		50
Anthracene	75		71		40-140	5		50
Pyrene	76		73		35-142	4		50
Benzo(a)anthracene	73		69		40-140	6		50
Chrysene	72		67		40-140	7		50
Benzo(b)fluoranthene	73		68		40-140	7		50
Benzo(a)pyrene	74		70		40-140	6		50
Benzo(ghi)perylene	77		72		40-140	7		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	96		88		23-120
2-Fluorobiphenyl	75		67		30-120
4-Terphenyl-d14	79		72		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-02
Client ID: 302-AH01-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 10:00
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	30.7		mg/kg	2.39	0.128	1	11/12/22 08:00	11/13/22 18:55	EPA 3050B	1,6010D	AMW

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-04
Client ID: 302-AH01-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 10:20
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	13.9		mg/kg	2.39	0.128	1	11/12/22 08:00	11/13/22 18:59	EPA 3050B	1,6010D	AMW

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-06
Client ID: 302-AH01-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 10:30
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.8		mg/kg	2.35	0.126	1	11/12/22 08:00	11/13/22 19:04	EPA 3050B	1,6010D	AMW

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-08
Client ID: 302-AI02-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 12:30
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	55.4		mg/kg	2.33	0.125	1	11/12/22 08:00	11/13/22 19:26	EPA 3050B	1,6010D	AMW

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-10
Client ID: 302-AI02-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 12:40
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.69		mg/kg	2.40	0.128	1	11/12/22 08:00	11/13/22 19:30	EPA 3050B	1,6010D	AMW

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-12
Client ID: 302-AI02-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 12:50
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.58		mg/kg	2.13	0.114	1	11/12/22 08:00	11/13/22 20:10	EPA 3050B	1,6010D	AMW

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-14
Client ID: 302-AI02-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 13:00
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.46		mg/kg	2.28	0.122	1	11/12/22 08:00	11/13/22 20:14	EPA 3050B	1,6010D	AMW

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263290
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-16
Client ID: 302-AI02-C5-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/10/22 13:10
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.31		mg/kg	2.28	0.122	1	11/12/22 08:00	11/13/22 20:18	EPA 3050B	1,6010D	AMW

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1711163-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/12/22 08:00	11/13/22 17:24	1,6010D	AMW

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263290

Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1711163-2 SRM Lot Number: D113-540								
Lead, Total	96		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263290
Report Date: 11/17/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1711163-3 QC Sample: L2263209-01 Client ID: MS Sample												
Lead, Total	11.0	48	49.1	79		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263290

Report Date: 11/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1711163-4 QC Sample: L2263209-01 Client ID: DUP Sample						
Lead, Total	11.0	11.6	mg/kg	5		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-01
Client ID: 302-AH01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 10:00
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.4		%	0.100	NA	1	-	11/11/22 17:29	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-02
Client ID: 302-AH01-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/10/22 10:00
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	11/11/22 13:38	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-03
Client ID: 302-AH01-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/10/22 10:20
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	11/11/22 17:29	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-04
Client ID: 302-AH01-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/10/22 10:20
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	11/11/22 13:38	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-05
Client ID: 302-AH01-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 10:30
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	11/11/22 17:29	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-06
Client ID: 302-AH01-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/10/22 10:30
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.4		%	0.100	NA	1	-	11/11/22 13:38	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-07
Client ID: 302-AI02-C1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/10/22 12:30
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	11/11/22 17:29	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-08
Client ID: 302-AI02-C1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/10/22 12:30
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	11/11/22 13:38	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-09
Client ID: 302-AI02-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 12:40
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	11/11/22 17:29	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-10
Client ID: 302-AI02-C2-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/10/22 12:40
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	11/11/22 13:38	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-11
Client ID: 302-AI02-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/10/22 12:50
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	11/11/22 17:29	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-12
Client ID: 302-AI02-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/10/22 12:50
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.8		%	0.100	NA	1	-	11/11/22 13:38	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-13
Client ID: 302-AI02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/10/22 13:00
Date Received: 11/10/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.5		%	0.100	NA	1	-	11/11/22 17:29	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-14
Client ID: 302-AI02-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/10/22 13:00
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	11/11/22 13:38	121,2540G	WM

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-15
Client ID: 302-AI02-C5-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/10/22 13:10
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.9		%	0.100	NA	1	-	11/11/22 17:29	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263290
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263290-16
Client ID: 302-AI02-C5-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/10/22 13:10
Date Received: 11/10/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	11/11/22 14:04	121,2540G	WM

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263290

Report Date: 11/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14 QC Batch ID: WG1711212-1 QC Sample: L2263197-01 Client ID: DUP Sample						
Solids, Total	75.7	75.0	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 16 QC Batch ID: WG1711216-1 QC Sample: L2263440-03 Client ID: DUP Sample						
Solids, Total	91.8	90.5	%	1		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263290
Report Date: 11/17/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2263290-01A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2263290-01B	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-01C	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-01D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		TS(7)
L2263290-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2263290-02B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2263290-03A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2263290-03B	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-03C	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-03D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		TS(7)
L2263290-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2263290-04B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2263290-05A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2263290-05B	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-05C	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-05D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		TS(7)
L2263290-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2263290-06B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2263290-06X	Glass 60ml unpreserved split	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2263290-07A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2263290-07B	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-07C	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-07D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263290
Report Date: 11/17/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2263290-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2263290-08B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2263290-09A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2263290-09B	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-09C	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-09D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		TS(7)
L2263290-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2263290-10B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2263290-11A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2263290-11B	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-11C	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-11D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		TS(7)
L2263290-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2263290-12B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2263290-13A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2263290-13B	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260H(14),PA-8260HLW(14)
L2263290-13C	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260H(14),PA-8260HLW(14)
L2263290-13D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		TS(7)
L2263290-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2263290-14B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2263290-14X	Glass 250ml unpreserved split	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2263290-15A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2263290-15B	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-15C	Vial water preserved	A	NA		2.9	Y	Absent	11-NOV-22 08:14	PA-8260HLW(14)
L2263290-15D	Plastic 2oz unpreserved for TS	A	NA		2.9	Y	Absent		TS(7)
L2263290-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2263290-16B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263290
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GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263290
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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263290
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Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263290
Project Number:	200.00135.006	**Report Date:**	11/17/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 11/11/22

ALPHA Job #: L2263290

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1~~ ~~[illegible]~~ 18559

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:
Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
63290-01	302-AH01-C1-VOC	11/10	1000	S	[initials]	☒	[scribbled]	☐		4
-02	302-AH01-C1-COMP	↓	1000	↓	↓	☐	☒	☒		2
-03	302-AH01-C2-VOC		1020			☒	☐	☐		4
-04	302-AH01-C2-COMP		1020			☐	☒	☒		2
-05	302-AH01-C3-VOC		1030			☒	☐	☐		4
-06	302-AH01-C3-COMP		1030			☐	☒	☒		2
-07	302-AI02-C1-VOC		1230			☒	☐	☐		4
-08	302-AI02-C1-COMP		1230			☐	☒	☒		2
-09	302-AI02-C2-VOC		1240			☒	☐	☐		4
-10	302-AI02-C2-COMP	↓	1240	↓	↓	☐	☒	☒		2
					Container Type	G	G	G		
					Preservative	F	A	A		

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/10/22	[signature] AAL	11/10/22 1400
[signature]	11/10/22 1800	[signature]	10/11 1800
[signature]	11/11/22	Paul Mazzella	11/11/22 2030

Paul Mazzella 11/10/22

[initials] 11/11/22 0220

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 11/11/22

ALPHA Job #: L2263290

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193

Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~12161~~ ~~12823~~ 18559

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
63290-11	30Z-AIOZ-C3-VOC	11/10	1250	S		☑	☐	☐		4
-12	30Z-AIOZ-C3-COMP		1250			☐	☑	☑		2
-13	30Z-AIOZ-C4-VOC		1300			☑	☐	☐		4
-14	30Z-AIOZ-C4-COMP		1300			☐	☑	☑		2
-15	30Z-AIOZ-C5-VOC		1310			☑	☐	☐		4
-16	30Z-AIOZ-C5-COMP	↓	1310	↓	↓	☐	☑	☑		2
						☐	☐	☐		4
						☐	☐	☐		2
						☐	☐	☐		4
						☐	☐	☐		2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	

Relinquished By:	Date/Time	Received By:	Date/Time
	11/10/22		11/10/22 1421
	11/10/22		11/10/22 1800
Paul Mazzella	11/10/22 2030	Paul Mazzella	11/10/22 2030

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

ANALYTICAL REPORT

Lab Number:	L2263601
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	11/17/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263601
Report Date: 11/17/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2263601-01	302-AL02-C1-VOC	SOIL	PHILADELPHIA, PA	11/11/22 10:00	11/11/22
L2263601-02	302-AL02-C1-COMP	SOIL	PHILADELPHIA, PA	11/11/22 10:00	11/11/22
L2263601-03	302-AL02-C2-VOC	SOIL	PHILADELPHIA, PA	11/11/22 10:10	11/11/22
L2263601-04	302-AL02-C2-COMP	SOIL	PHILADELPHIA, PA	11/11/22 10:10	11/11/22
L2263601-05	302-AL02-C3-VOC	SOIL	PHILADELPHIA, PA	11/11/22 10:20	11/11/22
L2263601-06	302-AL02-C3-COMP	SOIL	PHILADELPHIA, PA	11/11/22 10:20	11/11/22
L2263601-07	302-AL02-C4-VOC	SOIL	PHILADELPHIA, PA	11/11/22 10:30	11/11/22
L2263601-08	302-AL02-C4-COMP	SOIL	PHILADELPHIA, PA	11/11/22 10:30	11/11/22

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263601
Project Number:	200.00135.006	**Report Date:**	11/17/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263601
Project Number:	200.00135.006	**Report Date:**	11/17/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Walukevich

Caitlin Walukevich

Title: Technical Director/Representative

Date: 11/17/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-01
Client ID: 302-AL02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:00
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 16:24
Analyst: JIC
Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	0.00038	J	mg/kg	0.0011	0.00032	1
Xylenes, Total	0.00038	J	mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	0.00037	J	mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-03
Client ID: 302-AL02-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:10
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/15/22 15:21
Analyst: JIC
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	0.00046	J	mg/kg	0.0013	0.00037	1
Xylenes, Total	0.00046	J	mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	127		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-05
Client ID: 302-AL02-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:20
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 16:50
Analyst: JIC
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	0.00039	J	mg/kg	0.0011	0.00032	1
Xylenes, Total	0.00039	J	mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-07
Client ID: 302-AL02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:30
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 11/14/22 17:16
Analyst: JIC
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00083		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00052	1
o-Xylene	0.00030	J	mg/kg	0.00093	0.00027	1
Xylenes, Total	0.00030	J	mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263601
Report Date: 11/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/14/22 08:56
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,05,07 Batch: WG1712495-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2263601

Project Number: 200.00135.006 **Report Date:** 11/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 11/15/22 09:02
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1712970-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263601

Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,05,07 Batch: WG1712495-3 WG1712495-4								
Methyl tert butyl ether	96		99		66-130	3		30
Benzene	99		98		70-130	1		30
1,2-Dichloroethane	102		105		70-130	3		30
Toluene	101		102		70-130	1		30
1,2-Dibromoethane	113		118		70-130	4		30
Ethylbenzene	101		101		70-130	0		30
p/m-Xylene	95		95		70-130	0		30
o-Xylene	93		93		70-130	0		30
Isopropylbenzene	94		92		70-130	2		30
1,3,5-Trimethylbenzene	96		94		70-130	2		30
1,2,4-Trimethylbenzene	97		95		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		101		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	108		107		70-130
Dibromofluoromethane	99		99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263601

Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1712970-3 WG1712970-4								
Methyl tert butyl ether	93		97		66-130	4		30
Benzene	97		98		70-130	1		30
1,2-Dichloroethane	99		101		70-130	2		30
Toluene	101		103		70-130	2		30
1,2-Dibromoethane	112		117		70-130	4		30
Ethylbenzene	100		102		70-130	2		30
p/m-Xylene	95		96		70-130	1		30
o-Xylene	92		93		70-130	1		30
Isopropylbenzene	96		97		70-130	1		30
1,3,5-Trimethylbenzene	97		98		70-130	1		30
1,2,4-Trimethylbenzene	97		98		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		99		70-130
Toluene-d8	105		106		70-130
4-Bromofluorobenzene	111		113		70-130
Dibromofluoromethane	97		98		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-02
Client ID: 302-AL02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:00
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 15:13
Analyst: ALS
Percent Solids: 97%

Extraction Method: EPA 3546
Extraction Date: 11/12/22 18:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	0.024	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	0.047	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.025	J	mg/kg	0.10	0.019	1
Chrysene	0.027	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.035	J	mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.041	1
Benzo(ghi)perylene	0.023	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	90		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-04
Client ID: 302-AL02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:10
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 15:37
Analyst: ALS
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 11/12/22 18:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.14	J	mg/kg	0.18	0.022	1
Fluorene	0.026	J	mg/kg	0.18	0.018	1
Phenanthrene	0.30		mg/kg	0.11	0.022	1
Anthracene	0.061	J	mg/kg	0.11	0.036	1
Pyrene	0.55		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.38		mg/kg	0.11	0.021	1
Chrysene	0.42		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.74		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.69		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.46		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-06
Client ID: 302-AL02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:20
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 16:01
Analyst: ALS
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 11/12/22 18:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.083	J	mg/kg	0.19	0.023	1
Fluorene	0.11	J	mg/kg	0.19	0.018	1
Phenanthrene	0.18		mg/kg	0.11	0.023	1
Anthracene	0.23		mg/kg	0.11	0.037	1
Pyrene	0.59		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.29		mg/kg	0.11	0.021	1
Chrysene	0.62		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.18		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.22		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.17		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**143**	Q	23-120
2-Fluorobiphenyl	115		30-120
4-Terphenyl-d14	94		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-08
Client ID: 302-AL02-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:30
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 11/14/22 16:25
Analyst: ALS
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 11/12/22 18:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.13	J	mg/kg	0.20	0.024	1
Fluorene	0.27		mg/kg	0.20	0.019	1
Phenanthrene	0.76		mg/kg	0.12	0.024	1
Anthracene	0.34		mg/kg	0.12	0.038	1
Pyrene	0.79		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.46		mg/kg	0.12	0.022	1
Chrysene	0.60		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.33		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.34		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.20		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	117		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	72		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263601
Report Date: 11/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 11/16/22 23:08
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 11/11/22 23:28

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08 Batch: WG1711366-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	75		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263601
Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08 Batch: WG1711366-2 WG1711366-3								
Naphthalene	74		69		40-140	7		50
Fluorene	76		70		40-140	8		50
Phenanthrene	73		68		40-140	7		50
Anthracene	75		71		40-140	5		50
Pyrene	76		73		35-142	4		50
Benzo(a)anthracene	73		69		40-140	6		50
Chrysene	72		67		40-140	7		50
Benzo(b)fluoranthene	73		68		40-140	7		50
Benzo(a)pyrene	74		70		40-140	6		50
Benzo(ghi)perylene	77		72		40-140	7		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	96		88		23-120
2-Fluorobiphenyl	75		67		30-120
4-Terphenyl-d14	79		72		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-02
Client ID: 302-AL02-C1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/11/22 10:00
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	18.8		mg/kg	2.02	0.108	1	11/14/22 22:37	11/15/22 10:08	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-04
Client ID: 302-AL02-C2-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/11/22 10:10
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	132		mg/kg	2.14	0.115	1	11/14/22 22:37	11/15/22 10:11	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2263601
Project Number: 200.00135.006
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-06
Client ID: 302-AL02-C3-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/11/22 10:20
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	353		mg/kg	2.27	0.122	1	11/14/22 22:37	11/15/22 10:15	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263601
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-08
Client ID: 302-AL02-C4-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 11/11/22 10:30
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.64		mg/kg	2.32	0.124	1	11/14/22 22:37	11/15/22 10:18	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263601
Report Date: 11/17/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08 Batch: WG1711616-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	11/14/22 22:37	11/15/22 09:05	1,6010D	JMF

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263601

Report Date: 11/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 Batch: WG1711616-2 SRM Lot Number: D113-540								
Lead, Total	99		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263601
Report Date: 11/17/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1711616-3 WG1711616-4 QC Sample: L2263737-02 Client ID: MS Sample												
Lead, Total	409	50.5	447	75		747	**675**	Q	75-125	**50**	Q	20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Serial Dilution Analysis
Batch Quality Control

Lab Number: L2263601
Report Date: 11/17/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1711616-6 QC Sample: L2263737-02 Client ID: DUP Sample						
Lead, Total	409	395	mg/kg	3		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263601
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-01
Client ID: 302-AL02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:00
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.9		%	0.100	NA	1	-	11/13/22 18:51	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263601
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-02
Client ID: 302-AL02-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:00
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	97.3		%	0.100	NA	1	-	11/13/22 18:51	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263601
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-03
Client ID: 302-AL02-C2-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil
Date Collected: 11/11/22 10:10
Date Received: 11/11/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.3		%	0.100	NA	1	-	11/13/22 18:51	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263601
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-04
Client ID: 302-AL02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:10
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.8		%	0.100	NA	1	-	11/13/22 18:51	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263601
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-05
Client ID: 302-AL02-C3-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/11/22 10:20
Date Received: 11/11/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.4		%	0.100	NA	1	-	11/13/22 18:51	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263601
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-06
Client ID: 302-AL02-C3-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/11/22 10:20
Date Received: 11/11/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.5		%	0.100	NA	1	-	11/13/22 18:51	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263601
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-07
Client ID: 302-AL02-C4-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 11/11/22 10:30
Date Received: 11/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.4		%	0.100	NA	1	-	11/13/22 18:51	121,2540G	MF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2263601
Report Date: 11/17/22

SAMPLE RESULTS

Lab ID: L2263601-08
Client ID: 302-AL02-C4-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 11/11/22 10:30
Date Received: 11/11/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	11/13/22 18:51	121,2540G	MF

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2263601

Report Date: 11/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1711782-1 QC Sample: L2262362-01 Client ID: DUP Sample						
Solids, Total	84.6	85.0	%	0		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263601
Report Date: 11/17/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2263601-01A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2263601-01B	Vial water preserved	A	NA		4.2	Y	Absent	12-NOV-22 07:52	PA-8260HLW(14)
L2263601-01C	Vial water preserved	A	NA		4.2	Y	Absent	12-NOV-22 07:52	PA-8260HLW(14)
L2263601-01D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2263601-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2263601-02B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)
L2263601-03A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2263601-03B	Vial water preserved	A	NA		4.2	Y	Absent	12-NOV-22 07:52	PA-8260HLW(14)
L2263601-03C	Vial water preserved	A	NA		4.2	Y	Absent	12-NOV-22 07:52	PA-8260HLW(14)
L2263601-03D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2263601-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2263601-04B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)
L2263601-05A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2263601-05B	Vial water preserved	A	NA		4.2	Y	Absent	12-NOV-22 07:52	PA-8260HLW(14)
L2263601-05C	Vial water preserved	A	NA		4.2	Y	Absent	12-NOV-22 07:52	PA-8260HLW(14)
L2263601-05D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2263601-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2263601-06B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)
L2263601-07A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2263601-07B	Vial water preserved	A	NA		4.2	Y	Absent	12-NOV-22 07:52	PA-8260HLW(14)
L2263601-07C	Vial water preserved	A	NA		4.2	Y	Absent	12-NOV-22 07:52	PA-8260HLW(14)
L2263601-07D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2263601-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2263601
Report Date: 11/17/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2263601-08B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263601
Project Number:	200.00135.006	**Report Date:**	11/17/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263601
Project Number:	200.00135.006	**Report Date:**	11/17/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263601
Project Number:	200.00135.006	**Report Date:**	11/17/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2263601
Project Number:	200.00135.006	**Report Date:**	11/17/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:11172217:13

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 11/12/22

ALPHA Job #: L2263601

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-801-4974
Fax:
Email: William.Schmidt@ransomenv.com
☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: ~~17161~~ ~~17843~~ 18559

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
63601-01	302-ALOZ-C1-VOC	11/11/22	1000	S	ar	☑	☐	☐		4
02	302-ALOZ-C1-COMP	↓	1000	↓	↓	☐	☑	☑		2
03	302-ALOZ-C2-VOC		1010			☑	☐	☐		4
04	302-ALOZ-C2-COMP		1010			☐	☑	☑		2
05	302-ALOZ-C3-VOC		1020			☑	☐	☐		4
06	302-ALOZ-C3-COMP		1020			☐	☑	☑		2
07	302-ALOZ-C4-VOC		1030			☑	☐	☐		4
08	302-ALOZ-C4-COMP		1030			☐	☑	☑		2
										4
										2

	VOCs (8260)	SVOCs (8270)	Lead
Container Type	G	G	G
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/11/22 12:10	Sta AAL	11/11/22 12:10
[signature]	11/11/22 1600	[signature] 11/11	1600
[signature] 11/11/22 2100		Paul Mazzella	11/11/22 2030
Paul Mazzella 11/11/22		[signature] 11/12/22 0040	

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

GS 1402
11/12/22
0200
11/12/22 0200

FORM NO: 01-01(I)

ANALYTICAL REPORT

Lab Number:	L2316183
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	04/04/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316183
Report Date: 04/04/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2316183-01	201-A01-D1-VOC	SOIL	PHILADELPHIA, PA	03/28/23 12:45	03/28/23
L2316183-02	201-A01-D1-COMP	SOIL	PHILADELPHIA, PA	03/28/23 12:45	03/28/23
L2316183-03	301-D01-D1-VOC	SOIL	PHILADELPHIA, PA	03/28/23 11:10	03/28/23
L2316183-04	301-D01-D1-COMP	SOIL	PHILADELPHIA, PA	03/28/23 11:10	03/28/23
L2316183-05	301-E02-D1-VOC	SOIL	PHILADELPHIA, PA	03/28/23 09:10	03/28/23
L2316183-06	301-E02-D1-COMP	SOIL	PHILADELPHIA, PA	03/28/23 09:10	03/28/23

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316183
Project Number:	200.00135.006	**Report Date:**	04/04/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316183
Project Number:	200.00135.006	**Report Date:**	04/04/23

Case Narrative (continued)

Report Revision

April 04, 2023: The Semivolatile Organics analyte list has been amended on L2316183-02, -04 and -06.

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2316183-01: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2316183-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (151%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2316183-03: The surrogate recovery is outside the method acceptance criteria for dibromofluoromethane (62%) due to interference with the Internal Standard.

Total Metals

The WG1760820-3 MS recovery for lead (2410%), performed on L2316183-02, does not apply because the sample concentration is greater than four times the spike amount added.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Walukevich

Caitlin Walukevich

Title: Technical Director/Representative Date: 04/04/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-01
Client ID: 201-A01-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 12:45
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/03/23 21:52
Analyst: JIC
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.00080		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	0.0016		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	0.0018		mg/kg	0.0011	0.00015	1
p/m-Xylene	0.0077		mg/kg	0.0021	0.00060	1
o-Xylene	0.0017		mg/kg	0.0011	0.00031	1
Xylenes, Total	0.0094		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.038		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0099		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	0.023		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	**151**	Q	70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-03
Client ID: 301-D01-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 11:10
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 03/31/23 17:17
Analyst: JIC
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	1.2		mg/kg	0.029	0.0097	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	0.41		mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	7.7		mg/kg	0.059	0.0083	1
p/m-Xylene	2.3		mg/kg	0.12	0.033	1
o-Xylene	0.37		mg/kg	0.059	0.017	1
Xylenes, Total	2.7		mg/kg	0.059	0.017	1
Isopropylbenzene	30.	E	mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	0.76		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	4.8		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	**62**	Q	70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-03 D
Client ID: 301-D01-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 11:10
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 03/30/23 17:25
Analyst: KJD
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	31.		mg/kg	0.29	0.032	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-05 D2
Client ID: 301-E02-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 09:10
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 03/31/23 17:56
Analyst: JIC
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Toluene	2000		mg/kg	13	7.1	200
Ethylbenzene	420		mg/kg	13	1.8	200
p/m-Xylene	1800		mg/kg	26	7.3	200
Xylenes, Total	2500		mg/kg	1.3	0.38	200
1,2,4-Trimethylbenzene	610		mg/kg	26	4.4	200

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-05 D
Client ID: 301-E02-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 09:10
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 03/30/23 18:03
Analyst: KJD
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	2.6	0.26	20
Benzene	200		mg/kg	0.65	0.22	20
1,2-Dichloroethane	6.0		mg/kg	1.3	0.34	20
Toluene	1600	E	mg/kg	1.3	0.71	20
1,2-Dibromoethane	ND		mg/kg	0.65	0.38	20
Ethylbenzene	420	E	mg/kg	1.3	0.18	20
p/m-Xylene	1600	E	mg/kg	2.6	0.73	20
o-Xylene	720		mg/kg	1.3	0.38	20
Isopropylbenzene	24.		mg/kg	1.3	0.14	20
1,3,5-Trimethylbenzene	210		mg/kg	2.6	0.25	20
1,2,4-Trimethylbenzene	600	E	mg/kg	2.6	0.44	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 03/30/23 09:40
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 03,05 Batch: WG1761013-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 03/31/23 09:33
Analyst: TMH

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 03,05 Batch: WG1762056-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 04/03/23 13:04
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1762427-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	97		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316183
Report Date: 04/04/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 03,05 Batch: WG1761013-3 WG1761013-4								
Methyl tert butyl ether	94		99		66-130	5		30
Benzene	92		96		70-130	4		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	89		92		70-130	3		30
1,2-Dibromoethane	89		94		70-130	5		30
Ethylbenzene	91		94		70-130	3		30
p/m-Xylene	91		93		70-130	2		30
o-Xylene	95		98		70-130	3		30
Isopropylbenzene	90		95		70-130	5		30
1,3,5-Trimethylbenzene	91		95		70-130	4		30
1,2,4-Trimethylbenzene	91		94		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		101		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		102		70-130
Dibromofluoromethane	98		99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316183

Report Date: 04/04/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 03,05 Batch: WG1762056-3 WG1762056-4								
Methyl tert butyl ether	104		104		66-130	0		30
Benzene	100		99		70-130	1		30
1,2-Dichloroethane	103		102		70-130	1		30
Toluene	96		94		70-130	2		30
1,2-Dibromoethane	96		96		70-130	0		30
Ethylbenzene	97		96		70-130	1		30
p/m-Xylene	96		95		70-130	1		30
o-Xylene	101		99		70-130	2		30
Isopropylbenzene	98		97		70-130	1		30
1,3,5-Trimethylbenzene	98		97		70-130	1		30
1,2,4-Trimethylbenzene	97		96		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		104		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	102		103		70-130
Dibromofluoromethane	99		98		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316183
Report Date: 04/04/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1762427-3 WG1762427-4								
Methyl tert butyl ether	87		87		66-130	0		30
Benzene	98		99		70-130	1		30
1,2-Dichloroethane	89		87		70-130	2		30
Toluene	92		93		70-130	1		30
1,2-Dibromoethane	98		96		70-130	2		30
Ethylbenzene	93		94		70-130	1		30
p/m-Xylene	100		100		70-130	0		30
o-Xylene	97		97		70-130	0		30
Isopropylbenzene	96		96		70-130	0		30
1,3,5-Trimethylbenzene	94		94		70-130	0		30
1,2,4-Trimethylbenzene	94		93		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	93		91		70-130
Toluene-d8	97		98		70-130
4-Bromofluorobenzene	89		88		70-130
Dibromofluoromethane	102		102		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-02
Client ID: 201-A01-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 12:45
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 04/01/23 15:29
Analyst: CMM
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 03/31/23 20:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.15		mg/kg	0.041	0.025	1
Fluorene	0.36		mg/kg	0.20	0.020	1
Phenanthrene	2.5		mg/kg	0.12	0.025	1
Anthracene	0.59		mg/kg	0.12	0.040	1
Pyrene	2.0		mg/kg	0.12	0.020	1
Benzo(a)anthracene	1.0		mg/kg	0.12	0.023	1
Chrysene	0.99		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	1.2		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.99		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.52		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-04
Client ID: 301-D01-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 11:10
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 04/01/23 15:46
Analyst: CMM
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 03/31/23 20:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.13		mg/kg	0.038	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.043	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.034	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.026	J	mg/kg	0.11	0.022	1
Chrysene	0.020	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-06
Client ID: 301-E02-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 09:10
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 04/01/23 16:03
Analyst: CMM
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 03/31/23 20:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.4		mg/kg	0.039	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.029	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.029	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.032	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	41		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 04/01/23 08:34
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 03/31/23 20:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06 Batch: WG1761461-1					
Naphthalene	ND		mg/kg	0.033	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	81		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316183

Report Date: 04/04/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06 Batch: WG1761461-2 WG1761461-3								
Naphthalene	64		66		40-140	3		50
Fluorene	69		74		40-140	7		50
Phenanthrene	67		71		40-140	6		50
Anthracene	68		72		40-140	6		50
Pyrene	74		76		35-142	3		50
Benzo(a)anthracene	65		69		40-140	6		50
Chrysene	65		68		40-140	5		50
Benzo(b)fluoranthene	67		70		40-140	4		50
Benzo(a)pyrene	67		69		40-140	3		50
Benzo(ghi)perylene	63		66		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	66		67		23-120
2-Fluorobiphenyl	71		74		30-120
4-Terphenyl-d14	79		81		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-02
Client ID: 201-A01-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 12:45
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2540		mg/kg	2.40	0.129	1	03/31/23 06:20	04/03/23 11:42	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-04
Client ID: 301-D01-D1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 03/28/23 11:10
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	59.4		mg/kg	2.30	0.123	1	03/31/23 06:20	04/03/23 12:55	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316183
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-06
Client ID: 301-E02-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/28/23 09:10
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1640		mg/kg	2.25	0.121	1	03/31/23 06:20	04/03/23 13:00	EPA 3050B	1,6010D	DMB

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06 Batch: WG1760820-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	03/31/23 06:20	04/03/23 11:24	1,6010D	DMB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316183

Report Date: 04/04/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 Batch: WG1760820-2 SRM Lot Number: D116-540								
Lead, Total	109		-		83-117	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316183
Report Date: 04/04/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 QC Batch ID: WG1760820-3 QC Sample: L2316183-02 Client ID: 201-A01-D1-COMP												
Lead, Total	2540	49.4	3730	**2410**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316183

Report Date: 04/04/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 QC Batch ID: WG1760820-4 QC Sample: L2316183-02 Client ID: 201-A01-D1-COMP						
Lead, Total	2540	2930	mg/kg	14		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-01
Client ID: 201-A01-D1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 03/28/23 12:45
Date Received: 03/28/23
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.1		%	0.100	NA	1	-	03/29/23 11:13	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-02
Client ID: 201-A01-D1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 03/28/23 12:45
Date Received: 03/28/23
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.7		%	0.100	NA	1	-	03/29/23 12:52	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-03
Client ID: 301-D01-D1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 03/28/23 11:10
Date Received: 03/28/23
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.5		%	0.100	NA	1	-	03/29/23 11:13	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-04
Client ID: 301-D01-D1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 03/28/23 11:10
Date Received: 03/28/23
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	03/29/23 12:52	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-05
Client ID: 301-E02-D1-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 03/28/23 09:10
Date Received: 03/28/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	03/29/23 11:13	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316183
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316183-06
Client ID: 301-E02-D1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 03/28/23 09:10
Date Received: 03/28/23
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	03/29/23 12:52	121,2540G	ROI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316183

Report Date: 04/04/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05 QC Batch ID: WG1760178-1 QC Sample: L2316234-04 Client ID: DUP Sample						
Solids, Total	67.6	66.8	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06 QC Batch ID: WG1760233-1 QC Sample: L2316214-32 Client ID: DUP Sample						
Solids, Total	88.9	88.3	%	1		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316183
Report Date: 04/04/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2316183-01A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2316183-01B	Vial water preserved	A	NA		2.3	Y	Absent	29-MAR-23 07:35	PA-8260HLW(14)
L2316183-01C	Vial water preserved	A	NA		2.3	Y	Absent	29-MAR-23 07:35	PA-8260HLW(14)
L2316183-01D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2316183-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2316183-02B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2316183-03A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2316183-03B	Vial water preserved	A	NA		2.3	Y	Absent	29-MAR-23 07:35	PA-8260HLW(14)
L2316183-03C	Vial water preserved	A	NA		2.3	Y	Absent	29-MAR-23 07:35	PA-8260HLW(14)
L2316183-03D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2316183-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2316183-04B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2316183-05A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2316183-05B	Vial water preserved	A	NA		2.3	Y	Absent	29-MAR-23 07:35	PA-8260HLW(14)
L2316183-05C	Vial water preserved	A	NA		2.3	Y	Absent	29-MAR-23 07:35	PA-8260HLW(14)
L2316183-05D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2316183-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2316183-06B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316183
Project Number:	200.00135.006	**Report Date:**	04/04/23

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316183
Project Number:	200.00135.006	**Report Date:**	04/04/23

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316183
Project Number:	200.00135.006	**Report Date:**	04/04/23

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316183
Project Number:	200.00135.006	**Report Date:**	04/04/23

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 3/29/23

ALPHA Job #: L2316183

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Hamilton, NJ 08619
Phone: 215-901-4974
Fax:
Email: william.schmidt@ransomenv.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: 18559

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project specific analyte list of PADEP Leaded/unleaded gasoline and No. 2,4,5, and 6 fuel oils shortlist. Run naphthalene using method 8270 ONLY! Email results to edd@terraphase.com, william.schmidt@ransomenv.com, and jjerry@kilcoglobal.com

SAMPLE HANDLING

Filtration
☐ Done
☒ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
16183-01	201-A01-D1-VOC	3.28.23	12:45	S	TR	✓				4
02	201-A01-D1-COMP	↓	12:45	↓	↓		✓	✓		2
03	301-D01-D1-VOC	↓	11:10	↓	↓	✓				4
04	301-D01-D1-COMP	↓	11:10	↓	↓		✓	✓		2
05	301-E02-D1-VOC	↓	9:10	↓	↓	✓				4
06	301-E02-D1-COMP	↓	9:10	↓	↓		✓	✓		2

	VOCs	SVOCs	Lead
Container Type	G	G	G
Preservative	F	4	4

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	3/28/23 15:03	[signature] AAL	3/28/23 15:03
[signature] AAL	3/28/23 1800	[signature] AAL	3/28/23 1800
[signature] AAL	3/28/23 2100	404	3-28-23 2100
404	3-28-23 2345	[signature]	3-28-23 2345

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

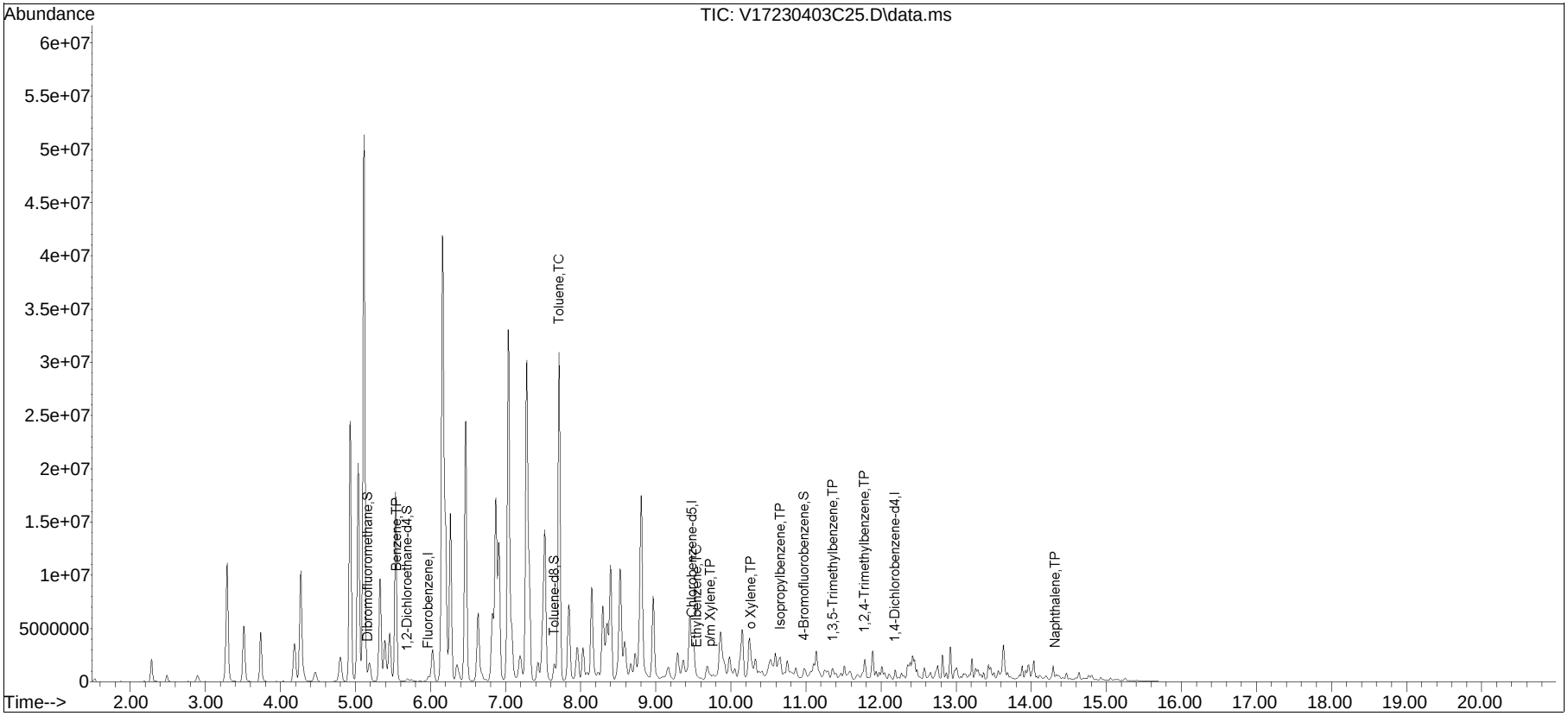
FORM NO: 01-01 (rev. 14-OCT-07)

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA117\2023\230403C\
Data File : V17230403C25.D
Acq On : 03 Apr 2023 09:52 pm
Operator : VOA117:JIC
Sample : L2316183-01,31,5.91,5,,C
Misc : WG1762427,ICAL19836
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 04 08:01:49 2023
Quant Method : I:\VOLATILES\VOA117\2023\230403C\V117_230322N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 23 10:56:50 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list03C\V17230403C01.D•



ANALYTICAL REPORT

Lab Number:	L2316479
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	04/04/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316479
Report Date: 04/04/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2316479-01	301-F01-D1-VOC	SOIL	PHILADELPHIA, PA	03/29/23 13:40	03/29/23
L2316479-02	301-F01-D1-COMP	SOIL	PHILADELPHIA, PA	03/29/23 13:40	03/29/23

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316479
Project Number:	200.00135.006	**Report Date:**	04/04/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316479
Project Number:	200.00135.006	**Report Date:**	04/04/23

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2316479-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (165%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Walukevich

Caitlin Walukevich

Title: Technical Director/Representative

Date: 04/04/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316479
Project Number: 200.00135.006
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316479-01
Client ID: 301-F01-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/29/23 13:40
Date Received: 03/29/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/03/23 14:53
Analyst: JIC
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	1.7		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	0.11		mg/kg	0.065	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	7.3		mg/kg	0.065	0.0091	1
p/m-Xylene	27.		mg/kg	0.13	0.036	1
o-Xylene	1.3		mg/kg	0.065	0.019	1
Xylenes, Total	28.		mg/kg	0.065	0.019	1
Isopropylbenzene	4.7		mg/kg	0.065	0.0070	1
1,3,5-Trimethylbenzene	3.9		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	13.		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	**165**	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316479
Report Date: 04/04/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 04/03/23 08:18
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1762449-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	103		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316479

Report Date: 04/04/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01 Batch: WG1762449-3 WG1762449-4								
Methyl tert butyl ether	104		110		66-130	6		30
Benzene	92		103		70-130	11		30
1,2-Dichloroethane	96		106		70-130	10		30
Toluene	82		92		70-130	11		30
1,2-Dibromoethane	95		101		70-130	6		30
Ethylbenzene	84		94		70-130	11		30
p/m-Xylene	88		98		70-130	11		30
o-Xylene	91		101		70-130	10		30
Isopropylbenzene	82		91		70-130	10		30
1,3,5-Trimethylbenzene	85		94		70-130	10		30
1,2,4-Trimethylbenzene	86		95		70-130	10		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		100		70-130
Toluene-d8	94		94		70-130
4-Bromofluorobenzene	95		95		70-130
Dibromofluoromethane	104		106		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316479
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316479-02
Client ID: 301-F01-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/29/23 13:40
Date Received: 03/29/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 04/03/23 02:44
Analyst: MG
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 04/02/23 02:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.23		mg/kg	0.041	0.025	1
Fluorene	0.14	J	mg/kg	0.21	0.020	1
Phenanthrene	0.76		mg/kg	0.12	0.025	1
Anthracene	0.22		mg/kg	0.12	0.040	1
Pyrene	0.51		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.29		mg/kg	0.12	0.023	1
Chrysene	0.27		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.30		mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.25		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.086	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	40		23-120
2-Fluorobiphenyl	47		30-120
4-Terphenyl-d14	42		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316479
Report Date: 04/04/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 04/02/23 21:01
Analyst: MG

Extraction Method: EPA 3546
Extraction Date: 04/02/23 02:07

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG1761691-1					
Naphthalene	ND		mg/kg	0.033	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.041
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	58		25-120
Phenol-d6	52		10-120
Nitrobenzene-d5	48		23-120
2-Fluorobiphenyl	51		30-120
2,4,6-Tribromophenol	40		10-136
4-Terphenyl-d14	48		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316479
Report Date: 04/04/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1761691-2 WG1761691-3								
Naphthalene	**39**	Q	51		40-140	27		50
Fluorene	41		53		40-140	26		50
Phenanthrene	42		53		40-140	23		50
Anthracene	44		56		40-140	24		50
Pyrene	42		55		35-142	27		50
Benzo(a)anthracene	45		58		40-140	25		50
Chrysene	44		58		40-140	27		50
Benzo(b)fluoranthene	46		62		40-140	30		50
Benzo(a)pyrene	54		71		40-140	27		50
Benzo(ghi)perylene	43		59		40-140	31		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	43		54		25-120
Phenol-d6	41		51		10-120
Nitrobenzene-d5	41		51		23-120
2-Fluorobiphenyl	39		49		30-120
2,4,6-Tribromophenol	43		56		10-136
4-Terphenyl-d14	37		47		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316479
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316479-02
Client ID: 301-F01-D1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 03/29/23 13:40
Date Received: 03/29/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	12.9		mg/kg	2.40	0.129	1	04/04/23 06:05	04/04/23 13:29	EPA 3050B	1,6010D	AMW

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316479
Report Date: 04/04/23

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02 Batch: WG1760842-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	04/04/23 06:05	04/04/23 11:35	1,6010D	AMW

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316479

Report Date: 04/04/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1760842-2 SRM Lot Number: D116-540								
Lead, Total	105		-		83-117	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316479
Report Date: 04/04/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1760842-3 WG1760842-4 QC Sample: L2316548-07 Client ID: MS Sample												
Lead, Total	12.2	44.4	58.3	104		59.8	108		75-125	3		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316479
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316479-01
Client ID: 301-F01-D1-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 03/29/23 13:40
Date Received: 03/29/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.7		%	0.100	NA	1	-	03/30/23 11:40	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316479
Report Date: 04/04/23

SAMPLE RESULTS

Lab ID: L2316479-02
Client ID: 301-F01-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/29/23 13:40
Date Received: 03/29/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.1		%	0.100	NA	1	-	03/30/23 11:40	121,2540G	ROI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316479

Report Date: 04/04/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1760627-1 QC Sample: L2316297-01 Client ID: DUP Sample						
Solids, Total	95.7	94.4	%	1		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316479
Report Date: 04/04/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2316479-01A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2316479-01B	Vial water preserved	A	NA		2.1	Y	Absent	30-MAR-23 04:15	PA-8260HLW(14)
L2316479-01C	Vial water preserved	A	NA		2.1	Y	Absent	30-MAR-23 04:15	PA-8260HLW(14)
L2316479-01D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2316479-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2316479-02B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316479
Project Number:	200.00135.006	**Report Date:**	04/04/23

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316479
Project Number:	200.00135.006	**Report Date:**	04/04/23

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316479
Project Number:	200.00135.006	**Report Date:**	04/04/23

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316479
Project Number:	200.00135.006	**Report Date:**	04/04/23

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 03/30/23

ALPHA Job #: L2316479

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Hamilton, NJ 08619
Phone: 609.584.0090 / 215.901.4974
Fax:
Email: william.schmidt@ransomenv.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: 18557

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☑ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report only project specific analyte list of PADEP Leaded/unleaded gasoline and No. 2, 4, 5, and 6 fuel oils shortlist. Run naphthalene using method 8270 ONLY! Email results to edd@testamerica.com, william.schmidt@ransomenv.com, and jjerry@hilcoglobal.com.

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
16479-01	301-F01-D1-VOC	3.29.23	13:40	S	TR	✓				4
-02	301-F01-D1-COMP	↓	13:40	S	TR		✓	✓		2

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☑ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Container Type	G	G	C
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
		SCS AAL	3/29/23 15:30
SCS AAL	3-29-23 1800		3/29/23 1800
	3/29/23 2100		3.29.23 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

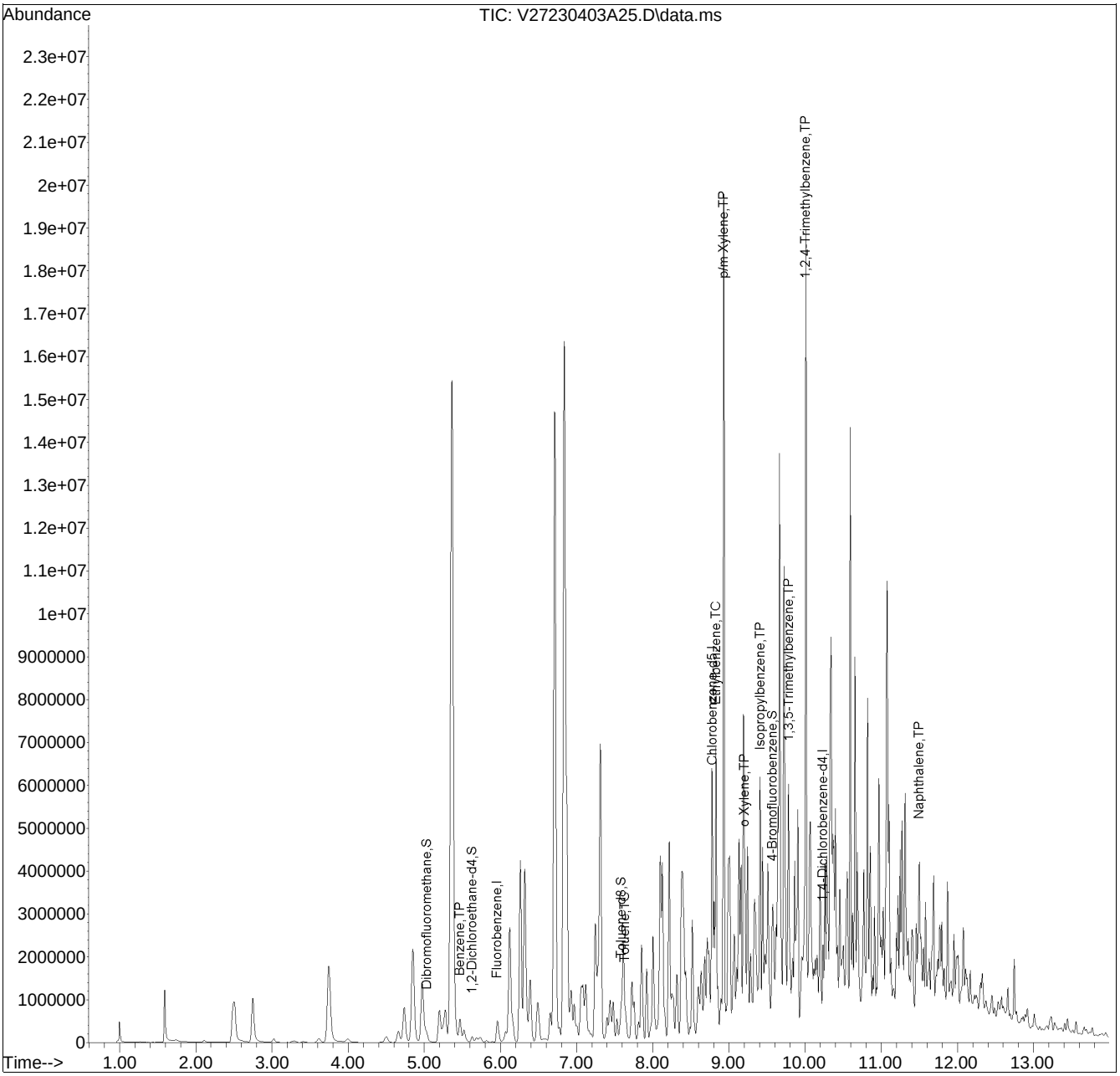
FORM NO: 01-01 (rev. 14-OCT-07)

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230403A\
Data File : V27230403A25.D
Acq On : 03 Apr 2023 02:53 pm
Operator : VOA127:JIC
Sample : L2316479-01,31H,6.20,5,0.100,,A
Misc : WG1762449,ICAL19866
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 04 08:10:19 2023
Quant Method : I:\VOLATILES\VOA127\2023\230403A\V127_230328A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Mar 29 09:51:44 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list03A\V27230403A01.D•



V127_230328A_8260.m Tue Apr 04 08:47:21 2023 Page: 2

ANALYTICAL REPORT

Lab Number:	L2316771
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	04/06/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316771
Report Date: 04/06/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2316771-01	301-G01-D1-VOC	SOIL	PHILADELPHIA, PA	03/30/23 10:30	03/30/23
L2316771-02	301-G01-D1-COMP	SOIL	PHILADELPHIA, PA	03/30/23 10:30	03/30/23
L2316771-03	301-H01-D1-COMP	SOIL	PHILADELPHIA, PA	03/30/23 12:30	03/30/23
L2316771-04	301-H01-D1-VOC	SOIL	PHILADELPHIA, PA	03/30/23 12:30	03/30/23
L2316771-05	301-O02-D1-VOC	SOIL	PHILADELPHIA, PA	03/30/23 14:00	03/30/23
L2316771-06	301-O02-D1-COMP	SOIL	PHILADELPHIA, PA	03/30/23 14:00	03/30/23

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316771
Project Number:	200.00135.006	**Report Date:**	04/06/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316771
Project Number:	200.00135.006	**Report Date:**	04/06/23

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2316771-05: Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies.

L2316771-05: The internal standard (IS) response(s) for fluorobenzene (867%) and the surrogate recoveries for dibromofluoromethane (19%), toluene-d8 (183%) and 4-bromofluorobenzene (620%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis; however, since the IS response was above method criteria, all associated compounds are considered to have a potentially low bias. The results of both analyses are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Walukevich Caitlin Walukevich

Title: Technical Director/Representative Date: 04/06/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316771
Project Number: 200.00135.006
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-01 D2
Client ID: 301-G01-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 10:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/04/23 22:40
Analyst: JIC
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	0.51		mg/kg	0.29	0.029	2.5
Benzene	16.		mg/kg	0.072	0.024	2.5
1,2-Dichloroethane	ND		mg/kg	0.14	0.037	2.5
Toluene	34.		mg/kg	0.14	0.078	2.5
1,2-Dibromoethane	ND		mg/kg	0.072	0.042	2.5
Ethylbenzene	27.		mg/kg	0.14	0.020	2.5
p/m-Xylene	120	E	mg/kg	0.29	0.080	2.5
o-Xylene	38.		mg/kg	0.14	0.042	2.5
Isopropylbenzene	3.0		mg/kg	0.14	0.016	2.5
1,3,5-Trimethylbenzene	17.		mg/kg	0.29	0.028	2.5
1,2,4-Trimethylbenzene	59.	E	mg/kg	0.29	0.048	2.5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316771
Project Number: 200.00135.006
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-01 D
Client ID: 301-G01-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 10:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/03/23 18:12
Analyst: AJK
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
p/m-Xylene	120		mg/kg	1.1	0.32	10
Xylenes, Total	160		mg/kg	0.14	0.042	10
1,2,4-Trimethylbenzene	57.		mg/kg	1.1	0.19	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-04
Client ID: 301-H01-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 12:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/03/23 18:39
Analyst: AJK
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	2.3		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.069	0.018	1
Toluene	3.1		mg/kg	0.069	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	2.7		mg/kg	0.069	0.0097	1
p/m-Xylene	10.		mg/kg	0.14	0.038	1
o-Xylene	3.4		mg/kg	0.069	0.020	1
Xylenes, Total	13.		mg/kg	0.069	0.020	1
Isopropylbenzene	0.42		mg/kg	0.069	0.0075	1
1,3,5-Trimethylbenzene	2.7		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	8.5		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316771
Project Number: 200.00135.006
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-05
Client ID: 301-O02-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 14:00
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/03/23 19:05
Analyst: AJK
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.89		mg/kg	0.030	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.061	0.016	1
Toluene	0.057	J	mg/kg	0.061	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	0.49		mg/kg	0.061	0.0086	1
p/m-Xylene	1.5		mg/kg	0.12	0.034	1
o-Xylene	0.046	J	mg/kg	0.061	0.018	1
Xylenes, Total	1.5	J	mg/kg	0.061	0.018	1
Isopropylbenzene	0.85		mg/kg	0.061	0.0066	1
1,3,5-Trimethylbenzene	0.92		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	1.5		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316771
Project Number: 200.00135.006
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-05
Client ID: 301-O02-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 14:00
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/04/23 23:33
Analyst: JIC
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.16		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	0.053		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00027	1
Ethylbenzene	0.40	E	mg/kg	0.00094	0.00013	1
p/m-Xylene	1.2	E	mg/kg	0.0019	0.00052	1
o-Xylene	0.035		mg/kg	0.00094	0.00027	1
Isopropylbenzene	0.57	E	mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	0.58	E	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.75	E	mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	**183**	Q	70-130
4-Bromofluorobenzene	**620**	Q	70-130
Dibromofluoromethane	**19**	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 04/03/23 12:56
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,04-05 Batch: WG1762552-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	113		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2316771

Project Number: 200.00135.006 **Report Date:** 04/06/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 04/04/23 16:31
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1763086-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	113		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 04/04/23 16:31
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1763087-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	113		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316771
Report Date: 04/06/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,04-05 Batch: WG1762552-3 WG1762552-4								
Methyl tert butyl ether	85		86		66-130	1		30
Benzene	91		85		70-130	7		30
1,2-Dichloroethane	94		93		70-130	1		30
Toluene	85		79		70-130	7		30
1,2-Dibromoethane	91		91		70-130	0		30
Ethylbenzene	90		82		70-130	9		30
p/m-Xylene	96		88		70-130	9		30
o-Xylene	95		89		70-130	7		30
Isopropylbenzene	88		82		70-130	7		30
1,3,5-Trimethylbenzene	88		84		70-130	5		30
1,2,4-Trimethylbenzene	89		85		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		101		70-130
Toluene-d8	92		92		70-130
4-Bromofluorobenzene	84		84		70-130
Dibromofluoromethane	112		111		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316771

Report Date: 04/06/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1763086-3 WG1763086-4								
Methyl tert butyl ether	93		96		66-130	3		30
Benzene	98		100		70-130	2		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	90		90		70-130	0		30
1,2-Dibromoethane	93		94		70-130	1		30
Ethylbenzene	94		94		70-130	0		30
p/m-Xylene	100		100		70-130	0		30
o-Xylene	100		100		70-130	0		30
Isopropylbenzene	94		95		70-130	1		30
1,3,5-Trimethylbenzene	94		96		70-130	2		30
1,2,4-Trimethylbenzene	94		96		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		100		70-130
Toluene-d8	92		90		70-130
4-Bromofluorobenzene	83		84		70-130
Dibromofluoromethane	113		114		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316771
Report Date: 04/06/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01 Batch: WG1763087-3 WG1763087-4								
Methyl tert butyl ether	93		96		66-130	3		30
Benzene	98		100		70-130	2		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	90		90		70-130	0		30
1,2-Dibromoethane	93		94		70-130	1		30
Ethylbenzene	94		94		70-130	0		30
p/m-Xylene	100		100		70-130	0		30
o-Xylene	100		100		70-130	0		30
Isopropylbenzene	94		95		70-130	1		30
1,3,5-Trimethylbenzene	94		96		70-130	2		30
1,2,4-Trimethylbenzene	94		96		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		100		70-130
Toluene-d8	92		90		70-130
4-Bromofluorobenzene	83		84		70-130
Dibromofluoromethane	113		114		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-02
Client ID: 301-G01-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 10:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 04/03/23 13:36
Analyst: JG
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/02/23 21:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.8		mg/kg	0.039	0.024	1
Fluorene	0.29		mg/kg	0.20	0.019	1
Phenanthrene	0.56		mg/kg	0.12	0.024	1
Anthracene	0.12		mg/kg	0.12	0.038	1
Pyrene	0.16		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.056	J	mg/kg	0.12	0.022	1
Chrysene	0.050	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.036	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**124**	Q	23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-03
Client ID: 301-H01-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 12:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 04/03/23 14:00
Analyst: JG
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 04/02/23 21:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	3.8		mg/kg	0.038	0.023	1
Fluorene	0.26		mg/kg	0.19	0.018	1
Phenanthrene	0.42		mg/kg	0.11	0.023	1
Anthracene	0.042	J	mg/kg	0.11	0.037	1
Pyrene	0.057	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	120		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316771
Project Number: 200.00135.006
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-06
Client ID: 301-O02-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 14:00
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 04/03/23 14:24
Analyst: JG
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 04/02/23 21:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.096		mg/kg	0.038	0.023	1
Fluorene	0.10	J	mg/kg	0.19	0.018	1
Phenanthrene	0.16		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.023	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 04/02/23 21:01
Analyst: MG

Extraction Method: EPA 3546
Extraction Date: 04/02/23 02:07

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02-03,06 Batch: WG1761691-1					
Naphthalene	ND		mg/kg	0.033	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.041
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	58		25-120
Phenol-d6	52		10-120
Nitrobenzene-d5	48		23-120
2-Fluorobiphenyl	51		30-120
2,4,6-Tribromophenol	40		10-136
4-Terphenyl-d14	48		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316771

Report Date: 04/06/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03,06 Batch: WG1761691-2 WG1761691-3								
Naphthalene	**39**	Q	51		40-140	27		50
Fluorene	41		53		40-140	26		50
Phenanthrene	42		53		40-140	23		50
Anthracene	44		56		40-140	24		50
Pyrene	42		55		35-142	27		50
Benzo(a)anthracene	45		58		40-140	25		50
Chrysene	44		58		40-140	27		50
Benzo(b)fluoranthene	46		62		40-140	30		50
Benzo(a)pyrene	54		71		40-140	27		50
Benzo(ghi)perylene	43		59		40-140	31		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	43		54		25-120
Phenol-d6	41		51		10-120
Nitrobenzene-d5	41		51		23-120
2-Fluorobiphenyl	39		49		30-120
2,4,6-Tribromophenol	43		56		10-136
4-Terphenyl-d14	37		47		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316771
Project Number: 200.00135.006
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-02
Client ID: 301-G01-D1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 03/30/23 10:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.38		mg/kg	2.38	0.127	1	04/05/23 21:10	04/06/23 10:21	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316771
Project Number: 200.00135.006
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-03
Client ID: 301-H01-D1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 03/30/23 12:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	19.6		mg/kg	2.26	0.121	1	04/05/23 21:10	04/06/23 10:24	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316771
Project Number: 200.00135.006
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-06
Client ID: 301-O02-D1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 03/30/23 14:00
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.52		mg/kg	2.25	0.121	1	04/05/23 21:10	04/06/23 10:27	EPA 3050B	1,6010D	JMF

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02-03,06 Batch: WG1761364-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	04/05/23 21:10	04/06/23 07:55	1,6010D	JMF

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316771

Report Date: 04/06/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-03,06 Batch: WG1761364-2 SRM Lot Number: D116-540								
Lead, Total	99		-		83-117	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316771
Report Date: 04/06/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-03,06 QC Batch ID: WG1761364-3 QC Sample: L2316705-01 Client ID: MS Sample												
Lead, Total	43.0	45.5	92.2	108		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316771

Report Date: 04/06/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-03,06 QC Batch ID: WG1761364-4 QC Sample: L2316705-01 Client ID: DUP Sample						
Lead, Total	43.0	44.6	mg/kg	4		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-01
Client ID: 301-G01-D1-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 03/30/23 10:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	03/31/23 10:41	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316771
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-02
Client ID: 301-G01-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 10:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	04/01/23 12:24	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316771
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-03
Client ID: 301-H01-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/30/23 12:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.6		%	0.100	NA	1	-	04/01/23 12:34	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-04
Client ID: 301-H01-D1-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 03/30/23 12:30
Date Received: 03/30/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.6		%	0.100	NA	1	-	03/31/23 10:41	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-05
Client ID: 301-O02-D1-VOC
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 03/30/23 14:00
Date Received: 03/30/23
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.4		%	0.100	NA	1	-	03/31/23 10:41	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006
Lab Number: L2316771
Report Date: 04/06/23

SAMPLE RESULTS

Lab ID: L2316771-06
Client ID: 301-O02-D1-COMP
Sample Location: PHILADELPHIA, PA
Sample Depth:
Matrix: Soil

Date Collected: 03/30/23 14:00
Date Received: 03/30/23
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.8		%	0.100	NA	1	-	04/01/23 12:34	121,2540G	ROI

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2316771

Report Date: 04/06/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,04-05 QC Batch ID: WG1761188-1 QC Sample: L2316567-01 Client ID: DUP Sample						
Solids, Total	42.9	46.6	%	8		20
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1761536-1 QC Sample: L2316685-01 Client ID: DUP Sample						
Solids, Total	62.1	63.1	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 03,06 QC Batch ID: WG1761537-1 QC Sample: L2316808-01 Client ID: DUP Sample						
Solids, Total	89.6	89.7	%	0		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2316771
Report Date: 04/06/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2316771-01A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2316771-01B	Vial water preserved	A	NA		3.9	Y	Absent	31-MAR-23 05:26	PA-8260HLW(14)
L2316771-01C	Vial water preserved	A	NA		3.9	Y	Absent	31-MAR-23 05:26	PA-8260HLW(14)
L2316771-01D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2316771-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2316771-02B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2316771-03A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2316771-03B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2316771-04A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2316771-04B	Vial water preserved	A	NA		3.9	Y	Absent	31-MAR-23 05:26	PA-8260HLW(14)
L2316771-04C	Vial water preserved	A	NA		3.9	Y	Absent	31-MAR-23 05:26	PA-8260HLW(14)
L2316771-04D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2316771-05A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2316771-05B	Vial water preserved	A	NA		3.9	Y	Absent	31-MAR-23 05:26	PA-8260H(14),PA-8260HLW(14)
L2316771-05C	Vial water preserved	A	NA		3.9	Y	Absent	31-MAR-23 05:26	PA-8260H(14),PA-8260HLW(14)
L2316771-05D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2316771-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2316771-06B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316771
Project Number:	200.00135.006	**Report Date:**	04/06/23

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316771
Project Number:	200.00135.006	**Report Date:**	04/06/23

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316771
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Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316771
Project Number:	200.00135.006	**Report Date:**	04/06/23

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 3/31/23

ALPHA Job #: L2316771

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Hamilton, NJ 08619
Phone: 215.901.4971
Fax:
Email: william.schmidt@ransomenv.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.006
Project Manager: William Schmidt
ALPHA Quote #: 18555

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project specific analyte list of PADEP Leaded/unleaded gasoline and NO. 2, 4, 5 and 6 oils shortlist. Run naphthalene via method 8270 ONLY! Email results to addie.terraphase.com, william.schmidt@ransomenv.com and jjeffery@hilcoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	TOTAL # BOTTLES
16771-01	301-G01-D1-VOC	3.30.23	10:30	S	TR	✓				4
02	301-G01-D1-COMP		10:30				✓	✓		2
03	301-H01-D1-COMP		12:30				✓	✓		2
04	301-H01-D1-VOC		12:30			✓				4
05	301-002-D1-VOC		14:00			✓				4
06	301-002-D1-COMP		14:00				✓	✓		2

SAMPLE HANDLING

Filtration
☐ Done
☑ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Container Type	G	G	G
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	3/30/23 1615	[signature] AAL	3/30/23 1615
[signature] AAL	3/30/23 1800	[signature]	3/30/23 1800
[signature]	3/30/23 2100	[signature]	3-30-23 2100
[signature]	3-31-23 0830	[signature]	3 31 23 0830

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

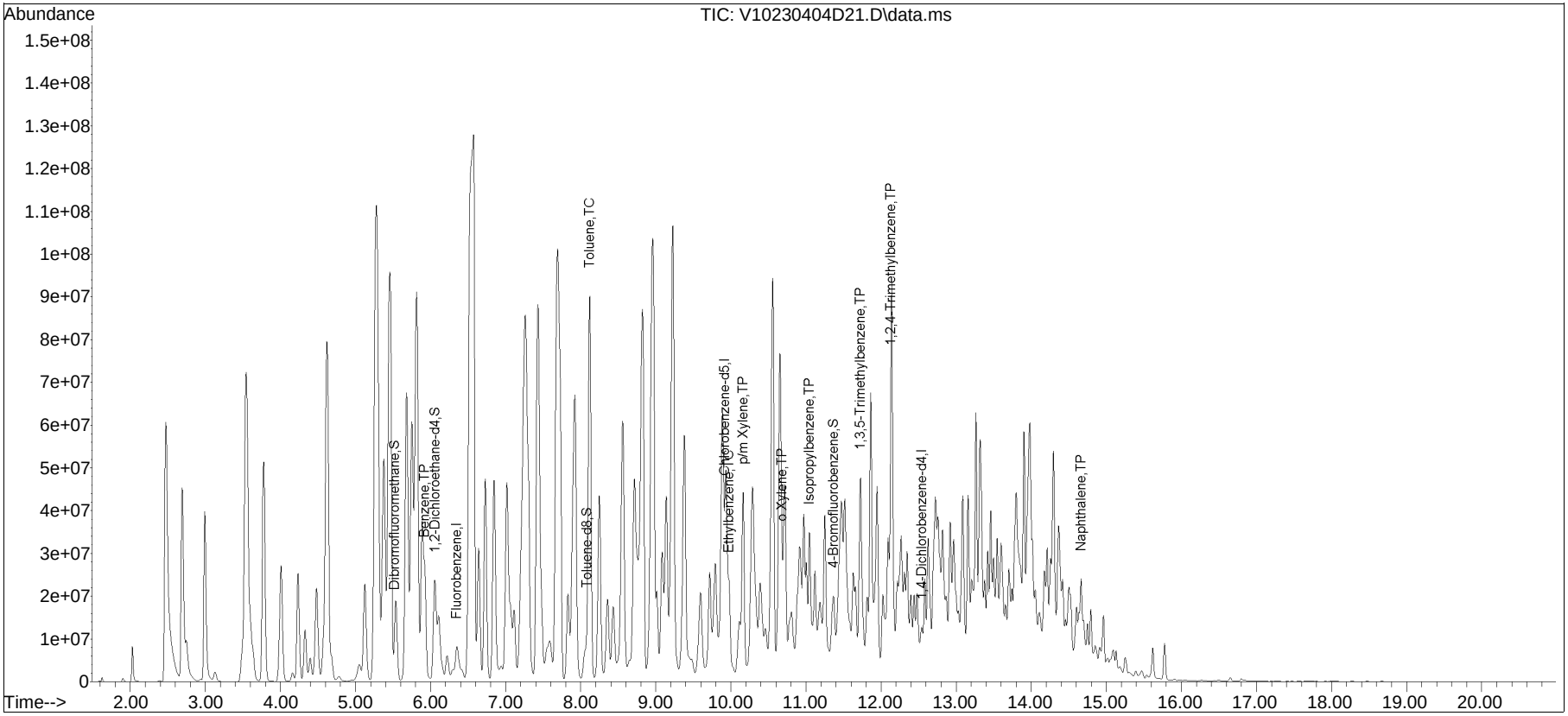
FORM NO: 01-01 (rev. 14-OCT-07)

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230404D\
Data File : V10230404D21.D
Acq On : 4 Apr 2023 11:33 pm
Operator : VOA110:JIC
Sample : L2316771-05,31,6.48,5,,B
Misc : WG1763086,ICAL19281
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Apr 05 10:36:58 2023
Quant Method : I:\VOLATILES\VOA110\2023\230404D\V110_220822N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Aug 23 09:34:28 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04D\V10230404D01.D•



ANALYTICAL REPORT

Lab Number:	L2316993
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135
Report Date:	04/07/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135

Lab Number: L2316993
Report Date: 04/07/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2316993-01	301-N02-D1-VOC	SOIL	PHILADELPHIA, PA	03/31/23 12:00	03/31/23
L2316993-02	301-N02-D1-COMP	SOIL	PHILADELPHIA, PA	03/31/23 11:40	03/31/23
L2316993-03	301-Q04-D1-VOC	SOIL	PHILADELPHIA, PA	03/31/23 15:00	03/31/23
L2316993-04	301-Q04-D1-COMP	SOIL	PHILADELPHIA, PA	03/31/23 14:40	03/31/23

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316993
Project Number:	200.00135	**Report Date:**	04/07/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316993
Project Number:	200.00135	**Report Date:**	04/07/23

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2316993-01: The internal standard (IS) response for fluorobenzene (292%) and the surrogate recoveries for dibromofluoromethane (47%) and 4-bromofluorobenzene (521%) were outside the acceptance criteria in the low-level analysis due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was above method criteria, all associated compounds are considered to have a potentially low bias. A high-level analysis was performed, and those results are also reported.

PAHs

L2316993-02D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 04/07/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316993
Project Number: 200.00135
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-01
Client ID: 301-N02-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/31/23 12:00
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/04/23 21:48
Analyst: JIC
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.67	E	mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00084	0.00022	1
Toluene	0.051		mg/kg	0.00084	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00024	1
Ethylbenzene	0.86	E	mg/kg	0.00084	0.00012	1
p/m-Xylene	2.1	E	mg/kg	0.0017	0.00047	1
o-Xylene	0.037		mg/kg	0.00084	0.00024	1
Isopropylbenzene	0.42	E	mg/kg	0.00084	0.00009	1
1,3,5-Trimethylbenzene	0.74	E	mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	1.1	E	mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	125		70-130
4-Bromofluorobenzene	**521**	Q	70-130
Dibromofluoromethane	**47**	Q	70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316993
Project Number: 200.00135
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-01
Client ID: 301-N02-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/31/23 12:00
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/06/23 10:15
Analyst: AJK
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	4.2		mg/kg	0.027	0.0091	1
1,2-Dichloroethane	ND		mg/kg	0.055	0.014	1
Toluene	0.065		mg/kg	0.055	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	1.2		mg/kg	0.055	0.0078	1
p/m-Xylene	2.5		mg/kg	0.11	0.031	1
o-Xylene	0.039	J	mg/kg	0.055	0.016	1
Xylenes, Total	2.5	J	mg/kg	0.055	0.016	1
Isopropylbenzene	0.57		mg/kg	0.055	0.0060	1
1,3,5-Trimethylbenzene	0.81		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	2.6		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316993
Project Number: 200.00135
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-03
Client ID: 301-Q04-D1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 03/31/23 15:00
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 04/07/23 00:39
Analyst: JIC
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	ND		mg/kg	0.00086	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00086	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00086	0.00025	1
Xylenes, Total	ND		mg/kg	0.00086	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00086	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2316993

Project Number: 200.00135 **Report Date:** 04/07/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 04/04/23 16:31
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1763086-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	113		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2316993

Project Number: 200.00135 **Report Date:** 04/07/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 04/06/23 08:30
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1763652-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY **Lab Number:** L2316993

Project Number: 200.00135 **Report Date:** 04/07/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 04/06/23 17:45
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1763903-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	106		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135

Lab Number: L2316993

Report Date: 04/07/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1763086-3 WG1763086-4								
Methyl tert butyl ether	93		96		66-130	3		30
Benzene	98		100		70-130	2		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	90		90		70-130	0		30
1,2-Dibromoethane	93		94		70-130	1		30
Ethylbenzene	94		94		70-130	0		30
p/m-Xylene	100		100		70-130	0		30
o-Xylene	100		100		70-130	0		30
Isopropylbenzene	94		95		70-130	1		30
1,3,5-Trimethylbenzene	94		96		70-130	2		30
1,2,4-Trimethylbenzene	94		96		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		100		70-130
Toluene-d8	92		90		70-130
4-Bromofluorobenzene	83		84		70-130
Dibromofluoromethane	113		114		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135

Lab Number: L2316993

Report Date: 04/07/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01 Batch: WG1763652-3 WG1763652-4								
Methyl tert butyl ether	110		104		66-130	6		30
Benzene	100		97		70-130	3		30
1,2-Dichloroethane	102		98		70-130	4		30
Toluene	83		82		70-130	1		30
1,2-Dibromoethane	95		91		70-130	4		30
Ethylbenzene	85		84		70-130	1		30
p/m-Xylene	89		88		70-130	1		30
o-Xylene	93		89		70-130	4		30
Isopropylbenzene	80		78		70-130	3		30
1,3,5-Trimethylbenzene	83		81		70-130	2		30
1,2,4-Trimethylbenzene	83		82		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		107		70-130
Toluene-d8	91		91		70-130
4-Bromofluorobenzene	89		91		70-130
Dibromofluoromethane	109		110		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135

Lab Number: L2316993

Report Date: 04/07/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1763903-3 WG1763903-4								
Methyl tert butyl ether	122		121		66-130	1		30
Benzene	115		116		70-130	1		30
1,2-Dichloroethane	116		117		70-130	1		30
Toluene	96		95		70-130	1		30
1,2-Dibromoethane	105		105		70-130	0		30
Ethylbenzene	99		98		70-130	1		30
p/m-Xylene	103		103		70-130	0		30
o-Xylene	104		104		70-130	0		30
Isopropylbenzene	91		92		70-130	1		30
1,3,5-Trimethylbenzene	94		95		70-130	1		30
1,2,4-Trimethylbenzene	95		95		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		106		70-130
Toluene-d8	91		91		70-130
4-Bromofluorobenzene	90		90		70-130
Dibromofluoromethane	109		111		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135
Lab Number: L2316993
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-02 D
Client ID: 301-N02-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/31/23 11:40
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 04/06/23 15:40
Analyst: MG
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/05/23 00:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	29.		mg/kg	0.40	0.24	10
Fluorene	4.0		mg/kg	2.0	0.19	10
Phenanthrene	5.0		mg/kg	1.2	0.24	10
Anthracene	0.62	J	mg/kg	1.2	0.39	10
Pyrene	0.41	J	mg/kg	1.2	0.20	10
Benzo(a)anthracene	ND		mg/kg	1.2	0.22	10
Chrysene	ND		mg/kg	1.2	0.21	10
Benzo(b)fluoranthene	ND		mg/kg	1.2	0.34	10
Benzo(a)pyrene	ND		mg/kg	1.6	0.49	10
Benzo(ghi)perylene	ND		mg/kg	1.6	0.24	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Lab Number: L2316993
Project Number: 200.00135
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-04
Client ID: 301-Q04-D1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 03/31/23 14:40
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 04/05/23 12:56
Analyst: IM
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/05/23 00:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.049		mg/kg	0.040	0.024	1
Fluorene	0.077	J	mg/kg	0.20	0.019	1
Phenanthrene	0.97		mg/kg	0.12	0.024	1
Anthracene	0.26		mg/kg	0.12	0.039	1
Pyrene	1.0		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.59		mg/kg	0.12	0.022	1
Chrysene	0.52		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.58		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.56		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.26		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135
Lab Number: L2316993
Report Date: 04/07/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 04/05/23 07:57
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 04/05/23 00:48

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04 Batch: WG1762794-1					
Naphthalene	ND		mg/kg	0.033	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	74		25-120
Phenol-d6	65		10-120
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	70		30-120
2,4,6-Tribromophenol	75		10-136
4-Terphenyl-d14	77		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135

Lab Number: L2316993

Report Date: 04/07/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04 Batch: WG1762794-2 WG1762794-3								
Naphthalene	63		69		40-140	9		50
Fluorene	65		73		40-140	12		50
Phenanthrene	66		74		40-140	11		50
Anthracene	70		77		40-140	10		50
Pyrene	69		78		35-142	12		50
Benzo(a)anthracene	72		80		40-140	11		50
Chrysene	72		78		40-140	8		50
Benzo(b)fluoranthene	73		80		40-140	9		50
Benzo(a)pyrene	82		89		40-140	8		50
Benzo(ghi)perylene	69		77		40-140	11		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	72		78		25-120
Phenol-d6	66		73		10-120
Nitrobenzene-d5	65		72		23-120
2-Fluorobiphenyl	66		73		30-120
2,4,6-Tribromophenol	76		88		10-136
4-Terphenyl-d14	66		74		18-120

METALS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135
Lab Number: L2316993
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-02
Client ID: 301-N02-D1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 03/31/23 11:40
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.41		mg/kg	2.34	0.125	1	04/05/23 17:34	04/06/23 13:49	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135
Lab Number: L2316993
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-04
Client ID: 301-Q04-D1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 03/31/23 14:40
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	72.7		mg/kg	2.33	0.125	1	04/05/23 17:34	04/06/23 13:52	EPA 3050B	1,6010D	DHL

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135
Lab Number: L2316993
Report Date: 04/07/23

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04 Batch: WG1762100-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	04/05/23 17:34	04/06/23 07:31	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135

Lab Number: L2316993

Report Date: 04/07/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04 Batch: WG1762100-2 SRM Lot Number: D116-540								
Lead, Total	116		-		83-117	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135

Lab Number: L2316993
Report Date: 04/07/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04	QC Batch ID: WG1762100-3					WG1762100-4			QC Sample: L2317033-03		Client ID: MS Sample	
Lead, Total	9.64	44.4	53.0	98		54.7	102		75-125	3		20

INORGANICS
&
MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135
Lab Number: L2316993
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-01
Client ID: 301-N02-D1-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 03/31/23 12:00
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	04/01/23 13:19	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135
Lab Number: L2316993
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-02
Client ID: 301-N02-D1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 03/31/23 11:40
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.0		%	0.100	NA	1	-	04/03/23 09:12	121,2540G	GAG

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135
Lab Number: L2316993
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-03
Client ID: 301-Q04-D1-VOC
Sample Location: PHILADELPHIA, PA
Date Collected: 03/31/23 15:00
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	04/01/23 13:19	121,2540G	ROI

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135
Lab Number: L2316993
Report Date: 04/07/23

SAMPLE RESULTS

Lab ID: L2316993-04
Client ID: 301-Q04-D1-COMP
Sample Location: PHILADELPHIA, PA
Date Collected: 03/31/23 14:40
Date Received: 03/31/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	04/03/23 09:12	121,2540G	GAG

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135

Lab Number: L2316993

Report Date: 04/07/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03 QC Batch ID: WG1761547-1 QC Sample: L2316889-02 Client ID: DUP Sample						
Solids, Total	70.2	72.6	%	3		20
General Chemistry - Westborough Lab Associated sample(s): 02,04 QC Batch ID: WG1761988-1 QC Sample: L2317114-04 Client ID: DUP Sample						
Solids, Total	94.8	94.7	%	0		20

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135

Lab Number: L2316993
Report Date: 04/07/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2316993-01A	Vial MeOH preserved	A	NA		5.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2316993-01B	Vial water preserved	A	NA		5.5	Y	Absent	01-APR-23 06:37	PA-8260H(14),PA-8260HLW(14)
L2316993-01C	Vial water preserved	A	NA		5.5	Y	Absent	01-APR-23 06:37	PA-8260H(14),PA-8260HLW(14)
L2316993-01D	Plastic 120ml unpreserved	A	NA		5.5	Y	Absent		TS(7)
L2316993-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.5	Y	Absent		PB-TI(180)
L2316993-02B	Glass 120ml/4oz unpreserved	A	NA		5.5	Y	Absent		TS(7),PA-PAH(14)
L2316993-03A	Vial MeOH preserved	A	NA		5.5	Y	Absent		PA-8260HLW(14)
L2316993-03B	Vial water preserved	A	NA		5.5	Y	Absent	01-APR-23 06:37	PA-8260HLW(14)
L2316993-03C	Vial water preserved	A	NA		5.5	Y	Absent	01-APR-23 06:37	PA-8260HLW(14)
L2316993-03D	Plastic 120ml unpreserved	A	NA		5.5	Y	Absent		TS(7)
L2316993-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.5	Y	Absent		PB-TI(180)
L2316993-04B	Glass 120ml/4oz unpreserved	A	NA		5.5	Y	Absent		TS(7),PA-PAH(14)

*Values in parentheses indicate holding time in days

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316993
Project Number:	200.00135	**Report Date:**	04/07/23

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316993
Project Number:	200.00135	**Report Date:**	04/07/23

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316993
Project Number:	200.00135	**Report Date:**	04/07/23

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	PHILADELPHIA REFINERY	**Lab Number:**	L2316993
Project Number:	200.00135	**Report Date:**	04/07/23

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW JERSEY CHAIN OF CUSTODY

ALPHA

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 4/1/23

ALPHA Job #: L2316993

Westborough, MA 01581, 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193

Mansfield, MA 02048, 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288

Project Information

Project Name: Philadelphia refinery
Project Location: Philadelphia, PA
Project #: 200.00135
(Use Project name as Project #) ☐
Project Manager: William Schmidt
ALPHAQuote #:

Client Information

Client: Ransom Consulting LLC
Address: 2127 Hamilton Ave, Hamilton NJ 08619
Phone: 609 584 0090
Fax:
Email: William.Schmidt@ransomenv...

Turn-Around Time

Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other ADLX

Billing Information

☐ Same as Client Info
PO #

Regulatory Requirement

☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other State/Fed program

Site Information

Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED: ☐ Category 1 ☐ Category 2

For VOC, selection is REQUIRED: ☐ 1,4-Dioxane ☐ 8011

Other project specific requirements/comments: # Report only project-specific analyte list of PA DEP Leaded/unleaded gasoline and No. 2, 4, 5+6 fuel oil shortlist. Run naphthalene using method 8270 only. Email

Please specify Metals or TAL. Results to add @terraphase.com, william.Schmidt@ransomenv.com, + JTerry@hikeglobal.com

ANALYSIS: VOCs (8260); SVOCs (8270); Lead

Sample Filtration: ☐ Done ☐ Lab to do
Preservation: ☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Sample Specific Comments	Total Bottles
16993-01	301-NO2-D1-VOC	3/31/23	12:00	S	CO	✓				4
02	301-NO2-D1-Comp	↓	11:40	↓	↓		✓	✓		2
03	301-Q04-D1-VOC	↓	1500	↓	↓	✓				4
04	301-Q04-D1-Comp	↓	14:40	↓	↓		✓	✓		2

	VOCs	SVOCs	Lead
Container Type	G	G	G
Preservative	F	A	A

Preservative Code: A = None, B = HCl, C = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, K/E = Zn Ac/NaOH, O = Other

Container Code: P = Plastic, A = Amber Glass, V = Vial, G = Glass, B = Bacteria Cup, C = Cube, O = Other, E = Encore, D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	3/31/23 1535	[signature] AAL	3/31/23 1535
[signature] AAL	3/31/23 1800	[signature] AAL	3/31/23 1800
[signature] AAL	3/31/23 2100	[signature]	3-31-23 2100
[signature]	4/1/23 0010	[signature]	4/1/23 0010
[signature]	4/1/23 0210	[signature]	4/1/23 0210

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

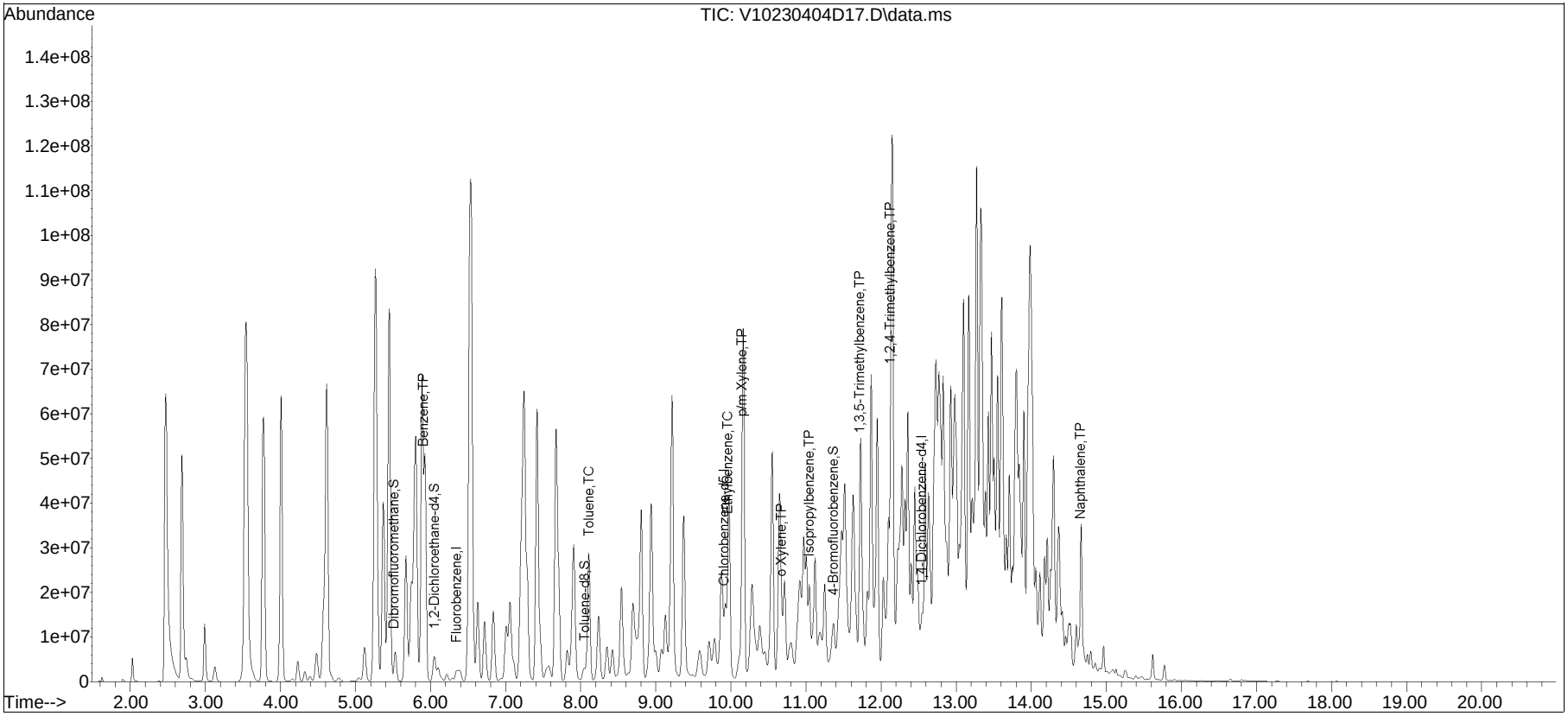
Form No: 01-14 HC (rev. 30-Sept-2013)

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230404D\
Data File : V10230404D17.D
Acq On : 4 Apr 2023 9:48 pm
Operator : VOA110:JIC
Sample : L2316993-01,31,7.23,5,,B
Misc : WG1763086,ICAL19281
ALS Vial : 17 Sample Multiplier: 1

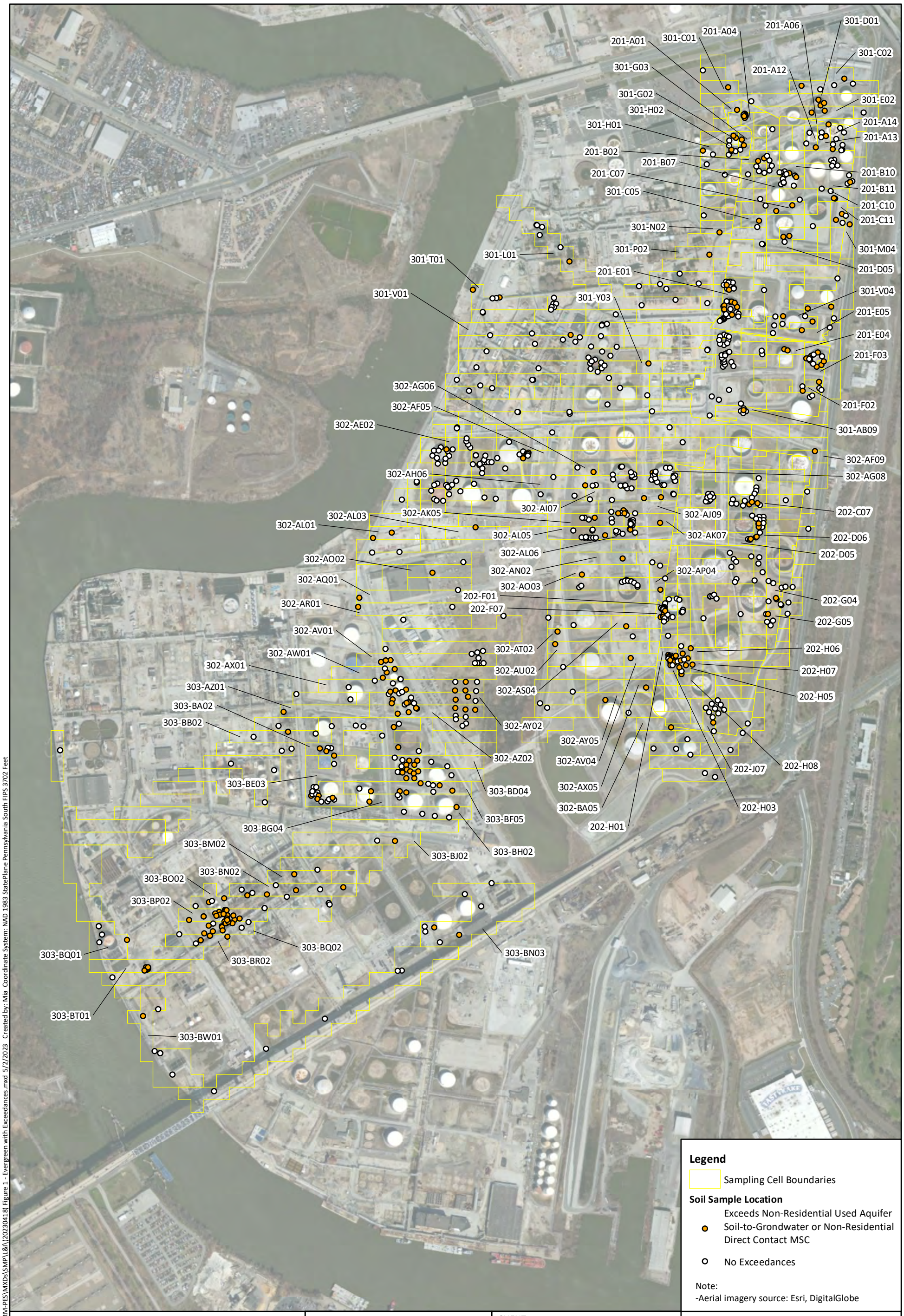
Quant Time: Apr 05 10:33:51 2023
Quant Method : I:\VOLATILES\VOA110\2023\230404D\V110_220822N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Aug 23 09:34:28 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04D\V10230404D01.D•



Appendix B

Historical Soil Sampling Results



File: N:\GIS\Prj\P044.001_PESRM-PES\MXDs\SMP\L&I\(20230418) Figure 1 - Evergreen with Exceedances.mxd 5/2/2023 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Legend

Sampling Cell Boundaries

Soil Sample Location

Exceeds Non-Residential Used Aquifer Soil-to-Grondwater or Non-Residential Direct Contact MSC

No Exceedances

Note:
-Aerial imagery source: Esri, DigitalGlobe

N

0 350 700 1,050 Feet

1 inch = 700 feet

SAFETY FIRST

terraphase engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 4
PROJECT NUMBER:	P044.001.001

Evergreen Locations with Exceedances

FIGURE 1

201-A07
201-A05
201-A11
201-A12
201-A10
201-D01
201-A04
201-A09
201-A08
201-B04
201-B02
301-E02
301-G01
301-F02
301-H01
201-A14
301-I01
201-A13
301-J02
301-K02
201-B12
301-K01
201-B11
301-L02
301-L03
201-B09
301-M02
201-C08
201-C04
201-C07
201-E02
201-B07
201-C06
201-F01
201-E01
301-V02
201-E05
301-AA05
201-F03
301-AC04
201-F02
302-AF06
201-F04
202-F04
202-E09
202-E08
202-F08
302-AV01
202-F07
302-AW01
202-J07
303-BD04
302-BB07
303-BG04
303-BE03
303-BH02
303-BJ01
303-BK03
303-BO02
303-BL02
303-BP02
Tank Group 07A
303-BQ02
303-BT01

Legend

Sampling Cell Boundaries

Tank Group

02
03
04
05
06
07
08

Soil Sample Location

Exceeds Non-Residential Used Aquifer Soil-to-Grondwater or Non-Residential Direct Contact MSC

No Exceedances

Note:
-Aerial imagery source: Esri, DigitalGlobe

N

0 350 700 1,050 Feet

1 in = 700 ft

SAFETY FIRST

terraphase engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 4
PROJECT NUMBER:	P044.001.001

Aboveground Storage Tank and Act 2 Locations with Exceedances

FIGURE 2

File: N:\GIS\Prj\P044.001_PESRM-PES\MXDs\SMP\L&I\(20230418) Figure 2 - AST and Act 2 with Exceedances.mxd 5/2/2023 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Appendix C

Data Usability Summary

Table 1a
Quality Control Checklist
Area 1
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

	Keyfile-Related		EDD-Related											
							Multiple Results						Check for	
SDG	Check Lab Login and Keyfile	Check COC/Field Notes	Check Sample IDs and Prepping	Check Analyte List Reported	Review EDD for Issues	Check Dates, Matrix and Sample Type	Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other	Resolved	Concerning Qualifiers	Comments
L2259023	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2259352	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2259629	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2259629-01 (302-AK02-C1-VOC): VOCs reported for two runs. The IS response for 1,4-dichlorobenzene-d4 (49%) was below the acceptance criteria; however, re-analysis achieved the following results: fluorobenzene (33%), chlorobenzened5 (39%), and 1,4-dichlorobenzene-d4 (42%). If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
L2259963	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2259963-13 (302-AI04-C3-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable. L2259963-15 (302-AI04-C4-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
L2260275	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2260275-03 (302-AI03-C2-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.
L2260619	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2260828	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2261133	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2261828	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2261829	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2262133	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2262428	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2262688	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2262976	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2263290	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2263290-13 (302-AI02-C4-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
L2263601	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	

Table 1b
Quality Control Checklist
Area 2
Former Philadelphia Refinery, Philadelphia, PA

	Keyfile-Related		EDD-Related											
							Multiple Results						Check for	
SDG	Check Lab Login and Keyfile	Check COC/Field Notes	Check Sample IDs and Prepping	Check Analyte List Reported	Review EDD for Issues	Check Dates, Matrix and Sample Type	Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other	Resolved	Concerning Qualifiers	Comments
L2316183	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2316479	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
L2316771	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2316771-05 (301-O02-D1-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis; however, since the IS response was above method criteria, all associated compounds are considered to have a potentially low bias. If the surrogate recoveries for one run are within acceptance criteria and the other run has 3-4 surrogates outside of acceptance criteria, the run with surrogate recoveries within acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable.
L2316993	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2316993-01 (301-N02-D1-VOC): VOCs reported for two runs. The internal standard (IS) response for fluorobenzene (292%) and the surrogate recoveries for dibromofluoromethane (47%) and 4-bromofluorobenzene (521%) were outside the acceptance criteria in the low-level analysis due to obvious interferences. Since the IS response was above method criteria, all associated compounds are considered to have a potentially low bias. If the surrogate recoveries for one run are within acceptance criteria and has some detections and the other run has 1-2 surrogates outside of acceptance criteria, the run with surrogate recoveries within acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable.

Table 2
Quality Control Methodology
Former Philadelphia Refinery, Philadelphia, PA

Multiple VOC Runs Data Quality	Solution
If the surrogate recoveries for one run are **within acceptance criteria** and the other run has **3-4 surrogates outside of acceptance criteria**:	The run with surrogate recoveries within acceptance criteria is selected as reportable.
If the surrogate recoveries for one run are **within acceptance criteria** and has some **detections** and the other run has **1-2 surrogates outside of acceptance criteria**:	The run with surrogate recoveries within acceptance criteria is selected as reportable.
If one run has surrogate recoveries **within acceptance critera** but is **non-detect** and the other run has **1-2 surrogates outside of acceptance** criteria but has **detections**:	The run with detections is selected as reportable and the run with non-detects is not reported.
If both runs have **detections** and **surrogate recoveries outside of acceptance criteria**:	The run with more surrogates recoveries outside acceptance criteria is not reported and the run with fewer surrogate recoveries outside of acceptance criteria is selected as reportable.
If one run has surrogate recoveries **outside of acceptance critera** but is **non-detect** and the other run has **1-2 more surrogates outside of acceptance** criteria but has **detections**:	The run with detections is selected as reportable and the run with non-detects is not reported.
If both runs have the **same number of surrogates** with recovery outside the acceptance criteria:	If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
If two VOC runs are reported and there are no QC issues for both runs:	If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.

Appendix D

Waste Material Identification and Notification Procedure

Waste Material Identification and Notificaiton Procedure

During mass grading activities at the former Philadelphia Refinery, there is the potential for previously unidentified waste materials to be encountered. This document describes the procedures for identifying non-soil waste material and notifying the appropriate parties, so that assessment and remediation activities can be conducted, as needed. These procedures will be applied during earthwork being conducted as part of the redevelopment of the former Philadelphia Refinery located at 3144 W Passyunk Avenue, Philadelphia, Pennsylvania (the Site). An Environmental Professional will be on site to observe soil movement and document that soil is placed in accordance with the results of pre-characterization samples collected under the site-specific Soil Management Plan dated June 15, 2020. The non-soil, waste-like material covered in these procedures includes leaded tank bottoms and containerized waste.

1. Waste Material Identification

Non-soil waste will be identified based on visual observation.

1.1 Leaded Tank Bottoms

Leaded tank bottoms are the sediment, dirt and petroleum byproducts that accumulated at the bottom of storage tanks used to store leaded gasoline. As this site is a former petroleum refining facility, leaded tank bottoms may be present in soil from historical spillage occurring during the cleaning operations of leaded gasoline tanks.

Leaded tank bottom materials encountered at the site have been described by Evergreen as rust/red to black, metallic, mostly oxidized scale materials, sometimes in a matrix of petroleum wax sludge. If material matching this description is encountered, the Environmental Professional will follow the notification procedures described in Section 2.

The contractor shall leave the materials in place pending further characterization and direction from Ownership.

1.2 Containerized Waste

The most common example of a waste container is a 55-gallon steel drum. If drums or containers with unknown contents are identified, on-site personnel will be directed to leave the area, and the general contractor's site safety officer will be notified to determine next steps. Once the site safety officer has confirmed that the drums or containers are not immediately dangerous to life or health, the drums may be further evaluated by the general contractor or earthwork contractor with observation by the Environmental Professional to determine if the drums are empty. Care will be taken during the evaluation to avoid damaging the drums or spilling their (potential) contents. If the drums are determined to be empty, they will be removed and disposed of as construction/demolition debris. If the

drums are not empty, the Environmental Professional will follow the notification procedures described in Section 2.

The contractor shall leave the materials in place pending further characterization and direction from Ownership.

2. Notification

The Environmental Professional will notify the Senior Project Manager immediately upon identifying either (1) material matching the description of leaded tank bottoms or (2) drums that are not empty. The Senior Project Manager will then notify Joseph Jeray of HRP via telephone and send email notification to Joseph Jeray and Julianna Connolly of HRP with a map showing the approximate location of the observation, photos showing what was observed, and a brief narrative providing the date, time, location, and depth relative to the original (pre-construction grade) of the observation. Contact information for the HRP representatives is provided below.

- Joseph Jeray, PE

  Vice President, Environmental Remediation

  (978) 729-3209 (c)

  jjeray@hilcoglobal.com
- Julianna Connolly

  Executive Vice President, Environmental Remediation

  jconnolly@hilcoglobal.com

  617-240-8695 (c)

After reviewing the information, HRP will notify Evergreen Resources Management Operations, a series of Evergreen Resources Group, LLC (Evergreen) of the observation.