

FINAL

Soil Management Plan Addendum No. 5

Former Philadelphia Energy Solutions Refinery
3144 West Passyunk Avenue, Philadelphia, PA

Prepared for

Philadelphia Energy Solutions Refining and Marketing LLC

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July 2023

Project Number P044.001.001



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Acronyms and Abbreviations

Act 2	Land Recycling and Environmental Remediation Standards Act
AST	aboveground storage tank
B(a)A	benzo(a)anthracene
B(a)P	benzo(a)pyrene
B(b)F	benzo(b)fluoranthene
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
<i>Plan</i>	<i>Soil Management Plan</i>
<i>Plan Addendum</i>	<i>Soil Management Plan Addendum No. 5</i>
Site	3144 West Passyunk Avenue, Philadelphia, PA
SHS	Statewide Health Standard(s)
SMP	Soil Management Plan
SSS	Site-specific standard(s)
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. 5 (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**). The areas sampled and discussed in this *Plan Addendum* are located in the former Point Breeze North Yard in the northern portion of the Site as shown on **Figure 1.2**. Additional soil samples were collected in this area since the submittal of the *Soil Management Plan (SMP) Addendum No. 1* (Terraphase 2022b), which documented previous sampling in this portion of the Site. 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 in support of the SMP is documented in a series of SMP Addenda:

- *Soil Management Plan Addendum No. 1* (Terraphase 2021b);
- *Soil Management Plan Addendum No. 2* (Terraphase 2022a);
- *Soil Management Plan Addendum No. 3* (Terraphase 2022b); and
- *Soil Management Plan Addendum No. 4* (Terraphase 2023).

The conclusions of the prior SMP Addenda are incorporated into this *Plan Addendum* to provide a comprehensive summary of soil management requirements based upon sampling completed 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 recent soil sampling not previously reported in the Addenda. This *Plan Addendum* summarizes additional sampling performed to account for changes in cut and fill volumes based on a March 2023 revision to the June 2021 mass grading plan for the Point Breeze North Yard.

Additional phases of sampling will be conducted within 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 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.



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 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 northern portion of the former refinery (**Figure 1.2**). Section 4 of this *Plan Addendum* includes soil categorizations and associated volumes for all areas of the Site 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 innovation campus with ancillary rail infrastructure, energy infrastructure, marine capabilities, and commercial uses. The recently sampled areas described in this *Plan Addendum* include approximately 150 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 the 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 the Site-Specific Standard (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. 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 use restrictions will be documented in one or more environmental covenants. These features can be used to attain the SHS or SSS under Act 2 for soil at the Site. **Table 1.1** lists examples of anticipated development components and the functions they will serve to attain 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 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 medium specific concentrations (MSC) 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 for which soil sampled under the SMP was characterized. 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 of this *Addendum* 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 area identified as Area 1 on **Figure 1.2**. From May 1, 2023 to May 25, 2023, soil sampling was conducted in Area 1 to characterize the concentrations of site-specific substances in soil that is now part of the anticipated cut based on a March 2023 revision to the June 2021 grading plan². The sampling previously performed in the Point Breeze North Yard, which encompasses Area 1, was based on the June 2021 grading plan and documented in the *SMP Addendum No. 1* (Terraphase 2021b). The revised grading plan includes additional cut area as well as deeper cut than was envisioned by the previous June 2021 version of the grading plan. This resulted in an additional anticipated cut volume of 265,600 cubic yards (yd³)³. This Plan Addendum documents the prior sampling results presented in the *SMP Addendum No. 1* (Terraphase 2021b), as well as the additional May 2023 soil sampling results targeted to characterize the additional anticipated cut as a result of the revised grading plan. In portions where shallower soil was previously characterized, the additional samples collected were targeted towards the new, deeper cut intervals. Cells previously categorized as “E” where additional deeper cut is proposed were not subject to additional soil sampling. The total volume of cut in these cell areas will be managed as “E” category.

Soil to be cut from Area 1 was divided into cells with one composite⁴ sample 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 yd³ and to have these samples analyzed for the site-specific list of substances. Overall, Area 1 was discretized into 67 two-dimensional cell areas⁵. 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 yd³. 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 (i.e., 265,600 yd³) this resulted in 147 cells (~1,800 yd³ per cell on average). Of the proposed soil samples, 143 were collected. The remaining 4 samples (8,500 yd³) were not collected due to the presence of railroad spurs that run through the Site. The area of the railroad spurs and locations of the cells that were not sampled are shown on **Figure 1.2**. Soil excavated from the railroad spurs during redevelopment 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 yd³ in accordance

² Approximately 8,500 yd³ of soil in Area 1 could not be safely sampled during the May 2023 sampling event due to the presence of railroad spurs. This soil will be sampled at a later date and will be summarized in a Plan Addendum.

³ The additional proposed cut volume between the June 2021 and the revised March 2023 grading plans is a result of the variation in vertical and horizontal extents between the former and revised grading plans. The cut extent from the former grading plan does not completely fall within the cut extent proposed in the revised grading plan. Thus, the amount of additional cut is greater than the difference in the revised and former cut (683,294 CY – 585,447 CY = 97,847 CY).

⁴ Samples for analysis of metals and SVOCs were collected as composite samples. Samples for analysis of VOCs were collected as discrete samples.

⁵ The program proposed additional sampling within 67 two-dimensional cell areas but only 61 cells were sampled. Four of the 67 cell areas were previously categorized as “E” (i.e., LS-E-B01, LS-E-301, LS-E-F02, LS-E-G01) and therefore, were not subject to additional soil sampling. Two of the 67 cell areas (i.e., LS-A-E01, LS-A-F02) were not sampled due to the presence of railroad spurs.



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.

Four soil borings were completed within each cell. Soil from each boring was used to generate the material for each composite sample. As shown on **Figure 2.1**, a total of 244 soil borings⁶ were installed across Area 1. Each boring was assigned a target depth interval for sampling based on the depth of cut planned at that location. The cells, which were used to discretize the development area, were identified by region (e.g., LS-A, LS-B, or LS-E) and cell letter/number (e.g., A01). Regions were designated as “LS-E” if the shallower cut was previously categorized as “E” (based on the June 2021 grading plan as documented in the *SMP Addendum No. 1*), “LS-B” if the shallower cut was previously categorized as “B”, or “LS-A” if the shallower cut was previously categorized as “A” or if soil in the area was subject to additionally proposed cut. The two-dimensional cell boundaries for the cut soil samples are shown on **Figure 2.2**.

2.2 Sample Collection Methods

Ransom Consulting, LLC (Ransom) was retained by PESRM to conduct soil sampling. Using a direct push drill rig, four soil borings (designated -a, -b, -c, and -d)⁷ were advanced in each cell to a depth specific to the approximate depth of cut planned at the location of each boring. To characterize the chemical concentrations in each 2,000 yd³ 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 8270⁸, and lead via USEPA Method 6010/6020.

⁶ 252 soil borings were proposed but only 244 borings were installed given the presence of the railroad spurs.

⁷ Where characterizing additional cut based on the March 2023 revision located below previously characterized cut, new soil boring locations were advanced, rather than returning to previous boring locations.

⁸ 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 SHS MSCs 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 3.1** and **3.2** 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 3.1** and **3.2**, respectively. Overall, 143 discrete and 143 composite soil samples were collected from the cut cells in Area 1 and analyzed for VOCs and SVOCs/lead, respectively. Benzo(a)anthracene (B(a)A), benzo(a)pyrene (B(a)P), benzo(b)fluoranthene (B(b)F), and lead were detected at concentrations above the Non-Residential Direct Contact MSC for soil in these cut samples.

- B(a)A was detected in 136 of the 143 samples at concentrations ranging from 0.029 to 200 milligram per kilogram (mg/kg). The average detected concentration was 4.4 mg/kg. Of the 136 samples with detected concentrations of B(a)A, as shown on **Table 3.2**, two exhibited concentrations greater than the Non-Residential Direct Contact MSC of 130 mg/kg.
- B(a)P was detected in 118 of the 143 samples at concentrations ranging from 0.074 to 190 mg/kg. The average detected concentration was 4.2 mg/kg. Of the 118 samples with detected concentrations of B(a)P, as shown on **Table 3.2**, one exhibited a concentration greater than the Non-Residential Direct Contact MSC of 91 mg/kg.
- B(b)F was detected in 124 of the 143 samples at concentrations ranging from 0.034 to 200 mg/kg. The average detected concentration was 4.6 mg/kg. Of the 124 samples with detected concentrations of B(b)F, as shown on **Table 3.2**, two exhibited concentrations greater than the Non-Residential Direct Contact MSC of 76 mg/kg.
- Lead was detected in 143 of the 143 samples at concentrations ranging from 3.5 to 18,000 mg/kg. The average detected concentration was 440 mg/kg. Of the 143 samples with detected concentrations, as shown on **Table 3.2**, five exhibited concentrations greater than the Non-Residential Direct Contact MSC of 1,000 mg/kg.
- Overall, six samples (4 percent) exhibited concentrations greater than the Non-Residential Direct Contact MSCs.

Within these cut cells, three VOCs (i.e., benzene, ethyl benzene, toluene), three SVOCs (B(a)P, B(b)F, naphthalene), and lead were detected at concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC.

- Benzene was detected in 78 of the 143 samples at concentrations ranging from 0.00017 to 28 mg/kg. The average detected concentration was 0.6 mg/kg. Of the 78 detected concentrations of



benzene, as shown on **Table 3.1**, 10 exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 0.5 mg/kg.

- Ethyl benzene was detected in 70 of the 143 samples at concentrations ranging from 0.00012 to 160 mg/kg. The average detected concentration was 2.5 mg/kg. Of the 70 samples with detected concentrations, as shown on **Table 3.1**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 70 mg/kg.
- Toluene was detected in 59 of the 143 samples at concentrations ranging from 0.00053 to 250 mg/kg. The average detected concentration was 4.5 mg/kg. Of the 59 samples with detected concentrations, as shown on **Table 3.1**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 100 mg/kg.
- B(a)P was detected in 118 of the 143 samples at concentrations ranging from 0.074 mg/kg to 190 mg/kg. The average detected concentration was 4.2 mg/kg. Of the 118 samples with detected concentrations, as shown on **Table 3.2**, two exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 46 mg/kg.
- B(b)F was detected in 124 of the 143 samples at concentrations ranging from 0.034 to 200 mg/kg. The average detected concentration was 4.6 mg/kg. Of the 124 samples with detected concentrations, as shown on **Table 3.2**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 170 mg/kg.
- Naphthalene was detected in 119 of the 143 samples at concentrations ranging from 0.022 to 61 mg/kg. The average detected concentration was 1.9 mg/kg. Of the 119 samples with detected concentrations, as shown on **Table 3.2**, three exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 25 mg/kg.
- Of the 143 samples with detected concentrations of lead, as shown on **Table 3.2**, 16 exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 450 mg/kg.
- Overall, 28 samples (20 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 results⁹, and soil sampling results performed to assess conditions as part of RCRA Clean Closure of former hazardous waste storage areas were also

⁹ 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.



considered in determining soil re-use categories. Figures presenting the spatial distribution of chemicals identified in **Table 1.3** with concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater or Non-Residential Direct Contact MSCs in soil samples reported by Evergreen or collected in support of AST closure and RCRA Clean Closure are included in **Appendix B**.

As shown in **Table 3.3**, the concentrations for each target analyte from the historical, AST, and RCRA Clean Closure samples were summarized and averaged for each cell. These averages were compared against the non-residential MSCs used to support this program (Section 1.2.3). Within the development area planned for soil regrading, benzene and lead were detected in historical, AST, or RCRA Clean Closure soil samples at concentrations greater than the non-residential MSCs. As summarized in **Table 3.3**, benzene was identified at concentrations greater than non-residential MSCs in historical, AST, or RCRA Clean Closure samples within eight cut cells (i.e., LS-A-E01, LS-A-E04, LS-A-F01, LS-A-F02, LS-A-G01, LS-B-E01, LS-B-H02, LS-E-B01) and lead was identified at concentrations greater than non-residential MSCs within seven cut cells (i.e., LS-A-A01, LS-A-A03, LS-A-E04, LS-A-F02, LS-B-E01, LS-B-G02, LS-E-B01).

These historical, AST, and RCRA Clean Closure sampling results were considered in assigning soil categories to each cell. Aside from LS-A-E01 and LS-A-F02, which PESRM does not plan to characterize due to the presence of railroad spurs, five cells were recategorized based on these results. The one cell originally categorized as B was recategorized as E. Four cells originally categorized as A were recategorized as B.

Cell	Original Category	Recategorization	Chemical Driver
LS-A-A03	B	E	Lead
LS-A-F01	A	B	Benzene
LS-A-G01	A	B	Benzene
LS-B-G02	A	B	Lead
LS-B-H02	A	B	Benzene

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 (**Figure 2.2**) were used to visualize the aerial extent of soil that will be managed in accordance with these categories.

Figure 3.1 presents the results of the soil categorization for the cut material. As illustrated, a large portion of the development in Area 1 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 six cells in Area 1 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 B(a)P, B(a)A, B(b)F, naphthalene, and lead.

As illustrated on **Figure 3.1**, an additional 21 cells in Area 1 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 benzene, ethyl benzene, naphthalene, toluene, and lead.

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 RCRA Clean Closure 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. The volume of soil associated with each category “A”, “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 the Point Breeze North Yard portion of the proposed development was revised in March 2023. The volumes in **Table 4.1** and the table below reflect the anticipated cut volumes based on the updated grading plan.



Soil Management Category	Previous Volume (yd ³)	Updated Volume (yd ³)
Industrial Development Phase 1¹⁰		
A	1,819,300	1,602,900
B	779,100	726,000
E	186,600	143,600
Not Yet Categorized	34,600	34,500
Total	2,819,600	2,507,000
Innovation Campus¹¹		
A	446,700	394,600
B	90,400	173,600
E	48,400	106,200
Not Yet Categorized	--	8,900
Total	585,400	683,300

The earthwork contractor will excavate and segregate the category “A”, “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*.

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.

¹⁰ Previous volumes are based on the October 2021 and March 2022 grading plans for the Industrial Development Phase 1 area. The updated volumes are based on a February 2023 revision to the grading plan for this area.

¹¹ The previous volumes are updated from *SMP Addendum No. 1* based on the November 2021 MSCs.



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.

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Tables

- 1.1 Development Component Functions
- 1.2 Soil Reuse Categories
- 1.3 Target Analyte List and Associated Soil Cleanup Standards
- 3.1 Cut Soil Discrete Analytical Results – Volatile Organic Compounds
- 3.2 Cut Soil Composite Analytical Results – Polycyclic Aromatic Hydrocarbons and Lead
- 3.3 Historical and PESRM Sampling Results Summary
- 4.1 Bulk Soil Movement and Placement, Soil Reuse Categories and Volume Estimate



Table 1.1

Development Component Functions

Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Development Component	Exposure Barrier	Impervious Barrier
<i>Surface Soil Layer</i> 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 demonstrate attainment of the Site-specific standard.	X	
<i>Building Slab</i> Minimum section will consist of 4 inches of concrete over 4 inches of aggregate subbase.	X	X
<i>Parking Lot</i> Minimum section will consist of 3.75 inches of concrete or asphalt over 4 inches of aggregate subbase.	X	X
<i>Roadway</i> Minimum section will consist of 5 inches of concrete and/or asphalt over 4 inches of aggregate subbase.	X	X
<i>Drive Aisle</i> 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. 5

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. 5**

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 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-A01-a	LS-A-A01-b	LS-A-A01-b	LS-A-A02-b	LS-A-A02-c	LS-A-A03-b	LS-A-A03-c	LS-A-A04-b	LS-A-A04-d	LS-A-A05-a	LS-A-A05-a
Cell	Soil Direct Contact	Soil to	LS-A-A01	LS-A-A01	LS-A-A01	LS-A-A02	LS-A-A02	LS-A-A03	LS-A-A03	LS-A-A04	LS-A-A04	LS-A-A05	LS-A-A05
Field Sample ID	Numeric Value	Groundwater	LS-A-A01-C1-VOC	LS-A-A01-C2-VOC	LS-A-A01-C3-VOC	LS-A-A02-C1-VOC	LS-A-A02-C2-VOC	LS-A-A03-C1-VOC	LS-A-A03-C2-VOC	LS-A-A04-C1-VOC	LS-A-A04-C2-VOC	LS-A-A05-C1-VOC	LS-A-A05-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.3 - 0.5	0.8 - 0.9	1.2 - 1.4	0.3 - 0.5	0.9 - 1.1	0.3 - 0.5	1.1 - 1.2	0.3 - 0.5	1.5 - 1.7	0.6 - 0.8	2.3 - 2.4
Sample Date	(mg/kg)	(mg/kg)	45047	45047	45047	45047	45047	45047	45047	45047	45047	45047	45047
VOCs													
Benzene	280	0.5	U (0.00049)	U (0.00053)	0.00028 J (0.00071)	0.00017 J (0.00049)	0.00032 J (0.00064)	U (0.00045)	U (0.00047)	0.0094 (0.00042)	U (0.00044)	U (0.00068)	0.0002 J (0.00061)
Cumene	10000	2500	U (0.00098)	U (0.0011)	U (0.0014)	U (0.00098)	U (0.0013)	U (0.0009)	U (0.00094)	U (0.00085)	0.0002 J (0.00088)	U (0.0014)	0.00025 J (0.0012)
1,2-Dibromoethane	3.7	0.005	U (0.00049)	U (0.00053)	U (0.00071)	U (0.00049)	U (0.00064)	U (0.00045)	U (0.00047)	U (0.00042)	U (0.00044)	U (0.00068)	U (0.00061)
1,2-Dichloroethane	85	0.5	U (0.00098)	U (0.0011)	U (0.0014)	U (0.00098)	U (0.0013)	U (0.0009)	U (0.00094)	U (0.00085)	U (0.00088)	U (0.0014)	U (0.0012)
Ethyl Benzene	880	70	U (0.00098)	U (0.0011)	U (0.0014)	U (0.00098)	U (0.0013)	U (0.0009)	U (0.00094)	U (0.00085)	0.00012 J (0.00088)	U (0.0014)	0.0003 J (0.0012)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.0021)	U (0.0028)	U (0.002)	U (0.0026)	U (0.0018)	U (0.0019)	U (0.0017)	U (0.0018)	U (0.0027)	U (0.0024)
Toluene	10000	100	U (0.00098)	U (0.0011)	U (0.0014)	U (0.00098)	0.00072 J (0.0013)	U (0.0009)	U (0.00094)	U (0.00085)	U (0.00088)	U (0.0014)	U (0.0012)
1,2,4-Trimethylbenzene	4700	300	U (0.002)	U (0.0021)	U (0.0028)	U (0.002)	0.00052 J (0.0026)	U (0.0018)	U (0.0019)	U (0.0017)	U (0.0018)	U (0.0027)	U (0.0024)
1,3,5-Trimethylbenzene	4700	93	U (0.002)	U (0.0021)	U (0.0028)	U (0.002)	0.0011 J (0.0026)	U (0.0018)	U (0.0019)	U (0.0017)	U (0.0018)	U (0.0027)	U (0.0024)
Xylenes (total)	7900	1000	U (0.002)	U (0.0021)	U (0.0028)	U (0.002)	0.00182 J (0.0026)	U (0.0018)	U (0.0019)	U (0.0017)	U (0.0018)	U (0.0027)	U (0.0024)

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 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-B01-b	LS-A-B01-c	LS-A-B02-c	LS-A-B03-a	LS-A-C01-a	LS-A-C01-c	LS-A-C02-a	LS-A-C02-b	LS-A-C03-c	LS-A-C03-d	LS-A-C04-c
Cell	Soil Direct Contact	Soil to	LS-A-B01	LS-A-B01	LS-A-B02	LS-A-B03	LS-A-C01	LS-A-C01	LS-A-C02	LS-A-C02	LS-A-C03	LS-A-C03	LS-A-C04
Field Sample ID	Numeric Value	Groundwater	LS-A-B01-C2-VOC	LS-A-B01-C1-VOC	LS-A-B02-C1-VOC	LS-A-B03-C1-VOC	LS-A-C01-C2-VOC	LS-A-C01-C1-VOC	LS-A-C02-C1-VOC	LS-A-C02-C2-VOC	LS-A-C03-C1-VOC	LS-A-C03-C2-VOC	LS-A-C04-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.1 - 2.3	0.6 - 0.8	0.9 - 1.1	1.8 - 2.0	1.4 - 1.5	0.5 - 0.6	0.8 - 0.9	1.4 - 1.5	1.1 - 1.2	2.9 - 3.0	1.4 - 1.5
Sample Date	(mg/kg)	(mg/kg)	45047	45047	45048	45048	45048	45048	45048	45048	45048	45048	45048
VOCs													
Benzene	280	0.5	0.12 (0.044)	0.00035 J (0.00069)	U (0.00044)	0.0079 (0.00044)	U (0.00044)	U (0.0007)	U (0.00057)	U (0.00059)	0.12 (0.026)	U (0.028)	U (0.00048)
Cumene	10000	2500	0.089 (0.088)	U (0.0014)	U (0.00088)	0.002 (0.00088)	0.00053 J (0.00088)	U (0.0014)	U (0.0011)	0.023 (0.0012)	3.6 (0.052)	3.4 (0.057)	U (0.00097)
1,2-Dibromoethane	3.7	0.005	U (0.044)	U (0.00069)	U (0.00044)	U (0.00044)	U (0.00044)	U (0.0007)	U (0.00057)	U (0.00059)	U (0.026)	U (0.028)	U (0.00048)
1,2-Dichloroethane	85	0.5	U (0.088)	U (0.0014)	U (0.00088)	U (0.00088)	U (0.00088)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.052)	U (0.057)	U (0.00097)
Ethyl Benzene	880	70	0.11 (0.088)	0.00025 J (0.0014)	U (0.00088)	0.00082 J (0.00088)	U (0.00088)	U (0.0014)	U (0.0011)	U (0.0012)	0.14 (0.052)	0.015 J (0.057)	U (0.00097)
Methyl tert-butyl ether	8500	2	U (0.18)	U (0.0028)	U (0.0018)	U (0.0018)	U (0.0018)	U (0.0028)	U (0.0023)	U (0.0024)	U (0.1)	U (0.11)	U (0.0019)
Toluene	10000	100	0.12 (0.088)	0.0034 (0.0014)	U (0.00088)	0.0014 (0.00088)	U (0.00088)	U (0.0014)	U (0.0011)	U (0.0012)	0.073 (0.052)	0.034 J (0.057)	U (0.00097)
1,2,4-Trimethylbenzene	4700	300	0.92 (0.18)	U (0.0028)	U (0.0018)	0.00048 J (0.0018)	U (0.0018)	U (0.0028)	U (0.0023)	0.00071 J (0.0024)	1.5 (0.1)	U (0.11)	U (0.0019)
1,3,5-Trimethylbenzene	4700	93	0.46 (0.18)	U (0.0028)	U (0.0018)	0.0005 J (0.0018)	U (0.0018)	U (0.0028)	U (0.0023)	U (0.0024)	0.12 (0.1)	0.015 J (0.11)	U (0.0019)
Xylenes (total)	7900	1000	0.3 J (0.18)	0.00128 J (0.0028)	U (0.0018)	0.00315 J (0.0018)	U (0.0018)	U (0.0028)	U (0.0023)	0.0051 J (0.0024)	0.29 J (0.1)	0.46 J (0.11)	U (0.0019)

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 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-C05-b	LS-A-D01-b	LS-A-D01-b	LS-A-D01-c	LS-A-D01-d	LS-A-D02-c	LS-A-D02-c	LS-A-D02-c	LS-A-D02-c	LS-A-D02-c	LS-A-D03-a	LS-A-D03-b
Cell	Soil Direct Contact	Soil to	LS-A-C05	LS-A-D01	LS-A-D01	LS-A-D01	LS-A-D01	LS-A-D02	LS-A-D02	LS-A-D02	LS-A-D02	LS-A-D02	LS-A-D03	LS-A-D03
Field Sample ID	Numeric Value	Groundwater	LS-A-C05-C1-VOC	LS-A-D01-C3-VOC	LS-A-D01-C4-VOC	LS-A-D01-C2-VOC	LS-A-D01-C1-VOC	LS-A-D02-C1-VOC	LS-A-D02-C2-VOC	LS-A-D02-C2-VOC	LS-A-D02-C3-VOC	LS-A-D02-C4-VOC	LS-A-D03-C2-VOC	LS-A-D03-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.9 - 1.1	2.7 - 2.9	3.5 - 3.7	2.1 - 2.3	2.1 - 2.2	0.3 - 0.5	0.8 - 0.9	1.2 - 1.4	1.7 - 1.8	1.7 - 1.8	1.7 - 1.8	0.6 - 0.8
Sample Date	(mg/kg)	(mg/kg)	45049	45069	45069	45069	45069	45049	45049	45049	45049	45049	45049	45049
VOCs														
Benzene	280	0.5	0.34 (0.028)	U (0.00048)	1.4 (0.029)	0.89 (0.033)	0.032 (0.025)	0.00029 J (0.00048)	0.0026 (0.00061)	0.00038 J (0.00048)	0.0014 (0.00047)	0.00081 (0.00046)	0.00036 J (0.00045)	
Cumene	10000	2500	1.6 (0.056)	U (0.00095)	1 (0.058)	1.1 (0.065)	0.59 (0.05)	U (0.00096)	0.00049 J (0.0012)	0.00022 J (0.00096)	0.00051 J (0.00094)	0.0022 (0.00091)	0.025 (0.00089)	
1,2-Dibromoethane	3.7	0.005	U (0.028)	U (0.00048)	U (0.029)	U (0.033)	U (0.025)	U (0.00048)	U (0.00061)	U (0.00048)	U (0.00047)	U (0.00046)	U (0.00045)	
1,2-Dichloroethane	85	0.5	U (0.056)	U (0.00095)	U (0.058)	U (0.065)	U (0.05)	U (0.00096)	U (0.0012)	U (0.00096)	U (0.00094)	U (0.00091)	U (0.00089)	
Ethyl Benzene	880	70	0.24 (0.056)	U (0.00095)	0.33 (0.058)	1.3 (0.065)	0.019 J (0.05)	U (0.00096)	U (0.0012)	U (0.00096)	0.0003 J (0.00094)	0.00016 J (0.00091)	0.00018 J (0.00089)	
Methyl tert-butyl ether	8500	2	U (0.11)	U (0.0019)	U (0.12)	U (0.13)	U (0.1)	U (0.0019)	U (0.0024)	U (0.0019)	U (0.0019)	U (0.0018)	U (0.0018)	
Toluene	10000	100	0.13 (0.056)	U (0.00095)	0.54 (0.058)	0.35 (0.065)	0.033 J (0.05)	U (0.00096)	0.00086 J (0.0012)	U (0.00096)	U (0.00094)	0.00077 J (0.00091)	0.00093 (0.00089)	
1,2,4-Trimethylbenzene	4700	300	1.5 (0.11)	0.00036 J (0.0019)	10 (0.12)	2.9 (0.13)	0.034 J (0.1)	U (0.0019)	0.0006 J (0.0024)	U (0.0019)	0.00031 J (0.0019)	U (0.0018)	U (0.0018)	
1,3,5-Trimethylbenzene	4700	93	0.52 (0.11)	U (0.0019)	0.24 (0.12)	0.051 J (0.13)	U (0.1)	U (0.0019)	0.00064 J (0.0024)	0.00024 J (0.0019)	0.00061 J (0.0019)	0.00018 J (0.0018)	U (0.0018)	
Xylenes (total)	7900	1000	1.55 J (0.11)	U (0.0019)	2.2 J (0.12)	1.08 J (0.13)	0.192 J (0.1)	U (0.0019)	0.00178 J (0.0024)	U (0.0019)	0.00137 J (0.0019)	0.00408 J (0.0018)	0.00128 J (0.0018)	

Notes:

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 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 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-D04-c	LS-A-D04-c	LS-A-D04-c	LS-A-D04-d	LS-A-D04-d	LS-A-D04-d	LS-A-D05-c	LS-A-D05-c	LS-A-D05-c	LS-A-D05-c	LS-A-D05-c	LS-A-D06-a	LS-A-D06-a
Cell	Soil Direct Contact	Soil to	LS-A-D04	LS-A-D04	LS-A-D04	LS-A-D04	LS-A-D04	LS-A-D04	LS-A-D05	LS-A-D05	LS-A-D05	LS-A-D05	LS-A-D05	LS-A-D06	LS-A-D06
Field Sample ID	Numeric Value	Groundwater	LS-A-D04-C3-VOC	LS-A-D04-C4-VOC	LS-A-D04-C5-VOC	LS-A-D04-C1-VOC	LS-A-D04-C2-VOC	LS-A-D04-C2-VOC	LS-A-D05-C1-VOC	LS-A-D05-C2-VOC	LS-A-D05-C2-VOC	LS-A-D05-C3-VOC	LS-A-D05-C4-VOC	LS-A-D06-C1-VOC	LS-A-D06-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	0.9 - 1.1	1.2 - 1.4	0.2 - 0.3	0.3 - 0.5	0.3 - 0.5	0.2 - 0.3	1.4 - 1.5	2.1 - 2.3	2.9 - 3.0	2.9 - 3.0	0.2 - 0.3	0.5 - 0.6
Sample Date	(mg/kg)	(mg/kg)	45049	45049	45049	45049	45049	45049	45050	45050	45050	45050	45050	45050	45050
VOCs															
Benzene	280	0.5	0.005 (0.0005)	0.0073 (0.00045)	0.00026 J (0.00046)	0.00028 J (0.00056)	0.00019 J (0.00057)	0.00019 J (0.00057)	0.0032 (0.00048)	0.00037 J (0.00046)	0.031 J (0.036)	U (0.031)	0.00017 J (0.00045)	U (0.00045)	U (0.00045)
Cumene	10000	2500	U (0.001)	0.026 (0.0009)	0.0056 (0.00092)	U (0.0011)	0.00018 J (0.0011)	0.00049 J (0.00096)	0.00043 J (0.00091)	0.012 J (0.072)	4.9 (0.063)	U (0.0009)	U (0.0009)	U (0.0009)	U (0.0009)
1,2-Dibromoethane	3.7	0.005	U (0.0005)	U (0.00045)	U (0.00046)	U (0.00056)	U (0.00057)	U (0.00048)	U (0.00046)	U (0.036)	U (0.031)	U (0.00045)	U (0.00045)	U (0.00045)	U (0.00045)
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.0009)	U (0.00092)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.00091)	U (0.072)	U (0.063)	U (0.0009)	U (0.0009)	U (0.0009)	U (0.0009)
Ethyl Benzene	880	70	0.00019 J (0.001)	0.0013 (0.0009)	0.00034 J (0.00092)	U (0.0011)	U (0.0011)	0.01 (0.00096)	0.0004 J (0.00091)	U (0.072)	0.04 J (0.063)	U (0.0009)	U (0.0009)	U (0.0009)	U (0.0009)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.0018)	U (0.0018)	U (0.0022)	U (0.0023)	U (0.0019)	U (0.0018)	U (0.14)	U (0.12)	U (0.0018)	U (0.0018)	U (0.0018)	U (0.0018)
Toluene	10000	100	0.00064 J (0.001)	0.002 (0.0009)	U (0.00092)	U (0.0011)	U (0.0011)	0.0049 (0.00096)	0.00062 J (0.00091)	0.05 J (0.072)	U (0.063)	U (0.0009)	U (0.0009)	U (0.0009)	U (0.0009)
1,2,4-Trimethylbenzene	4700	300	U (0.002)	U (0.0018)	0.00064 J (0.0018)	U (0.0022)	U (0.0023)	0.015 (0.0019)	0.0014 J (0.0018)	U (0.14)	0.27 (0.12)	U (0.0018)	U (0.0018)	U (0.0018)	U (0.0018)
1,3,5-Trimethylbenzene	4700	93	U (0.002)	0.00039 J (0.0018)	0.00021 J (0.0018)	U (0.0022)	U (0.0023)	0.012 (0.0019)	0.00051 J (0.0018)	U (0.14)	0.45 (0.12)	U (0.0018)	U (0.0018)	U (0.0018)	U (0.0018)
Xylenes (total)	7900	1000	U (0.002)	0.0078 J (0.0018)	0.00112 J (0.0018)	U (0.0022)	U (0.0023)	0.023 J (0.0019)	0.00249 J (0.0018)	0.188 J (0.14)	0.57 J (0.12)	U (0.0018)	U (0.0018)	U (0.0018)	U (0.0018)

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 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-D06-b	LS-A-D06-b	LS-A-D06-d	LS-A-D07-a	LS-A-D07-b	LS-A-D07-c	LS-A-D07-c	LS-A-D07-c	LS-A-E02-a	LS-A-E02-b	LS-A-E02-b
Cell	Soil Direct Contact	Soil to	LS-A-D06	LS-A-D06	LS-A-D06	LS-A-D07	LS-A-D07	LS-A-D07	LS-A-D07	LS-A-D07	LS-A-E02	LS-A-E02	LS-A-E02
Field Sample ID	Numeric Value	Groundwater	LS-A-D06-C3-VOC	LS-A-D06-C5-VOC	LS-A-D06-C4-VOC	LS-A-D07-C3-VOC	LS-A-D07-C1-VOC	LS-A-D07-C2-VOC	LS-A-D07-C4-VOC	LS-A-D07-C5-VOC	LS-A-E02-C5-VOC	LS-A-E02-C1-VOC	LS-A-E02-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.8 - 0.9	1.4 - 1.5	1.1 - 1.2	0.6 - 0.8	0.2 - 0.3	1.2 - 1.4	2.0 - 2.1	2.4 - 2.6	1.5 - 1.7	0.2 - 0.3	0.5 - 0.6
Sample Date	(mg/kg)	(mg/kg)	45050	45050	45050	45050	45050	45050	45050	45050	45051	45051	45051
VOCs													
Benzene	280	0.5	0.21 J (0.3)	0.17 (0.034)	0.033 J (0.034)	0.47 (0.027)	0.00018 J (0.00052)	U (0.025)	0.017 J (0.025)	0.092 (0.024)	U (0.028)	U (0.00045)	0.00032 J (0.00049)
Cumene	10000	2500	20 (0.61)	4.3 (0.068)	1.2 (0.068)	2.2 (0.054)	U (0.001)	0.64 (0.05)	0.55 (0.05)	0.77 (0.048)	1.1 (0.056)	U (0.0009)	U (0.00098)
1,2-Dibromoethane	3.7	0.005	U (0.3)	U (0.034)	U (0.034)	U (0.027)	U (0.00052)	U (0.025)	U (0.025)	U (0.024)	U (0.028)	U (0.00045)	U (0.00049)
1,2-Dichloroethane	85	0.5	U (0.61)	U (0.068)	U (0.068)	U (0.054)	U (0.001)	U (0.05)	U (0.05)	U (0.048)	U (0.056)	U (0.0009)	U (0.00098)
Ethyl Benzene	880	70	0.95 (0.61)	0.31 (0.068)	0.17 (0.068)	0.22 (0.054)	U (0.001)	0.0088 J (0.05)	0.0089 J (0.05)	0.062 (0.048)	U (0.056)	U (0.0009)	U (0.00098)
Methyl tert-butyl ether	8500	2	U (1.2)	U (0.14)	U (0.14)	U (0.11)	U (0.0021)	U (0.1)	U (0.1)	U (0.096)	U (0.11)	U (0.0018)	U (0.002)
Toluene	10000	100	0.67 (0.61)	0.56 (0.068)	0.041 J (0.068)	0.14 (0.054)	U (0.001)	U (0.05)	U (0.05)	0.071 (0.048)	U (0.056)	U (0.0009)	U (0.00098)
1,2,4-Trimethylbenzene	4700	300	2 (1.2)	0.37 (0.14)	0.16 (0.14)	0.1 J (0.11)	U (0.0021)	0.057 J (0.1)	0.062 J (0.1)	0.7 (0.096)	0.084 J (0.11)	U (0.0018)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	0.55 J (1.2)	0.11 J (0.14)	0.02 J (0.14)	0.022 J (0.11)	U (0.0021)	0.028 J (0.1)	0.026 J (0.1)	0.2 (0.096)	0.046 J (0.11)	U (0.0018)	U (0.002)
Xylenes (total)	7900	1000	3.78 J (1.2)	1.05 J (0.14)	0.215 J (0.14)	0.47 J (0.11)	U (0.0021)	0.15 J (0.1)	0.138 J (0.1)	0.18 J (0.096)	0.142 J (0.11)	U (0.0018)	U (0.002)

- Notes:**
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 - 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.
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mg/kg -- Milligram per Kilogram.

Table 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-E02-b	LS-A-E02-b	LS-A-E03-a	LS-A-E03-a	LS-A-E03-a	LS-A-E03-a	LS-A-E03-a	LS-A-E03-a	LS-A-E04-b	LS-A-E04-b	LS-A-E05-a	LS-A-E05-a
Cell	Soil Direct Contact	Soil to	LS-A-E02	LS-A-E02	LS-A-E03	LS-A-E03	LS-A-E03	LS-A-E03	LS-A-E03	LS-A-E03	LS-A-E04	LS-A-E04	LS-A-E05	LS-A-E05
Field Sample ID	Numeric Value	Groundwater	LS-A-E02-C3-VOC	LS-A-E02-C4-VOC	LS-A-E03-C1-VOC	LS-A-E03-C2-VOC	LS-A-E03-C3-VOC	LS-A-E03-C4-VOC	LS-A-E03-C5-VOC	LS-A-E04-C1-VOC	LS-A-E04-C2-VOC	LS-A-E05-C2-VOC	LS-A-E05-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.9 - 1.1	1.2 - 1.4	0.2 - 0.3	0.6 - 0.8	1.2 - 1.4	1.4 - 1.5	1.7 - 1.8	0.8 - 0.9	1.7 - 1.8	1.4 - 1.5	2.0 - 2.1	
Sample Date	(mg/kg)	(mg/kg)	45051	45051	45051	45051	45051	45051	45051	45051	45051	45051	45051	
VOCs														
Benzene	280	0.5	U (0.00041)	0.0012 (0.00049)	0.00051 J (0.00059)	0.0021 (0.0006)	0.66 (0.034)	0.04 (0.028)	0.4 (0.044)	0.19 (0.00057)	2.3 (0.036)	0.00023 J (0.00046)	0.00069 (0.00058)	
Cumene	10000	2500	U (0.00082)	0.00099 (0.00097)	U (0.0012)	0.036 (0.0012)	2.6 (0.069)	1.8 (0.057)	3.1 (0.088)	0.033 (0.0011)	2.4 (0.073)	0.00023 J (0.00092)	0.0006 J (0.0012)	
1,2-Dibromoethane	3.7	0.005	U (0.00041)	U (0.00049)	U (0.00059)	U (0.0006)	U (0.034)	U (0.028)	U (0.044)	U (0.00057)	U (0.036)	U (0.00046)	U (0.00058)	
1,2-Dichloroethane	85	0.5	U (0.00082)	U (0.00097)	U (0.0012)	U (0.0012)	U (0.069)	U (0.057)	U (0.088)	U (0.0011)	U (0.073)	U (0.00092)	U (0.0012)	
Ethyl Benzene	880	70	U (0.00082)	U (0.00097)	U (0.0012)	0.00099 J (0.0012)	0.33 (0.069)	0.016 J (0.057)	0.26 (0.088)	0.0023 (0.0011)	0.18 (0.073)	0.00023 J (0.00092)	0.00034 J (0.0012)	
Methyl tert-butyl ether	8500	2	U (0.0016)	U (0.0019)	U (0.0024)	U (0.0024)	U (0.14)	U (0.11)	U (0.18)	U (0.0023)	U (0.14)	U (0.0018)	U (0.0023)	
Toluene	10000	100	U (0.00082)	0.00053 J (0.00097)	U (0.0012)	0.00082 J (0.0012)	0.28 (0.069)	U (0.057)	0.46 (0.088)	0.0029 (0.0011)	0.31 (0.073)	U (0.00092)	0.0014 (0.0012)	
1,2,4-Trimethylbenzene	4700	300	U (0.0016)	U (0.0019)	U (0.0024)	0.0007 J (0.0024)	0.64 (0.14)	0.077 J (0.11)	0.32 (0.18)	0.00068 J (0.0023)	3.5 (0.14)	0.003 (0.0018)	0.00093 J (0.0023)	
1,3,5-Trimethylbenzene	4700	93	U (0.0016)	U (0.0019)	U (0.0024)	U (0.0024)	0.18 (0.14)	0.027 J (0.11)	0.082 J (0.18)	0.18 (0.14)	U (0.0023)	2.2 (0.14)	0.0014 J (0.0018)	
Xylenes (total)	7900	1000	U (0.0016)	0.00094 J (0.0019)	U (0.0024)	0.00182 J (0.0024)	0.72 J (0.14)	0.106 J (0.11)	0.73 J (0.18)	0.0042 J (0.0023)	1.75 J (0.14)	0.0018 J (0.0018)	0.0024 J (0.0023)	

Notes:

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- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
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Abbreviations:

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mg/kg -- Milligram per Kilogram.

Table 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-E05-d	LS-A-E06-c	LS-A-E06-d	LS-A-E07-c	LS-A-E08-a	LS-A-E08-a	LS-A-E08-a	LS-A-F01-b	LS-A-F03-d	LS-A-F04-c	LS-A-F05-b
Cell	Soil Direct Contact	Soil to	LS-A-E05	LS-A-E06	LS-A-E06	LS-A-E07	LS-A-E08	LS-A-E08	LS-A-E08	LS-A-F01	LS-A-F03	LS-A-F04	LS-A-F05
Field Sample ID	Numeric Value	Groundwater	LS-A-E05-C1-VOC	LS-A-E06-C2-VOC	LS-A-E06-C1-VOC	LS-A-E07-C1-VOC	LS-A-E08-C1-VOC	LS-A-E08-C2-VOC	LS-A-E08-C3-VOC	LS-A-F01-C1-VOC	LS-A-F03-C1-VOC	LS-A-F04-C1-VOC	LS-A-F05-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.2 - 0.3	1.4 - 1.5	1.2 - 1.4	3.7 - 3.8	1.5 - 1.7	2.4 - 2.6	3.4 - 3.5	1.4 - 1.5	1.1 - 1.2	1.2 - 1.4	1.1 - 1.2
Sample Date	(mg/kg)	(mg/kg)	45051	45054	45054	45054	45054	45054	45054	45055	45054	45071	45071
VOCs													
Benzene	280	0.5	0.00035 J (0.00056)	0.026 (0.026)	0.00033 J (0.00048)	U (0.03)	U (0.00064)	U (0.059)	U (0.026)	0.012 (0.00069)	3.1 (0.036)	0.015 J (0.027)	U (0.00072)
Cumene	10000	2500	U (0.0011)	0.26 (0.052)	0.045 (0.00096)	0.026 J (0.059)	U (0.0013)	1.5 (0.12)	0.67 (0.052)	U (0.0014)	1.6 (0.071)	0.72 (0.053)	U (0.0014)
1,2-Dibromoethane	3.7	0.005	U (0.00056)	U (0.026)	U (0.00048)	U (0.03)	U (0.00064)	U (0.059)	U (0.026)	U (0.00069)	U (0.036)	U (0.027)	U (0.00072)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.052)	U (0.00096)	U (0.059)	U (0.0013)	U (0.12)	U (0.052)	U (0.0014)	U (0.071)	U (0.053)	U (0.0014)
Ethyl Benzene	880	70	U (0.0011)	0.034 J (0.052)	0.00068 J (0.00096)	U (0.059)	U (0.0013)	U (0.12)	0.0094 J (0.052)	0.00025 J (0.0014)	0.84 (0.071)	0.031 J (0.053)	U (0.0014)
Methyl tert-butyl ether	8500	2	U (0.0022)	U (0.1)	0.0004 J (0.0019)	U (0.12)	U (0.0026)	U (0.24)	U (0.1)	U (0.0028)	U (0.14)	U (0.11)	U (0.0029)
Toluene	10000	100	U (0.0011)	0.038 J (0.052)	0.00063 J (0.00096)	U (0.059)	U (0.0013)	U (0.12)	U (0.052)	0.0011 J (0.0014)	0.69 (0.071)	U (0.053)	U (0.0014)
1,2,4-Trimethylbenzene	4700	300	U (0.0022)	0.051 J (0.1)	0.0011 J (0.0019)	U (0.12)	U (0.0026)	U (0.24)	0.021 J (0.1)	U (0.0028)	20 (0.14)	0.025 J (0.11)	U (0.0029)
1,3,5-Trimethylbenzene	4700	93	U (0.0022)	0.016 J (0.1)	0.00042 J (0.0019)	U (0.12)	U (0.0026)	U (0.24)	U (0.1)	U (0.0028)	6.2 (0.14)	0.011 J (0.11)	U (0.0029)
Xylenes (total)	7900	1000	U (0.0022)	0.097 J (0.1)	0.0074 J (0.0019)	U (0.12)	U (0.0026)	U (0.24)	0.066 J (0.1)	U (0.0028)	7.8 J (0.14)	0.075 J (0.11)	U (0.0029)

Notes:

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

Table 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-G01-a	LS-A-G01-b	LS-A-G01-c	LS-A-G02-a	LS-A-G02-b	LS-A-G02-b	LS-A-G03-b	LS-A-G03-b	LS-A-G04-b	LS-A-G04-c	LS-A-G04-c
Cell	Soil Direct Contact	Soil to	LS-A-G01	LS-A-G01	LS-A-G01	LS-A-G02	LS-A-G02	LS-A-G02	LS-A-G03	LS-A-G03	LS-A-G04	LS-A-G04	LS-A-G04
Field Sample ID	Numeric Value	Groundwater	LS-A-G01-C2-VOC	LS-A-G01-C1-VOC	LS-A-G01-C3-VOC	LS-A-G02-C1-VOC	LS-A-G02-C2-VOC	LS-A-G02-C3-VOC	LS-A-G03-C1-VOC	LS-A-G03-C2-VOC	LS-A-G04-C2-VOC	LS-A-G04-C1-VOC	LS-A-G04-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	0.3 - 0.5	1.5 - 1.7	3.8 - 4.0	1.8 - 2.0	2.3 - 2.4	4.1 - 4.3	5.8 - 5.9	1.1 - 1.2	2.0 - 2.1	2.7 - 2.9
Sample Date	(mg/kg)	(mg/kg)	45068	45068	45068	45057	45057	45057	45056	45056	45057	45057	45057
VOCs													
Benzene	280	0.5	0.00043 (0.00043)	U (0.00044)	U (0.00064)	U (0.021)	U (0.022)	U (0.24)	U (0.027)	U (0.25)	U (0.024)	U (0.024)	U (0.023)
Cumene	10000	2500	U (0.00086)	U (0.00087)	U (0.0013)	6.2 (0.041)	0.37 (0.044)	22 (0.48)	3.2 (0.053)	14 (0.51)	1 (0.047)	0.46 (0.048)	1.2 (0.047)
1,2-Dibromoethane	3.7	0.005	U (0.00043)	U (0.00044)	U (0.00064)	U (0.021)	U (0.022)	U (0.24)	U (0.027)	U (0.25)	U (0.024)	U (0.024)	U (0.023)
1,2-Dichloroethane	85	0.5	U (0.00086)	U (0.00087)	U (0.0013)	U (0.041)	U (0.044)	U (0.48)	U (0.053)	U (0.51)	U (0.047)	U (0.048)	U (0.047)
Ethyl Benzene	880	70	U (0.00086)	U (0.00087)	U (0.0013)	0.014 J (0.041)	U (0.044)	U (0.48)	U (0.053)	U (0.51)	U (0.047)	U (0.048)	U (0.047)
Methyl tert-butyl ether	8500	2	U (0.0017)	U (0.0017)	U (0.0025)	U (0.082)	U (0.087)	U (0.95)	U (0.11)	U (1)	U (0.095)	U (0.097)	U (0.093)
Toluene	10000	100	U (0.00086)	U (0.00087)	U (0.0013)	0.033 J (0.041)	U (0.044)	U (0.48)	U (0.053)	U (0.51)	U (0.047)	U (0.048)	0.034 J (0.047)
1,2,4-Trimethylbenzene	4700	300	U (0.0017)	U (0.0017)	U (0.0025)	0.33 (0.082)	0.028 J (0.087)	U (0.95)	0.094 J (0.11)	U (1)	U (0.095)	0.039 J (0.097)	0.42 (0.093)
1,3,5-Trimethylbenzene	4700	93	U (0.0017)	U (0.0017)	U (0.0025)	0.089 (0.082)	0.014 J (0.087)	U (0.95)	0.037 J (0.11)	U (1)	U (0.095)	0.013 J (0.097)	0.13 (0.093)
Xylenes (total)	7900	1000	U (0.0017)	U (0.0017)	U (0.0025)	0.112 J (0.082)	U (0.087)	U (0.95)	0.21 J (0.11)	U (1)	0.0715 J (0.095)	U (0.097)	0.261 J (0.093)

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 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	LS-A-G05-b LS-A-G05	LS-A-G05-c LS-A-G05	LS-A-G05-c LS-A-G05	LS-A-G05-d LS-A-G05	LS-A-G05-d LS-A-G05	LS-A-G06-a LS-A-G06	LS-A-G06-a LS-A-G06	LS-A-G07-c LS-A-G07	LS-A-G08-d LS-A-G08	LS-A-H01-c LS-A-H01	LS-A-H01-d LS-A-H01
Field Sample ID	Numeric Value	Numeric Value	LS-A-G05-C5-VOC	LS-A-G05-C2-VOC	LS-A-G05-C3-VOC	LS-A-G05-C1-VOC	LS-A-G05-C4-VOC	LS-A-G06-C1-VOC	LS-A-G06-C2-VOC	LS-A-G07-C1-VOC	LS-A-G08-C1-VOC	LS-A-H01-C3-VOC	LS-A-H01-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		5.5 - 5.6	1.7 - 1.8	2.7 - 2.9	2.6 - 2.7	3.7 - 3.8	1.2 - 1.4	1.6 - 1.8	0.9 - 1.1	0.9 - 1.1	3.4 - 3.5	2.3 - 2.4
Sample Date	(mg/kg)	(mg/kg)	45056	45056	45056	45056	45056	45068	45068	45070	45070	45057	45057
VOCs													
Benzene	280	0.5	U (0.023)	U (0.023)	U (0.023)	0.00033 J (0.00036)	0.00022 J (0.00053)	0.054 (0.035)	U (0.0005)	U (0.00044)	0.00056 (0.00042)	U (0.00044)	0.012 J (0.022)
Cumene	10000	2500	9.6 (0.046)	1.3 (0.045)	1.1 (0.045)	0.00016 J (0.00073)	0.15 (0.0011)	0.056 J (0.07)	0.00066 J (0.001)	U (0.00089)	U (0.00083)	0.01 (0.00088)	2.2 (0.045)
1,2-Dibromoethane	3.7	0.005	U (0.023)	U (0.023)	U (0.023)	U (0.00036)	U (0.00053)	U (0.035)	U (0.0005)	U (0.00044)	U (0.00042)	U (0.00044)	U (0.022)
1,2-Dichloroethane	85	0.5	U (0.046)	U (0.045)	U (0.045)	U (0.00073)	U (0.0011)	U (0.07)	U (0.001)	U (0.00089)	U (0.00083)	U (0.00088)	U (0.045)
Ethyl Benzene	880	70	0.032 J (0.046)	U (0.045)	U (0.045)	0.00012 J (0.00073)	0.003 (0.0011)	0.011 J (0.07)	U (0.001)	U (0.00089)	U (0.00083)	U (0.00088)	0.15 (0.045)
Methyl tert-butyl ether	8500	2	U (0.093)	U (0.091)	U (0.091)	U (0.0014)	U (0.0021)	U (0.14)	U (0.002)	U (0.0018)	U (0.0017)	U (0.0018)	U (0.09)
Toluene	10000	100	0.03 J (0.046)	U (0.045)	U (0.045)	U (0.00073)	0.0016 (0.0011)	0.038 J (0.07)	U (0.001)	U (0.00089)	U (0.00083)	U (0.00088)	U (0.045)
1,2,4-Trimethylbenzene	4700	300	0.092 J (0.093)	U (0.091)	U (0.091)	0.00029 J (0.0014)	0.024 (0.0021)	U (0.14)	U (0.002)	U (0.0018)	U (0.0017)	0.0015 J (0.0018)	0.1 (0.09)
1,3,5-Trimethylbenzene	4700	93	0.092 J (0.093)	U (0.091)	U (0.091)	U (0.0014)	0.0033 (0.0021)	U (0.14)	U (0.002)	U (0.0018)	U (0.0017)	0.00073 J (0.0018)	U (0.09)
Xylenes (total)	7900	1000	0.332 J (0.093)	0.0685 J (0.091)	0.091 J (0.091)	U (0.0014)	0.0242 J (0.0021)	U (0.14)	U (0.002)	U (0.0018)	U (0.0017)	0.00182 J (0.0018)	U (0.09)

Notes:

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 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 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-H01-d	LS-A-H02-b	LS-A-H02-b	LS-A-H02-b	LS-A-H02-b	LS-A-H02-b	LS-A-H02-c	LS-A-H03-d	LS-A-H03-d	LS-A-H03-d	LS-A-H04-a	LS-A-H04-a
Cell	Soil Direct Contact	Soil to	LS-A-H01	LS-A-H02	LS-A-H02	LS-A-H02	LS-A-H02	LS-A-H02	LS-A-H02	LS-A-H03	LS-A-H03	LS-A-H03	LS-A-H04	LS-A-H04
Field Sample ID	Numeric Value	Groundwater	LS-A-H01-C2-VOC	LS-A-H02-C1-VOC	LS-A-H02-C3-VOC	LS-A-H02-C4-VOC	LS-A-H02-C5-VOC	LS-A-H02-C2-VOC	LS-A-H03-C1-VOC	LS-A-H03-C2-VOC	LS-A-H03-C3-VOC	LS-A-H04-C1-VOC	LS-A-H04-C2-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	3.0 - 3.2	1.7 - 1.8	2.1 - 2.3	2.3 - 2.4	2.6 - 2.7	1.2 - 1.4	2.3 - 2.4	2.7 - 2.9	3.8 - 4.0	1.7 - 1.8	2.1 - 2.3	
Sample Date	(mg/kg)	(mg/kg)	45057	45064	45064	45064	45064	45064	45058	45058	45058	45064	45064	
VOCs														
Benzene	280	0.5	0.26 (0.021)	0.0096 (0.00061)	U (0.026)	U (0.026)	U (0.022)	0.032 J (0.036)	U (0.026)	0.012 J (0.027)	U (0.028)	0.00024 J (0.00053)	U (0.00044)	
Cumene	10000	2500	4 (0.043)	0.017 (0.0012)	0.34 (0.052)	0.33 (0.051)	0.21 (0.045)	0.052 J (0.071)	5 (0.052)	0.48 (0.053)	2.4 (0.057)	0.048 (0.0011)	0.016 (0.00088)	
1,2-Dibromoethane	3.7	0.005	U (0.021)	U (0.00049)	U (0.026)	U (0.026)	U (0.022)	U (0.036)	U (0.026)	U (0.027)	U (0.028)	U (0.00053)	U (0.00044)	
1,2-Dichloroethane	85	0.5	U (0.043)	U (0.00098)	U (0.052)	U (0.051)	U (0.045)	U (0.071)	U (0.052)	U (0.053)	U (0.057)	U (0.0011)	U (0.00088)	
Ethyl Benzene	880	70	0.21 (0.043)	0.005 (0.0012)	U (0.052)	U (0.051)	U (0.045)	0.046 J (0.071)	U (0.052)	U (0.053)	U (0.057)	0.00069 J (0.0011)	0.00027 J (0.00088)	
Methyl tert-butyl ether	8500	2	U (0.086)	U (0.002)	U (0.1)	U (0.1)	U (0.09)	U (0.14)	U (0.1)	U (0.11)	U (0.11)	U (0.0021)	U (0.0018)	
Toluene	10000	100	0.069 (0.043)	0.0097 (0.0012)	U (0.052)	U (0.051)	U (0.045)	0.085 (0.071)	U (0.052)	0.052 J (0.053)	U (0.057)	0.00092 J (0.0011)	0.00056 J (0.00088)	
1,2,4-Trimethylbenzene	4700	300	0.1 (0.086)	0.082 (0.0024)	U (0.1)	0.023 J (0.1)	0.055 J (0.09)	0.078 J (0.14)	U (0.1)	U (0.11)	U (0.11)	0.0036 (0.0021)	0.0076 (0.0018)	
1,3,5-Trimethylbenzene	4700	93	0.012 J (0.086)	0.031 (0.0024)	0.021 J (0.1)	0.042 J (0.1)	0.037 J (0.09)	0.024 J (0.14)	U (0.1)	0.01 J (0.11)	U (0.11)	0.0057 (0.0021)	0.0068 (0.0018)	
Xylenes (total)	7900	1000	0.0935 J (0.086)	0.06 J (0.0024)	0.137 J (0.1)	0.138 J (0.1)	0.088 J (0.09)	0.193 J (0.14)	U (0.1)	0.085 J (0.11)	U (0.11)	0.0148 J (0.0021)	0.0114 J (0.0018)	

Notes:

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- 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:

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Table 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-H04-b	LS-A-H05-a	LS-A-H05-c	LS-A-H06-c	LS-A-H07-b	LS-A-I01-d	LS-A-I02-d	LS-A-I03-c	LS-A-I03-d	LS-A-I03-d	LS-A-I03-d
Cell	Soil Direct Contact	Soil to	LS-A-H04	LS-A-H05	LS-A-H05	LS-A-H06	LS-A-H07	LS-A-I01	LS-A-I02	LS-A-I03	LS-A-I03	LS-A-I03	LS-A-I03
Field Sample ID	Numeric Value	Groundwater	LS-A-H04-C3-VOC	LS-A-H05-C1-VOC	LS-A-H05-C2-VOC	LS-A-H06-C1-VOC	LS-A-H07-C1-VOC	LS-A-I01-C1-VOC	LS-A-I02-C1-VOC	LS-A-I03-C3-VOC	LS-A-I03-C1-VOC	LS-A-I03-C2-VOC	LS-A-I03-C4-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.6 - 2.7	2.7 - 2.9	4.4 - 4.6	2.3 - 2.4	1.8 - 2.0	1.1 - 1.2	0.3 - 0.5	3.2 - 3.4	1.8 - 2.0	2.3 - 2.4	2.9 - 3.0
Sample Date	(mg/kg)	(mg/kg)	45064	45058	45058	45058	45064	45069	45069	45063	45063	45063	45063
VOCs													
Benzene	280	0.5	U (0.024)	U (0.028)	U (0.022)	U (0.028)	U (0.024)	0.025 J (0.03)	U (0.00038)	0.015 (0.00044)	U (0.025)	0.011 J (0.027)	0.016 J (0.039)
Cumene	10000	2500	0.13 (0.048)	0.062 (0.056)	1.6 (0.045)	0.54 (0.055)	2.5 (0.048)	0.53 (0.06)	U (0.00077)	0.007 (0.00089)	1 (0.05)	0.63 (0.054)	12 (0.078)
1,2-Dibromoethane	3.7	0.005	U (0.024)	U (0.028)	U (0.022)	U (0.028)	U (0.024)	U (0.03)	U (0.00038)	U (0.00044)	U (0.025)	U (0.027)	U (0.039)
1,2-Dichloroethane	85	0.5	U (0.048)	U (0.056)	U (0.045)	U (0.055)	U (0.048)	U (0.06)	U (0.00077)	U (0.00089)	U (0.05)	U (0.054)	U (0.078)
Ethyl Benzene	880	70	U (0.048)	U (0.056)	0.0071 J (0.045)	0.021 J (0.055)	U (0.048)	0.018 J (0.06)	U (0.00077)	0.0046 (0.00089)	U (0.05)	U (0.054)	0.025 J (0.078)
Methyl tert-butyl ether	8500	2	U (0.095)	U (0.11)	U (0.09)	U (0.11)	U (0.097)	U (0.12)	U (0.0015)	U (0.0018)	U (0.1)	U (0.11)	U (0.16)
Toluene	10000	100	U (0.048)	U (0.056)	0.024 J (0.045)	U (0.055)	U (0.048)	U (0.06)	U (0.00077)	0.0013 (0.00089)	U (0.05)	U (0.054)	U (0.078)
1,2,4-Trimethylbenzene	4700	300	0.048 J (0.095)	0.049 J (0.11)	0.076 J (0.09)	0.063 J (0.11)	U (0.097)	1.8 (0.12)	U (0.0015)	0.00058 J (0.0018)	U (0.1)	U (0.11)	U (0.16)
1,3,5-Trimethylbenzene	4700	93	0.013 J (0.095)	0.019 J (0.11)	0.12 (0.09)	0.039 J (0.11)	U (0.097)	1.4 (0.12)	U (0.0015)	0.00047 J (0.0018)	U (0.1)	U (0.11)	U (0.16)
Xylenes (total)	7900	1000	0.118 J (0.095)	0.091 J (0.11)	0.077 J (0.09)	0.145 J (0.11)	U (0.097)	0.196 J (0.12)	U (0.0015)	0.00332 J (0.0018)	U (0.1)	U (0.11)	U (0.16)

Notes:

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Table 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-A-I04-c	LS-A-I04-c	LS-B-B01-d	LS-B-B02-c	LS-B-B03-d	LS-B-C01-a	LS-B-D01-a	LS-B-D01-a	LS-B-E01-b	LS-B-E01-c	LS-B-E01-d
Cell	Soil Direct Contact	Soil to	LS-A-I04	LS-A-I04	LS-B-B01	LS-B-B02	LS-B-B03	LS-B-C01	LS-B-D01	LS-B-D01	LS-B-E01	LS-B-E01	LS-B-E01
Field Sample ID	Numeric Value	Groundwater	LS-A-I04-C1-VOC	LS-A-I04-C2-VOC	LS-B-B01-C1-VOC	LS-B-B02-C1-VOC	LS-B-B03-C1-VOC	LS-B-C01-C1-VOC	LS-B-D01-C1-VOC	LS-B-D01-C2-VOC	LS-B-E01-C2-VOC	LS-B-E01-C3-VOC	LS-B-E01-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	1.8 - 2.0	2.3 - 2.4	0.5 - 0.6	1.7 - 1.8	1.2 - 1.4	1.2 - 1.4	1.4 - 1.5	1.7 - 1.8	2.4 - 2.6	2.1 - 2.3	4.9 - 5.0
Sample Date	(mg/kg)	(mg/kg)	45063	45063	45055	45055	45055	45055	45055	45055	45051	45070	45051
VOCs													
Benzene	280	0.5	U (0.025)	0.00017 J (0.00039)	U (0.06)	1.3 (0.23)	U (0.00042)	1 (0.033)	0.41 (0.033)	1.8 (0.14)	U (0.00045)	0.017 J (0.024)	0.18 (0.027)
Cumene	10000	2500	0.064 (0.05)	0.087 (0.00079)	0.34 (0.12)	0.58 (0.47)	0.0002 J (0.00084)	0.86 (0.065)	0.29 (0.066)	0.78 (0.28)	0.0022 (0.0009)	0.014 J (0.048)	1.4 (0.054)
1,2-Dibromoethane	3.7	0.005	U (0.025)	U (0.00039)	U (0.06)	U (0.23)	U (0.00042)	U (0.033)	U (0.033)	U (0.14)	U (0.00045)	U (0.024)	U (0.027)
1,2-Dichloroethane	85	0.5	U (0.05)	U (0.00079)	U (0.12)	U (0.47)	U (0.00084)	U (0.065)	U (0.066)	U (0.28)	U (0.0009)	U (0.048)	U (0.054)
Ethyl Benzene	880	70	0.011 J (0.05)	0.00043 J (0.00079)	0.18 (0.12)	1.1 (0.47)	U (0.00084)	5.4 (0.065)	0.28 (0.066)	2.3 (0.28)	U (0.0009)	0.0084 J (0.048)	0.14 (0.054)
Methyl tert-butyl ether	8500	2	U (0.1)	U (0.0016)	U (0.24)	U (0.93)	U (0.0017)	U (0.13)	U (0.13)	U (0.57)	U (0.0018)	U (0.095)	U (0.11)
Toluene	10000	100	0.031 J (0.05)	0.0015 (0.00079)	0.17 (0.12)	2 (0.47)	U (0.00084)	0.67 (0.065)	0.17 (0.066)	1.3 (0.28)	U (0.0009)	U (0.048)	0.12 (0.054)
1,2,4-Trimethylbenzene	4700	300	0.034 J (0.1)	0.0045 (0.0016)	11 (0.24)	14 (0.93)	0.0006 J (0.0017)	25 (1.3)	0.12 J (0.13)	1.3 (0.57)	U (0.0018)	U (0.095)	0.14 (0.11)
1,3,5-Trimethylbenzene	4700	93	0.017 J (0.1)	0.0013 J (0.0016)	7.1 (0.24)	6.2 (0.93)	0.00052 J (0.0017)	9.5 (0.13)	0.099 J (0.13)	0.9 (0.57)	U (0.0018)	U (0.095)	0.042 J (0.11)
Xylenes (total)	7900	1000	0.078 J (0.1)	0.005 J (0.0016)	4.3 J (0.24)	9.6 J (0.93)	0.00089 J (0.0017)	17 J (0.13)	0.57 J (0.13)	4.2 J (0.57)	U (0.0018)	U (0.095)	0.359 J (0.11)

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 3.1
Cut Soil Discrete Analytical Results - Volatile Organic Compounds
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	LS-B-F01-d	LS-B-G01-a	LS-B-G01-b	LS-B-G02-c	LS-B-G02-d	LS-B-G02-d	LS-B-G02-d	LS-B-G02-d	LS-B-H01-b	LS-B-H02-b	LS-B-H02-b	LS-B-H02-b
Cell	Soil Direct Contact	Soil to	LS-B-F01	LS-B-G01	LS-B-G01	LS-B-G02	LS-B-G02	LS-B-G02	LS-B-G02	LS-B-G02	LS-B-H01	LS-B-H02	LS-B-H02	LS-B-H02
Field Sample ID	Numeric Value	Groundwater	LS-B-F01-C1-VOC	LS-B-G01-C2-VOC	LS-B-G01-C1-VOC	LS-B-G02-C2-VOC	LS-B-G02-C1-VOC	LS-B-G02-C3-VOC	LS-B-G02-C4-VOC	LS-B-G02-C4-VOC	LS-B-H01-C1-VOC	LS-B-H02-C1-VOC	LS-B-H02-C2-VOC	LS-B-H02-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	5.5 - 5.6	1.1 - 1.2	0.6 - 0.8	0.5 - 0.6	1.1 - 1.2	1.4 - 1.5	3.7 - 3.8	1.8 - 2.0	2.3 - 2.4	2.6 - 2.7	
Sample Date	(mg/kg)	(mg/kg)	45054	45056	45056	45068	45068	45068	45068	45058	45063	45063	45063	
VOCs														
Benzene	280	0.5	2.6 (0.049)	28 (0.3)	0.21 (0.039)	0.0025 (0.00052)	U (0.00093)	U (0.001)	U (0.00042)	U (0.026)	U (0.036)	U (0.00044)	U (0.026)	
Cumene	10000	2500	3 (0.097)	33 (0.59)	5 (0.078)	0.00037 J (0.001)	U (0.0019)	U (0.0021)	U (0.00083)	0.96 (0.051)	0.26 (0.071)	U (0.00088)	0.36 (0.053)	
1,2-Dibromoethane	3.7	0.005	U (0.049)	U (0.3)	U (0.039)	U (0.00052)	U (0.00093)	U (0.001)	U (0.00042)	U (0.026)	U (0.036)	U (0.00044)	U (0.026)	
1,2-Dichloroethane	85	0.5	U (0.097)	U (0.59)	U (0.078)	U (0.001)	U (0.0019)	U (0.0021)	U (0.00083)	U (0.051)	U (0.071)	U (0.00088)	U (0.053)	
Ethyl Benzene	880	70	0.51 (0.097)	160 (0.59)	0.77 (0.078)	0.0013 (0.001)	U (0.0019)	U (0.0021)	U (0.00083)	U (0.051)	U (0.071)	U (0.00088)	U (0.053)	
Methyl tert-butyl ether	8500	2	U (0.19)	U (1.2)	U (0.16)	U (0.0021)	U (0.0037)	U (0.0042)	U (0.0017)	U (0.1)	U (0.14)	U (0.0018)	U (0.11)	
Toluene	10000	100	1.3 (0.097)	250 (1.2)	4.6 (0.078)	0.0097 (0.001)	U (0.0019)	U (0.0021)	U (0.00083)	U (0.051)	U (0.071)	U (0.00088)	U (0.053)	
1,2,4-Trimethylbenzene	4700	300	45 (0.39)	200 (2.4)	120 (1.6)	0.0011 J (0.0021)	U (0.0037)	U (0.0042)	U (0.0017)	U (0.1)	U (0.14)	U (0.0018)	U (0.11)	
1,3,5-Trimethylbenzene	4700	93	14 (0.19)	79 (1.2)	48 (1.6)	0.00088 J (0.0021)	U (0.0037)	U (0.0042)	U (0.0017)	U (0.1)	U (0.14)	U (0.0018)	U (0.11)	
Xylenes (total)	7900	1000	16.6 J (0.19)	570 J (2.4)	84 J (0.78)	0.014 J (0.0021)	U (0.0037)	U (0.0042)	U (0.0017)	U (0.1)	0.114 J (0.14)	U (0.0018)	0.076 J (0.11)	

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 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	LS-A-A01-C1	LS-A-A01-C2	LS-A-A01-C3	LS-A-A02-C1	LS-A-A02-C2	LS-A-A03-C1	LS-A-A03-C2	LS-A-A04-C1	LS-A-A04-C2	LS-A-A05-C1
Cell	Direct Contact Numeric	Groundwater Numeric	LS-A-A01	LS-A-A01	LS-A-A01	LS-A-A02	LS-A-A02	LS-A-A03	LS-A-A03	LS-A-A04	LS-A-A04	LS-A-A05
Field Sample ID	Value (0-2 ft bgs)	Value	LS-A-A01-C1-COMP	LS-A-A01-C2-COMP	LS-A-A01-C3-COMP	LS-A-A02-C1-COMP	LS-A-A02-C2-COMP	LS-A-A03-C1-COMP	LS-A-A03-C2-COMP	LS-A-A04-C1-COMP	LS-A-A04-C2-COMP	LS-A-A05-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	5/1/2023	5/1/2023	5/1/2023	5/1/2023	5/1/2023	5/1/2023	5/1/2023	5/1/2023	5/1/2023	5/1/2023
PAHs												
Anthracene	190000	350	0.17 (0.12)	1.4 (0.12)	3.5 (0.12)	0.24 (0.11)	0.45 (0.12)	0.4 (0.12)	0.68 (0.12)	0.45 (0.11)	1.2 (0.12)	170 (9.2)
Benzo(a)anthracene	130	340	0.48 (0.12)	3.4 (0.12)	7.4 (0.12)	0.67 (0.11)	1.1 (0.12)	1.3 (0.12)	1.9 (0.12)	1.3 (0.11)	2 (0.12)	200 (9.2)
Benzo(a)pyrene	91	46	0.52 (0.16)	3.2 (0.16)	6 (0.17)	0.66 (0.15)	1.1 (0.16)	1.3 (0.16)	1.5 (0.16)	1.3 (0.15)	1.8 (0.16)	190 (12)
Benzo(b)fluoranthene	76	170	0.66 (0.12)	3.8 (0.12)	8.3 (0.12)	0.8 (0.11)	1.3 (0.12)	1.5 (0.12)	1.9 (0.12)	1.5 (0.11)	2.1 (0.12)	200 (9.2)
Benzo(g,h,i)perylene	190000	180	0.35 (0.16)	2 (0.16)	3.9 (0.17)	0.36 (0.15)	0.6 (0.16)	0.68 (0.16)	0.84 (0.16)	0.71 (0.15)	1 (0.16)	82 (12)
Chrysene	760	230	0.47 (0.12)	3.3 (0.12)	6.9 (0.12)	0.66 (0.11)	1.2 (0.12)	1.2 (0.12)	1.7 (0.12)	1.2 (0.11)	1.8 (0.12)	170 (9.2)
Fluorene	130000	3800	0.053 J (0.2)	0.41 (0.19)	1.7 (0.21)	0.093 J (0.18)	0.19 (0.19)	0.13 J (0.2)	0.31 (0.2)	0.16 J (0.19)	0.98 (0.2)	120 (15)
Naphthalene	66	25	0.073 (0.039)	0.27 (0.039)	1.5 (0.042)	0.1 (0.037)	0.41 (0.039)	0.065 (0.039)	0.28 (0.039)	0.086 (0.038)	0.35 (0.04)	61 (3)
Phenanthrene	190000	10000	0.58 (0.12)	5.2 (0.12)	19 (0.63)	1 (0.11)	2.2 (0.12)	1.5 (0.12)	2.6 (0.12)	1.8 (0.11)	5.7 (0.12)	610 (9.2)
Pyrene	96000	2200	0.81 (0.12)	6.1 (0.12)	16 (0.63)	1.2 (0.11)	2.2 (0.12)	2.1 (0.12)	2.8 (0.12)	2.2 (0.11)	4.3 (0.12)	370 (9.2)
Metals												
Lead	1000	450	994 (2.25)	17500 (46.4)	5380 (49)	65.3 (2.15)	1520 (2.29)	244 (2.32)	687 (2.34)	121 (2.24)	153 (2.36)	61.8 (2.23)

Notes:

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds 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 reported value is estimated.

Abbreviations:

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

Table 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	LS-A-A05-C2 LS-A-A05	LS-A-B01-C1 LS-A-B01	LS-A-B01-C2 LS-A-B01	LS-A-B02-C1 LS-A-B02	LS-A-B03-C1 LS-A-B03	LS-A-C01-C1 LS-A-C01	LS-A-C01-C2 LS-A-C01	LS-A-C02-C1 LS-A-C02	LS-A-C02-C2 LS-A-C02	LS-A-C03-C1 LS-A-C03
Field Sample ID	Value (0-2 ft bgs)	Value	LS-A-A05-C2-COMP	LS-A-B01-C1-COMP	LS-A-B01-C2-COMP	LS-A-B02-C1-COMP	LS-A-B03-C1-COMP	LS-A-C01-C1-COMP	LS-A-C01-C2-COMP	LS-A-C02-C1-COMP	LS-A-C02-C2-COMP	LS-A-C03-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	5/1/2023	5/1/2023	5/1/2023	5/2/2023	5/2/2023	5/2/2023	5/2/2023	5/2/2023	5/2/2023	5/2/2023
PAHs												
Anthracene	190000	350	17 (1.2)	11 (0.6)	74 (1.3)	6 (0.11)	0.064 J (0.11)	0.69 (0.12)	0.19 (0.11)	0.4 (0.11)	0.1 J (0.11)	0.52 J (0.57)
Benzo(a)anthracene	130	340	33 (1.2)	19 (0.6)	150 (13)	14 (1.1)	0.64 (0.11)	1.5 (0.12)	0.056 J (0.11)	1 (0.11)	0.29 (0.11)	0.82 (0.57)
Benzo(a)pyrene	91	46	25 (1.6)	15 (0.8)	78 (1.7)	11 (1.5)	0.86 (0.15)	1.5 (0.16)	U (0.15)	1.2 (0.15)	0.28 (0.15)	0.81 (0.76)
Benzo(b)fluoranthene	76	170	28 (1.2)	18 (0.6)	130 (13)	15 (1.1)	1.1 (0.11)	1.8 (0.12)	0.049 J (0.11)	1.4 (0.11)	0.31 (0.11)	0.75 (0.57)
Benzo(g,h,i)perylene	190000	180	13 (1.6)	8.1 (0.8)	42 (1.7)	5.9 (0.15)	0.51 (0.15)	0.77 (0.16)	0.026 J (0.15)	0.69 (0.15)	0.23 (0.15)	0.49 J (0.76)
Chrysene	760	230	27 (1.2)	17 (0.6)	85 (1.3)	12 (1.1)	0.79 (0.11)	1.5 (0.12)	0.062 J (0.11)	1 (0.11)	0.3 (0.11)	2 (0.57)
Fluorene	130000	3800	9.8 (2)	8 (1)	62 (2.1)	3.5 (0.19)	0.022 J (0.19)	0.31 (0.19)	0.49 (0.19)	0.057 J (0.19)	0.047 J (0.18)	2.5 (0.95)
Naphthalene	66	25	6.1 (0.4)	4.6 (0.2)	32 (0.43)	2.9 (0.037)	U (0.038)	0.33 (0.039)	0.058 (0.038)	0.085 (0.037)	0.14 (0.037)	0.25 (0.19)
Phenanthrene	190000	10000	51 (1.2)	36 (0.6)	390 (13)	20 (1.1)	0.35 (0.11)	2.7 (0.12)	1.1 (0.11)	0.69 (0.11)	0.34 (0.11)	5.6 (0.57)
Pyrene	96000	2200	53 (1.2)	29 (0.6)	260 (13)	21 (1.1)	0.94 (0.11)	2.3 (0.12)	0.16 (0.11)	1.5 (0.11)	0.4 (0.11)	1.5 (0.57)
Metals												
Lead	1000	450	158 (2.33)	346 (2.39)	16800 (49.3)	79.8 (2.15)	36.2 (2.27)	291 (2.2)	51.6 (2.29)	96.4 (2.23)	277 (2.21)	177 (2.24)

- Notes:**
- Concentrations are presented in mg/kg.
 - Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
 - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
 - 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.
 - Underlining indicates that the concentration exceeds the Site-specific standard of 2,520 mg/kg for lead.
 - 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 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	LS-A-C03-C2 LS-A-C03 LS-A-C03-C2-COMP 5/2/2023	LS-A-C04-C1 LS-A-C04 LS-A-C04-C1-COMP 5/2/2023	LS-A-C05-C1 LS-A-C05 LS-A-C05-C1-COMP 5/3/2023	LS-A-D01-C1 LS-A-D01 LS-A-D01-C1-COMP 5/23/2023	LS-A-D01-C2 LS-A-D01 LS-A-D01-C2-COMP 5/23/2023	LS-A-D01-C3 LS-A-D01 LS-A-D01-C3-COMP 5/23/2023	LS-A-D01-C4 LS-A-D01 LS-A-D01-C4-COMP 5/23/2023	LS-A-D02-C1 LS-A-D02 LS-A-D02-C1-COMP 5/3/2023	LS-A-D02-C2 LS-A-D02 LS-A-D02-C2-COMP 5/3/2023	LS-A-D02-C3 LS-A-D02 LS-A-D02-C3-COMP 5/3/2023
PAHs												
Anthracene	190000	350	0.33 J (0.54)	U (0.11)	0.051 J (0.11)	0.6 (0.54)	0.79 (0.13)	U (0.12)	0.85 (0.54)	0.13 (0.11)	0.62 (0.11)	0.065 J (0.12)
Benzo(a)anthracene	130	340	0.34 J (0.54)	U (0.11)	0.066 J (0.11)	0.65 (0.54)	0.62 (0.13)	0.088 J (0.12)	0.71 (0.54)	0.47 (0.11)	2.5 (0.11)	0.18 (0.12)
Benzo(a)pyrene	91	46	U (0.72)	U (0.14)	0.075 J (0.15)	0.48 J (0.72)	0.45 (0.17)	0.08 J (0.16)	0.56 J (0.72)	0.6 (0.15)	2.8 (0.15)	0.18 (0.15)
Benzo(b)fluoranthene	76	170	U (0.54)	U (0.11)	0.072 J (0.11)	0.38 J (0.54)	0.34 (0.13)	0.093 J (0.12)	0.48 J (0.54)	0.66 (0.11)	3.4 (0.11)	0.23 (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.72)	U (0.14)	0.14 J (0.15)	0.37 J (0.72)	0.35 (0.17)	0.068 J (0.16)	0.47 J (0.72)	0.55 (0.15)	1.9 (0.15)	0.14 J (0.15)
Chrysene	760	230	0.94 (0.54)	U (0.11)	0.16 (0.11)	1 (0.54)	1.2 (0.13)	0.1 J (0.12)	1.2 (0.54)	0.54 (0.11)	2.7 (0.11)	0.19 (0.12)
Fluorene	130000	3800	1.3 (0.9)	U (0.18)	0.16 J (0.19)	1.3 (0.9)	1.6 (0.22)	0.027 J (0.2)	2.1 (0.9)	0.044 J (0.19)	0.33 (0.19)	0.21 (0.19)
Naphthalene	66	25	U (0.18)	U (0.035)	0.31 (0.038)	0.16 J (0.18)	0.68 (0.044)	U (0.041)	0.87 (0.18)	0.33 (0.038)	0.63 (0.038)	0.59 (0.038)
Phenanthrene	190000	10000	4.6 (0.54)	U (0.11)	0.37 (0.11)	4.3 (0.54)	4.2 (0.13)	0.11 J (0.12)	5.3 (0.54)	0.51 (0.11)	2.6 (0.11)	0.49 (0.12)
Pyrene	96000	2200	0.61 (0.54)	U (0.11)	0.15 (0.11)	0.99 (0.54)	1.3 (0.13)	0.14 (0.12)	1.7 (0.54)	0.67 (0.11)	3.4 (0.11)	0.27 (0.12)
Metals												
Lead	1000	450	15.4 (2.08)	7.87 (2.09)	15.1 (2.21)	122 (2.12)	550 (2.54)	98.1 (2.43)	171 (2.2)	105 (2.19)	1120 (2.22)	352 (2.26)

- Notes:**
- Concentrations are presented in mg/kg.
 - Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
 - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
 - 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.
 - Underlining indicates that the concentration exceeds the Site-specific standard of 2,520 mg/kg for lead.
 - 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 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell Field Sample ID Sample Date	Non-Residential Soil	Non-Residential Soil to	LS-A-D02-C4	LS-A-D03-C1	LS-A-D03-C2	LS-A-D04-C1	LS-A-D04-C2	LS-A-D04-C3	LS-A-D04-C4	LS-A-D04-C5	LS-A-D05-C1	LS-A-D05-C2
	Direct Contact	Groundwater	LS-A-D02	LS-A-D03	LS-A-D03	LS-A-D04	LS-A-D04	LS-A-D04	LS-A-D04	LS-A-D04	LS-A-D05	LS-A-D05
	Numeric	Numeric	LS-A-D02-C4-COMP	LS-A-D03-C1-COMP	LS-A-D03-C2-COMP	LS-A-D04-C1-COMP	LS-A-D04-C2-COMP	LS-A-D04-C3-COMP	LS-A-D04-C4-COMP	LS-A-D04-C5-COMP	LS-A-D05-C1-COMP	LS-A-D05-C2-COMP
	Value (0-2 ft bgs)	Value	5/3/2023	5/3/2023	5/3/2023	5/3/2023	5/3/2023	5/3/2023	5/3/2023	5/3/2023	5/3/2023	5/4/2023
	(mg/kg)	(mg/kg)										
PAHs												
Anthracene	190000	350	0.37 J (1.1)	0.11 (0.11)	U (0.11)	0.12 (0.11)	0.052 J (0.11)	0.35 (0.11)	1.9 (0.12)	0.16 (0.11)	0.65 J (1.2)	U (0.12)
Benzo(a)anthracene	130	340	0.33 J (1.1)	0.13 (0.11)	0.11 (0.11)	0.48 (0.11)	0.12 (0.11)	0.89 (0.11)	1.7 (0.12)	0.21 (0.11)	4.2 (1.2)	0.1 J (0.12)
Benzo(a)pyrene	91	46	U (1.5)	0.098 J (0.15)	0.2 (0.15)	0.68 (0.15)	0.14 J (0.15)	0.98 (0.15)	1.6 (0.15)	0.21 (0.15)	3.7 (1.5)	0.13 J (0.16)
Benzo(b)fluoranthene	76	170	U (1.1)	0.1 J (0.11)	0.2 (0.11)	0.69 (0.11)	0.14 (0.11)	0.74 (0.11)	1.3 (0.12)	0.26 (0.11)	2.6 (1.2)	0.11 J (0.12)
Benzo(g,h,i)perylene	190000	180	U (1.5)	0.081 J (0.15)	0.14 J (0.15)	0.68 (0.15)	0.18 (0.15)	1.4 (0.15)	1.3 (0.15)	0.18 (0.15)	2.3 (1.5)	0.2 (0.16)
Chrysene	760	230	0.61 J (1.1)	0.17 (0.11)	0.12 (0.11)	0.46 (0.11)	0.17 (0.11)	1.2 (0.11)	2.4 (0.12)	0.34 (0.11)	8.4 (1.2)	0.12 (0.12)
Fluorene	130000	3800	1.8 (1.8)	0.17 J (0.18)	U (0.19)	0.023 J (0.18)	0.031 J (0.18)	0.2 (0.19)	1.6 (0.19)	0.16 J (0.19)	0.59 J (1.9)	U (0.2)
Naphthalene	66	25	4 (0.37)	0.071 (0.037)	0.025 J (0.038)	0.28 (0.037)	0.12 (0.037)	0.56 (0.038)	1.7 (0.038)	0.14 (0.038)	0.25 J (0.38)	0.074 (0.039)
Phenanthrene	190000	10000	3 (1.1)	0.82 (0.11)	0.08 J (0.11)	0.24 (0.11)	0.18 (0.11)	1 (0.11)	4 (0.12)	0.47 (0.11)	2.5 (1.2)	0.085 J (0.12)
Pyrene	96000	2200	0.6 J (1.1)	0.44 (0.11)	0.12 (0.11)	0.51 (0.11)	0.23 (0.11)	1.6 (0.11)	4.1 (0.12)	0.42 (0.11)	5 (1.2)	0.13 (0.12)
Metals												
Lead	1000	450	82.8 (2.25)	90.8 (2.19)	43.6 (2.24)	105 (2.23)	180 (2.12)	98.1 (2.21)	88.6 (2.28)	336 (2.22)	488 (2.34)	53.7 (2.27)

- Notes:**
- 1 Concentrations are presented in mg/kg.
 - 2 Yellow shading indicates that the concentration exceeds 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 reported value is estimated.

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

Table 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
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Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	LS-A-D05-C3 LS-A-D05 LS-A-D05-C3-COMP 5/4/2023	LS-A-D05-C4 LS-A-D05 LS-A-D05-C4-COMP 5/4/2023	LS-A-D06-C1 LS-A-D06 LS-A-D06-C1-COMP 5/4/2023	LS-A-D06-C2 LS-A-D06 LS-A-D06-C2-COMP 5/4/2023	LS-A-D06-C3 LS-A-D06 LS-A-D06-C3-COMP 5/4/2023	LS-A-D06-C4 LS-A-D06 LS-A-D06-C4-COMP 5/4/2023	LS-A-D06-C5 LS-A-D06 LS-A-D06-C5-COMP 5/4/2023	LS-A-D07-C1 LS-A-D07 LS-A-D07-C1-COMP 5/4/2023	LS-A-D07-C2 LS-A-D07 LS-A-D07-C2-COMP 5/4/2023	LS-A-D07-C3 LS-A-D07 LS-A-D07-C3-COMP 5/4/2023
PAHs												
Anthracene	190000	350	0.17 (0.12)	U (0.11)	0.12 (0.11)	0.15 (0.11)	0.23 (0.11)	0.37 (0.12)	0.26 (0.12)	1.9 (0.11)	2.5 (1.1)	0.23 (0.11)
Benzo(a)anthracene	130	340	0.75 (0.12)	0.12 (0.11)	0.32 (0.11)	0.15 (0.11)	0.14 (0.11)	0.29 (0.12)	0.16 (0.12)	3.8 (0.11)	0.71 J (1.1)	0.092 J (0.11)
Benzo(a)pyrene	91	46	0.77 (0.16)	0.69 (0.15)	0.32 (0.15)	0.19 (0.15)	0.25 (0.15)	0.39 (0.16)	0.18 (0.15)	3.7 (0.15)	0.54 J (1.5)	U (0.14)
Benzo(b)fluoranthene	76	170	0.94 (0.12)	0.31 (0.11)	0.34 (0.11)	0.13 (0.11)	0.14 (0.11)	0.3 (0.12)	0.087 J (0.12)	3.9 (0.11)	0.4 J (1.1)	U (0.11)
Benzo(g,h,i)perylene	190000	180	0.51 (0.16)	0.94 (0.15)	0.21 (0.15)	0.17 (0.15)	0.32 (0.15)	0.34 (0.16)	0.24 (0.15)	1.5 (0.15)	0.36 J (1.5)	0.15 (0.14)
Chrysene	760	230	0.84 (0.12)	0.51 (0.11)	0.32 (0.11)	0.22 (0.11)	0.28 (0.11)	0.54 (0.12)	0.24 (0.12)	3.5 (0.11)	0.82 J (1.1)	0.3 (0.11)
Fluorene	130000	3800	0.1 J (0.19)	U (0.18)	0.032 J (0.19)	0.19 (0.19)	0.47 (0.19)	0.63 (0.19)	0.35 (0.19)	0.5 (0.19)	3.6 (1.8)	1.1 (0.18)
Naphthalene	66	25	0.043 (0.039)	U (0.037)	0.057 (0.038)	0.76 (0.038)	2.2 (0.038)	3.1 (0.039)	1.6 (0.039)	0.69 (0.038)	0.41 (0.37)	U (0.036)
Phenanthrene	190000	10000	0.53 (0.12)	0.029 J (0.11)	0.56 (0.11)	0.62 (0.11)	0.76 (0.11)	1.3 (0.12)	0.76 (0.12)	8.9 (1.1)	9.7 (1.1)	1.4 (0.11)
Pyrene	96000	2200	1.1 (0.12)	0.22 (0.11)	0.49 (0.11)	0.4 (0.11)	0.39 (0.11)	0.79 (0.12)	0.47 (0.12)	7.1 (0.11)	4.7 (1.1)	0.32 (0.11)
Metals												
Lead	1000	450	122 (2.34)	36.9 (2.18)	156 (2.24)	194 (2.27)	684 (2.22)	158 (2.31)	489 (2.32)	274 (2.25)	145 (2.09)	177 (2.11)

- Notes:**
- Concentrations are presented in mg/kg.
 - Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
 - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
 - 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.
 - Underlining indicates that the concentration exceeds the Site-specific standard of 2,520 mg/kg for lead.
 - 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:
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ft bgs -- Feet Below Ground Surface.
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Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	LS-A-D07-C4 LS-A-D07 LS-A-D07-C4-COMP 5/4/2023	LS-A-D07-C5 LS-A-D07 LS-A-D07-C5-COMP 5/4/2023	LS-A-E02-C1 LS-A-E02 LS-A-E02-C1-COMP 5/5/2023	LS-A-E02-C2 LS-A-E02 LS-A-E02-C2-COMP 5/5/2023	LS-A-E02-C3 LS-A-E02 LS-A-E02-C3-COMP 5/5/2023	LS-A-E02-C4 LS-A-E02 LS-A-E02-C4-COMP 5/5/2023	LS-A-E02-C5 LS-A-E02 LS-A-E02-C5-COMP 5/5/2023	LS-A-E03-C1 LS-A-E03 LS-A-E03-C1-COMP 5/5/2023	LS-A-E03-C2 LS-A-E03 LS-A-E03-C2-COMP 5/5/2023	LS-A-E03-C3 LS-A-E03 LS-A-E03-C3-COMP 5/5/2023
PAHs												
Anthracene	190000	350	0.38 (0.11)	0.13 (0.11)	U (0.11)	U (0.11)	U (0.11)	U (1.1)	U (1.2)	U (0.12)	U (0.13)	U (1.2)
Benzo(a)anthracene	130	340	0.12 (0.11)	1.5 (0.11)	0.1 J (0.11)	0.067 J (0.11)	0.12 (0.11)	0.24 J (1.1)	0.39 J (1.2)	0.054 J (0.12)	0.029 J (0.13)	U (1.2)
Benzo(a)pyrene	91	46	0.11 J (0.15)	0.9 (0.15)	0.11 J (0.14)	0.074 J (0.14)	0.12 J (0.14)	U (1.4)	0.63 J (1.5)	0.078 J (0.16)	U (0.17)	U (1.6)
Benzo(b)fluoranthene	76	170	0.075 J (0.11)	0.91 (0.11)	0.13 (0.11)	0.083 J (0.11)	0.14 (0.11)	U (1.1)	U (1.2)	0.056 J (0.12)	0.042 J (0.13)	U (1.2)
Benzo(g,h,i)perylene	190000	180	0.1 J (0.15)	0.38 (0.15)	0.063 J (0.14)	0.053 J (0.14)	0.075 J (0.14)	0.21 J (1.4)	0.49 J (1.5)	0.073 J (0.16)	0.038 J (0.17)	U (1.6)
Chrysene	760	230	0.15 (0.11)	3.1 (0.11)	0.092 J (0.11)	0.065 J (0.11)	0.11 (0.11)	0.4 J (1.1)	0.69 J (1.2)	0.075 J (0.12)	0.027 J (0.13)	0.24 J (1.2)
Fluorene	130000	3800	0.69 (0.19)	0.23 (0.18)	U (0.18)	U (0.18)	U (0.18)	U (1.8)	0.59 J (1.9)	0.03 J (0.19)	U (0.22)	U (1.9)
Naphthalene	66	25	0.13 (0.038)	0.23 (0.037)	U (0.036)	U (0.036)	U (0.036)	U (0.36)	U (0.39)	U (0.039)	0.029 J (0.043)	0.37 J (0.39)
Phenanthrene	190000	10000	1.7 (0.11)	0.65 (0.11)	0.09 J (0.11)	0.058 J (0.11)	0.11 (0.11)	0.26 J (1.1)	1.3 (1.2)	0.069 J (0.12)	0.044 J (0.13)	0.25 J (1.2)
Pyrene	96000	2200	0.7 (0.11)	0.65 (0.11)	0.14 (0.11)	0.11 (0.11)	0.17 (0.11)	0.75 J (1.1)	1.8 (1.2)	0.16 (0.12)	0.04 J (0.13)	0.27 J (1.2)
Metals												
Lead	1000	450	70.6 (2.15)	104 (2.12)	83.7 (2.13)	22.3 (2.1)	216 (2.12)	53.7 (2.17)	56.1 (2.3)	62.9 (2.27)	381 (2.49)	58.7 (2.28)

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

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PAHs												
Anthracene	190000	350	U (1.2)	0.33 J (0.6)	0.63 J (1.1)	0.42 J (0.56)	1.5 (1.2)	4.5 (1.2)	1.2 (0.61)	0.21 (0.11)	0.15 (0.11)	0.16 (0.12)
Benzo(a)anthracene	130	340	0.44 J (1.2)	0.36 J (0.6)	0.41 J (1.1)	1 (0.56)	3 (1.2)	7.7 (1.2)	1.3 (0.61)	0.31 (0.11)	0.32 (0.11)	1.3 (0.12)
Benzo(a)pyrene	91	46	0.66 J (1.6)	U (0.79)	U (1.5)	1 (0.75)	2.4 (1.6)	4.4 (1.6)	0.65 J (0.81)	0.31 (0.15)	0.35 (0.14)	1.3 (0.15)
Benzo(b)fluoranthene	76	170	0.38 J (1.2)	0.24 J (0.6)	U (1.1)	0.75 (0.56)	1.5 (1.2)	2.1 (1.2)	0.28 J (0.61)	0.32 (0.11)	0.34 (0.11)	0.79 (0.12)
Benzo(g,h,i)perylene	190000	180	0.72 J (1.6)	0.12 J (0.79)	U (1.5)	0.59 J (0.75)	1.3 J (1.6)	2.8 (1.6)	0.4 J (0.81)	0.21 (0.15)	0.29 (0.14)	1.6 (0.15)
Chrysene	760	230	0.61 J (1.2)	0.72 (0.6)	0.88 J (1.1)	2.2 (0.56)	5 (1.2)	13 (1.2)	2.2 (0.61)	0.39 (0.11)	0.43 (0.11)	2 (0.12)
Fluorene	130000	3800	0.29 J (2)	0.78 J (0.99)	1.4 J (1.9)	0.46 J (0.94)	1.8 J (2.1)	11 (1.9)	2.9 (1)	0.31 (0.19)	0.18 (0.18)	0.067 J (0.19)
Naphthalene	66	25	0.39 (0.39)	U (0.2)	0.27 J (0.38)	0.32 (0.19)	0.99 (0.41)	1.5 (0.39)	0.62 (0.2)	0.069 (0.037)	0.072 (0.036)	0.051 (0.038)
Phenanthrene	190000	10000	1.2 (1.2)	3.2 (0.6)	4.8 (1.1)	2 (0.56)	7.4 (1.2)	39 (1.2)	6.3 (0.61)	0.46 (0.11)	0.31 (0.11)	0.16 (0.12)
Pyrene	96000	2200	0.51 J (1.2)	1 (0.6)	1.1 (1.1)	1.6 (0.56)	6.7 (1.2)	17 (1.2)	2.7 (0.61)	0.51 (0.11)	0.54 (0.11)	1.1 (0.12)
Metals												
Lead	1000	450	256 (2.34)	54.4 (2.34)	133 (2.23)	82.5 (2.23)	634 (2.4)	222 (2.29)	314 (2.33)	96.7 (2.15)	148 (2.07)	75.6 (2.24)

Notes:

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- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 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.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,520 mg/kg for lead.
- 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:

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Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	LS-A-E08-C1 LS-A-E08 LS-A-E08-C1-COMP 5/8/2023	LS-A-E08-C2 LS-A-E08 LS-A-E08-C2-COMP 5/8/2023	LS-A-E08-C3 LS-A-E08 LS-A-E08-C3-COMP 5/8/2023	LS-A-F01-C1 LS-A-F01 LS-A-F01-C1-COMP 5/9/2023	LS-A-F03-C1 LS-A-F03 LS-A-F03-C1-COMP 5/8/2023	LS-A-F04-C1 LS-A-F04 LS-A-F04-C1-COMP 5/25/2023	LS-A-F05-C1 LS-A-F05 LS-A-F05-C1-COMP 5/25/2023	LS-A-G01-C1 LS-A-G01 LS-A-G01-C1-COMP 5/22/2023	LS-A-G01-C2 LS-A-G01 LS-A-G01-C2-COMP 5/22/2023	LS-A-G01-C3 LS-A-G01 LS-A-G01-C3-COMP 5/22/2023
PAHs												
Anthracene	190000	350	0.14 (0.13)	0.19 (0.12)	0.093 J (0.12)	0.72 (0.55)	0.44 (0.12)	0.3 (0.11)	0.28 (0.11)	U (0.1)	0.067 J (0.1)	0.29 (0.1)
Benzo(a)anthracene	130	340	0.16 (0.13)	0.56 (0.12)	0.057 J (0.12)	4 (0.55)	0.64 (0.12)	0.88 (0.11)	1.2 (0.11)	U (0.1)	0.2 (0.1)	0.58 (0.1)
Benzo(a)pyrene	91	46	0.14 J (0.17)	0.39 (0.17)	U (0.16)	10 (0.74)	0.65 (0.16)	1.5 (0.15)	1.3 (0.15)	U (0.14)	0.18 (0.14)	0.54 (0.14)
Benzo(b)fluoranthene	76	170	0.16 (0.13)	0.23 (0.12)	0.034 J (0.12)	5.4 (0.55)	0.47 (0.12)	1.2 (0.11)	1.5 (0.11)	U (0.1)	0.2 (0.1)	0.67 (0.1)
Benzo(g,h,i)perylene	190000	180	0.13 J (0.17)	0.26 (0.17)	0.029 J (0.16)	10 (0.74)	0.37 (0.16)	1.1 (0.15)	0.84 (0.15)	U (0.14)	0.13 J (0.14)	0.38 (0.14)
Chrysene	760	230	0.22 (0.13)	1.1 (0.12)	0.091 J (0.12)	4.8 (0.55)	1.4 (0.12)	1.4 (0.11)	1.1 (0.11)	U (0.1)	0.2 (0.1)	0.58 (0.1)
Fluorene	130000	3800	0.23 (0.22)	0.34 (0.21)	0.25 (0.2)	1.2 (0.92)	0.83 (0.2)	0.29 (0.18)	0.073 J (0.19)	U (0.17)	0.03 J (0.17)	0.17 (0.17)
Naphthalene	66	25	0.099 (0.044)	0.048 (0.042)	0.044 (0.039)	0.25 (0.18)	0.048 (0.04)	0.22 (0.037)	0.14 (0.037)	U (0.034)	0.042 (0.034)	0.2 (0.034)
Phenanthrene	190000	10000	0.5 (0.13)	0.74 (0.12)	0.26 (0.12)	1.8 (0.55)	5.6 (0.12)	0.84 (0.11)	1.1 (0.11)	U (0.1)	0.18 (0.1)	1 (0.1)
Pyrene	96000	2200	0.35 (0.13)	0.86 (0.12)	0.13 (0.12)	3.3 (0.55)	1.2 (0.12)	1.4 (0.11)	1.9 (0.11)	U (0.1)	0.27 (0.1)	0.88 (0.1)
Metals												
Lead	1000	450	238 (2.55)	171 (2.45)	81 (2.27)	143 (2.17)	409 (2.4)	252 (2.19)	649 (2.21)	3.81 (2.04)	64 (2.04)	116 (1.96)

- Notes:**
- Concentrations are presented in mg/kg.
 - Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
 - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
 - 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.
 - Underlining indicates that the concentration exceeds the Site-specific standard of 2,520 mg/kg for lead.
 - 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 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	LS-A-G02-C1 LS-A-G02 LS-A-G02-C1-COMP 5/11/2023	LS-A-G02-C2 LS-A-G02 LS-A-G02-C2-COMP 5/11/2023	LS-A-G02-C3 LS-A-G02 LS-A-G02-C3-COMP 5/11/2023	LS-A-G03-C1 LS-A-G03 LS-A-G03-C1-COMP 5/10/2023	LS-A-G03-C2 LS-A-G03 LS-A-G03-C2-COMP 5/10/2023	LS-A-G04-C1 LS-A-G04 LS-A-G04-C1-COMP 5/11/2023	LS-A-G04-C2 LS-A-G04 LS-A-G04-C2-COMP 5/11/2023	LS-A-G04-C3 LS-A-G04 LS-A-G04-C3-COMP 5/11/2023	LS-A-G05-C1 LS-A-G05 LS-A-G05-C1-COMP 5/10/2023	LS-A-G05-C2 LS-A-G05 LS-A-G05-C2-COMP 5/10/2023
Field Sample ID	Value (0-2 ft bgs)	Value										
Sample Date	(mg/kg)	(mg/kg)										
PAHs												
Anthracene	190000	350	0.17 (0.1)	0.45 J (0.52)	1 (0.53)	0.25 (0.11)	0.41 (0.11)	14 (0.52)	12 (0.51)	3.2 (0.55)	U (0.52)	1.6 (0.56)
Benzo(a)anthracene	130	340	0.17 (0.1)	0.5 J (0.52)	0.43 J (0.53)	0.24 (0.11)	0.42 (0.11)	5.8 (0.52)	9.6 (0.51)	2.4 (0.55)	0.94 (0.52)	3.8 (0.56)
Benzo(a)pyrene	91	46	0.2 (0.14)	0.42 J (0.69)	0.35 J (0.71)	0.25 (0.14)	0.37 (0.14)	4.9 (0.7)	6.6 (0.69)	1.7 (0.74)	1.6 (0.69)	3.5 (0.75)
Benzo(b)fluoranthene	76	170	0.13 (0.1)	0.35 J (0.52)	0.31 J (0.53)	0.17 (0.11)	0.35 (0.11)	5.1 (0.52)	7.7 (0.51)	1.7 (0.55)	0.87 (0.52)	2.4 (0.56)
Benzo(g,h,i)perylene	190000	180	0.17 (0.14)	0.36 J (0.69)	0.3 J (0.71)	0.22 (0.14)	0.24 (0.14)	3.1 (0.7)	3.7 (0.69)	0.84 (0.74)	1.9 (0.69)	2.3 (0.75)
Chrysene	760	230	0.26 (0.1)	0.93 (0.52)	0.86 (0.53)	0.32 (0.11)	0.51 (0.11)	5.9 (0.52)	7.6 (0.51)	2.5 (0.55)	1.2 (0.52)	4.1 (0.56)
Fluorene	130000	3800	0.18 (0.17)	0.77 J (0.86)	2 (0.89)	0.36 (0.18)	0.58 (0.18)	11 (0.87)	17 (0.86)	4.3 (0.92)	U (0.86)	1.1 (0.93)
Naphthalene	66	25	0.064 (0.035)	0.16 J (0.17)	0.37 (0.18)	1.5 (0.036)	0.56 (0.036)	0.57 (0.17)	0.13 J (0.17)	0.23 (0.18)	0.1 J (0.17)	1.2 (0.19)
Phenanthrene	190000	10000	0.74 (0.1)	2.1 (0.52)	5.2 (0.53)	1 (0.11)	2.1 (0.11)	39 (2.6)	54 (2.6)	14 (0.55)	0.2 J (0.52)	1.2 (0.56)
Pyrene	96000	2200	0.49 (0.1)	1.5 (0.52)	1.1 (0.53)	0.52 (0.11)	0.95 (0.11)	20 (0.52)	34 (0.51)	7.3 (0.55)	0.7 (0.52)	4.4 (0.56)
Metals												
Lead	1000	450	39.2 (2.06)	17.4 (2.03)	50.8 (2.08)	95.1 (2.03)	23.3 (2.11)	26.5 (2.11)	10.5 (2.06)	5.7 (2.2)	96.5 (2.04)	179 (2.15)

- Notes:**
- Concentrations are presented in mg/kg.
 - Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
 - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
 - 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.
 - Underlining indicates that the concentration exceeds the Site-specific standard of 2,520 mg/kg for lead.
 - 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 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	LS-A-G05-C3	LS-A-G05-C4	LS-A-G05-C5	LS-A-G06-C1	LS-A-G06-C2	LS-A-G07-C1	LS-A-G08-C1	LS-A-H01-C1	LS-A-H01-C2	LS-A-H01-C3
Cell	Direct Contact Numeric	Groundwater Numeric	LS-A-G05	LS-A-G05	LS-A-G05	LS-A-G06	LS-A-G06	LS-A-G07	LS-A-G08	LS-A-H01	LS-A-H01	LS-A-H01
Field Sample ID	Value (0-2 ft bgs)	Value	LS-A-G05-C3-COMP	LS-A-G05-C4-COMP	LS-A-G05-C5-COMP	LS-A-G06-C1-COMP	LS-A-G06-C2-COMP	LS-A-G07-C1-COMP	LS-A-G08-C1-COMP	LS-A-H01-C1-COMP	LS-A-H01-C2-COMP	LS-A-H01-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	5/10/2023	5/10/2023	5/10/2023	5/22/2023	5/22/2023	5/24/2023	5/24/2023	5/11/2023	5/11/2023	5/11/2023
PAHs												
Anthracene	190000	350	0.6 (0.1)	0.57 (0.1)	0.64 (0.1)	1.5 (0.12)	0.24 J (0.57)	U (0.13)	0.83 (0.11)	0.083 J (0.11)	U (0.52)	0.56 (0.51)
Benzo(a)anthracene	130	340	0.9 (0.1)	1.6 (0.1)	0.48 (0.1)	5.2 (0.12)	0.87 (0.57)	0.098 J (0.13)	4 (0.11)	0.09 J (0.11)	U (0.52)	0.26 J (0.51)
Benzo(a)pyrene	91	46	0.66 (0.14)	1 (0.14)	0.24 (0.14)	7.2 (0.16)	1.7 (0.76)	0.11 J (0.18)	6 (0.14)	0.096 J (0.14)	U (0.7)	U (0.68)
Benzo(b)fluoranthene	76	170	0.44 (0.1)	0.45 (0.1)	0.16 (0.1)	8 (0.6)	2.2 (0.57)	0.14 (0.13)	6.4 (0.11)	0.11 (0.11)	U (0.52)	0.2 J (0.51)
Benzo(g,h,i)perylene	190000	180	0.38 (0.14)	0.56 (0.14)	0.32 (0.14)	5.3 (0.16)	2.6 (0.76)	0.072 J (0.18)	3.3 (0.14)	0.094 J (0.14)	U (0.7)	0.12 J (0.68)
Chrysene	760	230	0.97 (0.1)	1.6 (0.1)	0.76 (0.1)	4.5 (0.12)	1.3 (0.57)	0.11 J (0.13)	3.4 (0.11)	0.12 (0.11)	U (0.52)	0.88 (0.51)
Fluorene	130000	3800	0.73 (0.17)	0.37 (0.17)	1.5 (0.17)	0.45 (0.2)	0.53 J (0.95)	U (0.22)	0.1 J (0.18)	0.039 J (0.18)	U (0.87)	1.6 (0.84)
Naphthalene	66	25	0.48 (0.035)	0.18 (0.034)	0.65 (0.034)	0.42 (0.04)	0.75 (0.19)	0.047 (0.045)	0.29 (0.036)	0.074 (0.035)	U (0.17)	U (0.17)
Phenanthrene	190000	10000	1.5 (0.1)	0.7 (0.1)	3.5 (0.1)	4.7 (0.12)	0.84 (0.57)	0.12 J (0.13)	3 (0.11)	0.36 (0.11)	U (0.52)	1.2 (0.51)
Pyrene	96000	2200	1.5 (0.1)	2.2 (0.1)	1 (0.1)	5.4 (0.12)	1.2 (0.57)	0.15 (0.13)	3.4 (0.11)	0.14 (0.11)	U (0.52)	0.89 (0.51)
Metals												
Lead	1000	450	5.6 (2.06)	6.91 (2)	3.52 (2.02)	281 (2.26)	386 (2.22)	165 (2.6)	94.1 (2.2)	48.5 (2.09)	33.6 (2.01)	13.9 (1.98)

- Notes:**
- 1 Concentrations are presented in mg/kg.
 - 2 Yellow shading indicates that the concentration exceeds 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 reported value is estimated.

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

Table 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	LS-A-H02-C1 LS-A-H02 LS-A-H02-C1-COMP 5/18/2023	LS-A-H02-C2 LS-A-H02 LS-A-H02-C2-COMP 5/18/2023	LS-A-H02-C3 LS-A-H02 LS-A-H02-C3-COMP 5/18/2023	LS-A-H02-C4 LS-A-H02 LS-A-H02-C4-COMP 5/18/2023	LS-A-H02-C5 LS-A-H02 LS-A-H02-C5-COMP 5/18/2023	LS-A-H03-C1 LS-A-H03 LS-A-H03-C1-COMP 5/12/2023	LS-A-H03-C2 LS-A-H03 LS-A-H03-C2-COMP 5/12/2023	LS-A-H03-C3 LS-A-H03 LS-A-H03-C3-COMP 5/12/2023	LS-A-H04-C1 LS-A-H04 LS-A-H04-C1-COMP 5/18/2023	LS-A-H04-C2 LS-A-H04 LS-A-H04-C2-COMP 5/18/2023
PAHs												
Anthracene	190000	350	0.28 (0.11)	3.2 (1.2)	2.3 (0.55)	1.3 (0.55)	0.99 (0.54)	0.2 (0.11)	U (0.11)	0.22 J (0.55)	0.44 (0.12)	0.63 (0.11)
Benzo(a)anthracene	130	340	0.84 (0.11)	2.3 (1.2)	2.1 (0.55)	1.6 (0.55)	3.3 (0.54)	0.21 (0.11)	0.038 J (0.11)	0.28 J (0.55)	0.54 (0.12)	0.59 (0.11)
Benzo(a)pyrene	91	46	1.7 (0.15)	1.8 (1.6)	1.2 (0.73)	1.3 (0.73)	3 (0.72)	0.14 J (0.15)	U (0.15)	0.23 J (0.73)	0.46 (0.16)	0.88 (0.15)
Benzo(b)fluoranthene	76	170	1.3 (0.11)	0.89 J (1.2)	0.64 (0.55)	0.88 (0.55)	2.5 (0.54)	0.12 (0.11)	0.04 J (0.11)	0.24 J (0.55)	0.6 (0.12)	0.68 (0.11)
Benzo(g,h,i)perylene	190000	180	1.4 (0.15)	1.5 J (1.6)	1.3 (0.73)	1.9 (0.73)	3 (0.72)	0.076 J (0.15)	0.037 J (0.15)	0.16 J (0.73)	0.47 (0.16)	1 (0.15)
Chrysene	760	230	1.1 (0.11)	4 (1.2)	2.8 (0.55)	2.4 (0.55)	3.8 (0.54)	0.34 (0.11)	0.081 J (0.11)	0.66 (0.55)	1 (0.12)	1.7 (0.11)
Fluorene	130000	3800	0.21 (0.19)	1.8 J (2)	1.1 (0.92)	1.2 (0.91)	0.9 (0.9)	0.44 (0.19)	0.042 J (0.19)	0.5 J (0.92)	1.1 (0.2)	1.4 (0.19)
Naphthalene	66	25	0.35 (0.038)	0.64 (0.4)	0.47 (0.18)	0.44 (0.18)	0.58 (0.18)	0.038 (0.038)	U (0.038)	U (0.18)	0.4 (0.039)	0.98 (0.038)
Phenanthrene	190000	10000	0.85 (0.11)	8.9 (1.2)	5.5 (0.55)	4.9 (0.55)	4.1 (0.54)	1.4 (0.11)	0.14 (0.11)	1.5 (0.55)	0.72 (0.12)	2.7 (0.11)
Pyrene	96000	2200	0.83 (0.11)	8 (1.2)	5.9 (0.55)	3.4 (0.55)	4.1 (0.54)	0.32 (0.11)	U (0.11)	0.64 (0.55)	0.88 (0.12)	0.85 (0.11)
Metals												
Lead	1000	450	157 (2.33)	176 (2.3)	90.2 (2.22)	51 (2.2)	37.9 (2.09)	32.9 (2.25)	94.2 (2.25)	14.7 (2.21)	54.1 (2.3)	63.9 (2.27)

- Notes:**
- Concentrations are presented in mg/kg.
 - Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
 - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
 - 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.
 - Underlining indicates that the concentration exceeds the Site-specific standard of 2,520 mg/kg for lead.
 - 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 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
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)	LS-A-H04-C3	LS-A-H05-C1	LS-A-H05-C2	LS-A-H06-C1	LS-A-H07-C1	LS-A-I01-C1	LS-A-I02-C1	LS-A-I03-C1	LS-A-I03-C2	LS-A-I03-C3
			LS-A-H04	LS-A-H05	LS-A-H05	LS-A-H06	LS-A-H07	LS-A-I01	LS-A-I02	LS-A-I03	LS-A-I03	LS-A-I03
			LS-A-H04-C3-COMP	LS-A-H05-C1-COMP	LS-A-H05-C2-COMP	LS-A-H06-C1-COMP	LS-A-H07-C1-COMP	LS-A-I01-C1-COMP	LS-A-I02-C1-COMP	LS-A-I03-C1-COMP	LS-A-I03-C2-COMP	LS-A-I03-C3-COMP
			5/18/2023	5/12/2023	5/12/2023	5/12/2023	5/18/2023	5/23/2023	5/23/2023	5/17/2023	5/17/2023	5/17/2023
PAHs												
Anthracene	190000	350	0.65 (0.11)	0.15 (0.11)	0.097 J (0.11)	0.44 (0.12)	0.23 J (0.54)	0.33 J (0.57)	0.052 J (0.11)	U (0.12)	0.12 (0.12)	U (0.12)
Benzo(a)anthracene	130	340	0.66 (0.11)	0.37 (0.11)	0.054 J (0.11)	1 (0.12)	0.6 (0.54)	1.3 (0.57)	0.15 (0.11)	U (0.12)	0.18 (0.12)	U (0.12)
Benzo(a)pyrene	91	46	1.3 (0.15)	U (0.14)	U (0.14)	0.74 (0.16)	0.61 J (0.72)	1.6 (0.76)	0.18 (0.14)	U (0.15)	0.17 (0.16)	U (0.15)
Benzo(b)fluoranthene	76	170	0.72 (0.11)	U (0.11)	U (0.11)	0.5 (0.12)	0.66 (0.54)	1.2 (0.57)	0.18 (0.11)	U (0.12)	0.14 (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	1.6 (0.15)	U (0.14)	U (0.14)	0.62 (0.16)	0.41 J (0.72)	1.9 (0.76)	0.16 (0.14)	0.051 J (0.15)	0.13 J (0.16)	U (0.15)
Chrysene	760	230	2 (0.11)	0.084 J (0.11)	0.3 (0.11)	1.4 (0.12)	0.64 (0.54)	1.9 (0.57)	0.22 (0.11)	0.036 J (0.12)	0.21 (0.12)	0.022 J (0.12)
Fluorene	130000	3800	1.3 (0.19)	0.54 (0.18)	0.3 (0.18)	0.49 (0.2)	0.1 J (0.9)	0.32 J (0.95)	0.03 J (0.18)	0.042 J (0.19)	0.068 J (0.2)	0.034 J (0.19)
Naphthalene	66	25	1.4 (0.038)	0.053 (0.036)	0.022 J (0.036)	0.075 (0.04)	U (0.18)	0.43 (0.19)	0.076 (0.036)	U (0.039)	0.04 (0.039)	U (0.038)
Phenanthrene	190000	10000	3.6 (0.11)	1.3 (0.11)	0.52 (0.11)	1.6 (0.12)	0.53 J (0.54)	1.6 (0.57)	0.11 (0.11)	U (0.12)	0.098 J (0.12)	0.049 J (0.12)
Pyrene	96000	2200	1 (0.11)	0.27 (0.11)	0.12 (0.11)	1.9 (0.12)	0.95 (0.54)	1.2 (0.57)	0.25 (0.11)	0.062 J (0.12)	0.35 (0.12)	0.037 J (0.12)
Metals												
Lead	1000	450	18.1 (2.2)	49.4 (2.2)	20.4 (2.15)	485 (2.38)	41.6 (2.14)	579 (2.3)	69.4 (2.15)	10.6 (2.3)	34.4 (2.28)	85.1 (2.29)

- Notes:**
- Concentrations are presented in mg/kg.
 - Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
 - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
 - 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.
 - Underlining indicates that the concentration exceeds the Site-specific standard of 2,520 mg/kg for lead.
 - 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 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential Soil	Non-Residential Soil to	LS-A-I03-C4	LS-A-I04-C1	LS-A-I04-C2	LS-B-B01-C1	LS-B-B02-C1	LS-B-B03-C1	LS-B-C01-C1	LS-B-D01-C1	LS-B-D01-C2	LS-B-E01-C1
Cell	Direct Contact Numeric	Groundwater Numeric	LS-A-I03	LS-A-I04	LS-A-I04	LS-B-B01	LS-B-B02	LS-B-B03	LS-B-C01	LS-B-D01	LS-B-D01	LS-B-E01
Field Sample ID	Value (0-2 ft bgs)	Value	LS-A-I03-C4-COMP	LS-A-I04-C1-COMP	LS-A-I04-C2-COMP	LS-B-B01-C1-COMP	LS-B-B02-C1-COMP	LS-B-B03-C1-COMP	LS-B-C01-C1-COMP	LS-B-D01-C1-COMP	LS-B-D01-C2-COMP	LS-B-E01-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	5/17/2023	5/17/2023	5/17/2023	5/9/2023	5/9/2023	5/9/2023	5/9/2023	5/9/2023	5/9/2023	5/5/2023
PAHs												
Anthracene	190000	350	U (0.11)	U (0.56)	0.17 (0.11)	0.17 J (0.38)	1.3 J (1.6)	22 (2.9)	0.66 (0.63)	0.12 J (0.14)	U (0.12)	0.11 (0.11)
Benzo(a)anthracene	130	340	0.029 J (0.11)	0.4 J (0.56)	0.18 (0.11)	0.67 (0.38)	1.1 J (1.6)	27 (2.9)	0.53 J (0.63)	0.5 (0.14)	U (0.12)	0.16 (0.11)
Benzo(a)pyrene	91	46	U (0.14)	0.26 J (0.74)	0.14 J (0.15)	0.82 (0.51)	0.8 J (2.1)	21 (3.9)	0.52 J (0.84)	0.52 (0.19)	U (0.16)	0.16 (0.15)
Benzo(b)fluoranthene	76	170	U (0.11)	0.38 J (0.56)	0.19 (0.11)	0.7 (0.38)	0.84 J (1.6)	26 (2.9)	0.4 J (0.63)	0.57 (0.14)	U (0.12)	0.18 (0.11)
Benzo(g,h,i)perylene	190000	180	0.055 J (0.14)	0.28 J (0.74)	0.093 J (0.15)	0.54 (0.51)	0.5 J (2.1)	9.8 (3.9)	0.46 J (0.84)	0.29 (0.19)	U (0.16)	0.14 J (0.15)
Chrysene	760	230	0.046 J (0.11)	0.95 (0.56)	0.7 (0.11)	1.1 (0.38)	1.2 J (1.6)	24 (2.9)	1.1 (0.63)	0.55 (0.14)	0.028 J (0.12)	0.23 (0.11)
Fluorene	130000	3800	0.058 J (0.18)	0.21 J (0.93)	0.26 (0.19)	0.062 J (0.64)	1.6 J (2.6)	22 (4.8)	1.8 (1)	0.034 J (0.23)	0.06 J (0.2)	0.14 J (0.19)
Naphthalene	66	25	U (0.036)	U (0.18)	0.035 J (0.037)	0.21 (0.13)	11 (0.53)	52 (0.97)	2.1 (0.21)	0.029 J (0.047)	1.2 (0.04)	0.046 (0.037)
Phenanthrene	190000	10000	0.085 J (0.11)	0.62 (0.56)	0.7 (0.11)	0.69 (0.38)	4.1 (1.6)	83 (2.9)	4.5 (0.63)	0.52 (0.14)	0.16 (0.12)	0.43 (0.11)
Pyrene	96000	2200	0.064 J (0.11)	0.27 J (0.56)	0.38 (0.11)	1 (0.38)	1.9 (1.6)	48 (2.9)	1.4 (0.63)	0.71 (0.14)	0.033 J (0.12)	0.27 (0.11)
Metals												
Lead	1000	450	6.79 (2.06)	16.8 (2.18)	54 (2.18)	326 (2.59)	181 (2.04)	104 (2.32)	79.5 (2.5)	165 (2.8)	13 (2.38)	91.6 (2.13)

- Notes:**
- 1 Concentrations are presented in mg/kg.
 - 2 Yellow shading indicates that the concentration exceeds 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 reported value is estimated.

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

Table 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	LS-B-E01-C2 LS-B-E01	LS-B-E01-C3 LS-B-E01	LS-B-F01-C1 LS-B-F01	LS-B-G01-C1 LS-B-G01	LS-B-G01-C2 LS-B-G01	LS-B-G02-C1 LS-B-G02	LS-B-G02-C2 LS-B-G02	LS-B-G02-C3 LS-B-G02	LS-B-G02-C4 LS-B-G02	LS-B-H01-C1 LS-B-H01
Field Sample ID	Value (0-2 ft bgs)	Value	LS-B-E01-C2-COMP	LS-B-E01-C3-COMP	LS-B-F01-C1-COMP	LS-B-G01-C1-COMP	LS-B-G01-C2-COMP	LS-B-G02-C1-COMP	LS-B-G02-C2-COMP	LS-B-G02-C3-COMP	LS-B-G02-C4-COMP	LS-B-H01-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	5/5/2023	5/24/2023	5/8/2023	5/10/2023	5/10/2023	5/22/2023	5/22/2023	5/22/2023	5/22/2023	5/12/2023
PAHs												
Anthracene	190000	350	0.082 J (0.12)	0.09 J (0.12)	0.44 J (0.58)	0.68 J (1.1)	0.54 J (0.55)	1 (0.53)	0.78 (0.52)	1.5 (1.1)	U (0.11)	0.058 J (0.11)
Benzo(a)anthracene	130	340	0.22 (0.12)	0.09 J (0.12)	1.2 (0.58)	0.61 J (1.1)	0.52 J (0.55)	6.8 (0.53)	4.2 (0.52)	6.8 (1.1)	0.035 J (0.11)	0.039 J (0.11)
Benzo(a)pyrene	91	46	0.16 (0.16)	0.11 J (0.16)	0.87 (0.78)	U (1.4)	U (0.74)	9.8 (0.71)	6.1 (0.69)	8.9 (1.4)	U (0.15)	U (0.15)
Benzo(b)fluoranthene	76	170	0.16 (0.12)	0.096 J (0.12)	0.64 (0.58)	0.35 J (1.1)	U (0.55)	11 (0.53)	7.1 (0.52)	11 (1.1)	U (0.11)	U (0.11)
Benzo(g,h,i)perylene	190000	180	0.16 (0.16)	0.098 J (0.16)	0.53 J (0.78)	0.38 J (1.4)	U (0.74)	6.5 (0.71)	4.3 (0.69)	5.4 (1.4)	U (0.15)	U (0.15)
Chrysene	760	230	0.35 (0.12)	0.15 (0.12)	2.2 (0.58)	0.89 J (1.1)	0.81 (0.55)	6 (0.53)	3.7 (0.52)	6.5 (1.1)	0.04 J (0.11)	0.073 J (0.11)
Fluorene	130000	3800	0.098 J (0.2)	0.2 (0.2)	0.78 J (0.98)	1 J (1.8)	1 (0.92)	0.18 J (0.88)	0.39 J (0.86)	0.49 J (1.8)	U (0.19)	0.21 (0.19)
Naphthalene	66	25	0.03 J (0.041)	0.063 (0.04)	1.5 (0.2)	0.5 (0.36)	2.3 (0.18)	0.43 (0.18)	0.4 (0.17)	1.2 (0.35)	U (0.038)	0.16 (0.038)
Phenanthrene	190000	10000	0.19 (0.12)	0.33 (0.12)	2.4 (0.58)	3 (1.1)	3.9 (0.55)	2.9 (0.53)	2.8 (0.52)	5 (1.1)	0.038 J (0.11)	0.48 (0.11)
Pyrene	96000	2200	0.25 (0.12)	0.2 (0.12)	1.8 (0.58)	1.8 (1.1)	1 (0.55)	4.6 (0.53)	4.3 (0.52)	6.8 (1.1)	0.037 J (0.11)	U (0.11)
Metals												
Lead	1000	450	455 (2.48)	115 (2.43)	84.1 (2.34)	149 (2.12)	40.5 (2.15)	180 (2.03)	67.7 (2.08)	30.6 (2.07)	11 (2.24)	11.7 (2.26)

- Notes:**
- 1 Concentrations are presented in mg/kg.
 - 2 Yellow shading indicates that the concentration exceeds 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 reported value is estimated.

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

Table 3.2
Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	LS-B-H02-C1 LS-B-H02 LS-B-H02-C1-COMP 5/17/2023	LS-B-H02-C2 LS-B-H02 LS-B-H02-C2-COMP 5/17/2023	LS-B-H02-C3 LS-B-H02 LS-B-H02-C3-COMP 5/17/2023
PAHs					
Anthracene	190000	350	0.71 (0.57)	1.3 (0.6)	0.26 (0.11)
Benzo(a)anthracene	130	340	0.47 J (0.57)	2.1 (0.6)	0.22 (0.11)
Benzo(a)pyrene	91	46	0.34 J (0.76)	1.6 (0.8)	0.29 (0.15)
Benzo(b)fluoranthene	76	170	0.29 J (0.57)	1.9 (0.6)	0.16 (0.11)
Benzo(g,h,i)perylene	190000	180	0.46 J (0.76)	0.99 (0.8)	0.38 (0.15)
Chrysene	760	230	0.78 (0.57)	2.4 (0.6)	0.42 (0.11)
Fluorene	130000	3800	3.3 (0.95)	4.7 (1)	1.3 (0.19)
Naphthalene	66	25	0.61 (0.19)	0.69 (0.2)	0.16 (0.038)
Phenanthrene	190000	10000	4.2 (0.57)	9.6 (0.6)	2.8 (0.11)
Pyrene	96000	2200	1.2 (0.57)	4.9 (0.6)	0.43 (0.11)
Metals					
Lead	1000	450	41.3 (2.22)	79.2 (2.36)	30.2 (2.31)

Notes:

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds 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 reported value is estimated.

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. 5

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	LS-A-A01	Innovation Campus	1	U (0.24)	0.12	280	0.5
VOC	Benzene	LS-A-A02	Innovation Campus	2	U (0.3)	0.075	280	0.5
VOC	Benzene	LS-A-A03	Innovation Campus	1	U (0.00071)	0.00036	280	0.5
VOC	Benzene	LS-A-A04	Innovation Campus	3	U (0.28)	0.093	280	0.5
VOC	Benzene	LS-A-B02	Innovation Campus	14	0.00039 - 0.0018	0.00041	280	0.5
VOC	Benzene	LS-A-B03	Innovation Campus	4	U (0.059) - 0.121	0.031	280	0.5
VOC	Benzene	LS-A-C01	Innovation Campus	28	U (0.22) - 0.00305	0.0057	280	0.5
VOC	Benzene	LS-A-C02	Innovation Campus	12	U (0.3) - 0.00134	0.023	280	0.5
VOC	Benzene	LS-A-C04	Innovation Campus	3	U (0.21)	0.039	280	0.5
VOC	Benzene	LS-A-D01	Innovation Campus	5	0.0942 - 0.74	0.29	280	0.5
VOC	Benzene	LS-A-D02	Innovation Campus	1	U (0.23)	0.12	280	0.5
VOC	Benzene	LS-A-D03	Innovation Campus	3	U (0.26)	0.044	280	0.5
VOC	Benzene	LS-A-D04	Innovation Campus	2	0.00155 - 0.00229	0.0019	280	0.5
VOC	Benzene	LS-A-D05	Innovation Campus	6	U (0.27) - 0.00488	0.046	280	0.5
VOC	Benzene	LS-A-D06	Innovation Campus	4	U (0.0265) - 0.00694	0.0069	280	0.5
VOC	Benzene	LS-A-D07	Innovation Campus	2	U (0.137) - 0.00208	0.035	280	0.5
VOC	Benzene	LS-A-E01	Innovation Campus	3	U (3.1) - 0.0378	0.54	280	0.5
VOC	Benzene	LS-A-E03	Innovation Campus	1	U (0.23)	0.12	280	0.5
VOC	Benzene	LS-A-E04	Innovation Campus	2	U (0.158) - 1.86	0.94	280	0.5
VOC	Benzene	LS-A-E05	Innovation Campus	1	U (0.22)	0.11	280	0.5
VOC	Benzene	LS-A-E07	Innovation Campus	7	U (0.59)	0.12	280	0.5
VOC	Benzene	LS-A-E08	Innovation Campus	6	U (0.22)	0.060	280	0.5
VOC	Benzene	LS-A-F01	Innovation Campus	3	0.31 - 1.25	0.52	280	0.5
VOC	Benzene	LS-A-F02	Innovation Campus	3	U (0.26) - 3.1	1.1	280	0.5
VOC	Benzene	LS-A-F03	Innovation Campus	1	U (0.19)	0.095	280	0.5
VOC	Benzene	LS-A-F04	Innovation Campus	12	U (0.37) - 0.00204	0.044	280	0.5
VOC	Benzene	LS-A-F05	Innovation Campus	1	U (0.32)	0.16	280	0.5
VOC	Benzene	LS-A-G01	Innovation Campus	3	U (3.1) - 0.531	0.77	280	0.5
VOC	Benzene	LS-A-G02	Innovation Campus	2	U (0.734)	0.23	280	0.5
VOC	Benzene	LS-A-G03	Innovation Campus	3	U (0.38) - 0.21	0.13	280	0.5
VOC	Benzene	LS-A-G07	Innovation Campus	3	U (0.24) - 0.00271	0.041	280	0.5
VOC	Benzene	LS-A-G08	Innovation Campus	2	0.00453 - 0.00453	0.0026	280	0.5
VOC	Benzene	LS-A-H03	Innovation Campus	2	U (0.00118)	0.00059	280	0.5
VOC	Benzene	LS-A-H04	Innovation Campus	2	U (0.0207) - 0.028	0.019	280	0.5
VOC	Benzene	LS-A-H06	Innovation Campus	1	U (0.19)	0.095	280	0.5
VOC	Benzene	LS-A-H07	Innovation Campus	2	U (0.0184) - 0.363	0.19	280	0.5
VOC	Benzene	LS-A-I01	Innovation Campus	6	U (0.38) - 0.00295	0.070	280	0.5
VOC	Benzene	LS-A-I02	Innovation Campus	1	U (0.18)	0.090	280	0.5
VOC	Benzene	LS-A-I03	Innovation Campus	3	U (0.22)	0.060	280	0.5
VOC	Benzene	LS-B-B01	Innovation Campus	1	U (0.00087)	0.00044	280	0.5
VOC	Benzene	LS-B-C01	Innovation Campus	3	0.0257 - 0.0257	0.054	280	0.5
VOC	Benzene	LS-B-E01	Innovation Campus	4	3.1 - 9.93	3.3	280	0.5
VOC	Benzene	LS-B-G02	Innovation Campus	1	0.0284 - 0.0284	0.028	280	0.5
VOC	Benzene	LS-B-H01	Innovation Campus	3	U (0.29) - 1.9	0.68	280	0.5
VOC	Benzene	LS-E-B02	Innovation Campus	98	0.00037 - 20.3	0.55	280	0.5
VOC	Benzene	LS-E-G01	Innovation Campus	4	U (0.23) - 0.0094	0.060	280	0.5
VOC	Cumene	LS-A-A01	Innovation Campus	1	U (0.24)	0.12	10000	2500
VOC	Cumene	LS-A-A02	Innovation Campus	2	U (0.3)	0.075	10000	2500
VOC	Cumene	LS-A-A03	Innovation Campus	1	U (0.0028)	0.0014	10000	2500
VOC	Cumene	LS-A-A04	Innovation Campus	3	U (0.28)	0.094	10000	2500
VOC	Cumene	LS-A-B02	Innovation Campus	14	0.0017 - 0.0017	0.00075	10000	2500
VOC	Cumene	LS-A-B03	Innovation Campus	4	U (0.29) - 1.04	0.26	10000	2500
VOC	Cumene	LS-A-C01	Innovation Campus	28	U (0.394) - 0.00027	0.019	10000	2500
VOC	Cumene	LS-A-C02	Innovation Campus	12	U (3) - 0.575	0.19	10000	2500
VOC	Cumene	LS-A-C04	Innovation Campus	3	U (0.246)	0.078	10000	2500
VOC	Cumene	LS-A-D01	Innovation Campus	5	0.36 - 0.36	0.16	10000	2500
VOC	Cumene	LS-A-D02	Innovation Campus	1	U (0.23)	0.12	10000	2500
VOC	Cumene	LS-A-D03	Innovation Campus	3	U (0.26)	0.048	10000	2500

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	Cumene	LS-A-D04	Innovation Campus	2	U (0.0122)	0.0058	10000	2500
VOC	Cumene	LS-A-D05	Innovation Campus	6	U (0.301) - 1.79	0.34	10000	2500
VOC	Cumene	LS-A-D06	Innovation Campus	2	U (0.265)	0.069	10000	2500
VOC	Cumene	LS-A-D07	Innovation Campus	2	1.74 - 1.74	0.87	10000	2500
VOC	Cumene	LS-A-E01	Innovation Campus	3	U (3.1)	0.66	10000	2500
VOC	Cumene	LS-A-E03	Innovation Campus	1	U (0.23)	0.12	10000	2500
VOC	Cumene	LS-A-E04	Innovation Campus	2	0.655 - 2.9	1.8	10000	2500
VOC	Cumene	LS-A-E05	Innovation Campus	1	0.47 - 0.47	0.47	10000	2500
VOC	Cumene	LS-A-E07	Innovation Campus	7	4 - 19	7.1	10000	2500
VOC	Cumene	LS-A-E08	Innovation Campus	6	2.3 - 13	4.4	10000	2500
VOC	Cumene	LS-A-F01	Innovation Campus	3	U (6.33)	1.1	10000	2500
VOC	Cumene	LS-A-F02	Innovation Campus	3	U (0.26) - 2.1	0.78	10000	2500
VOC	Cumene	LS-A-F03	Innovation Campus	1	U (0.19)	0.10	10000	2500
VOC	Cumene	LS-A-F04	Innovation Campus	12	U (0.37)	0.047	10000	2500
VOC	Cumene	LS-A-F05	Innovation Campus	1	U (0.32)	0.16	10000	2500
VOC	Cumene	LS-A-G01	Innovation Campus	3	U (3.1)	0.96	10000	2500
VOC	Cumene	LS-A-G02	Innovation Campus	2	U (7.34)	2.3	10000	2500
VOC	Cumene	LS-A-G03	Innovation Campus	3	1.4 - 1.4	0.79	10000	2500
VOC	Cumene	LS-A-G07	Innovation Campus	3	U (0.24)	0.044	10000	2500
VOC	Cumene	LS-A-G08	Innovation Campus	2	U (0.0125) - 0.043	0.025	10000	2500
VOC	Cumene	LS-A-H03	Innovation Campus	2	U (0.0118)	0.0059	10000	2500
VOC	Cumene	LS-A-H04	Innovation Campus	2	U (0.207)	0.055	10000	2500
VOC	Cumene	LS-A-H06	Innovation Campus	1	U (0.19)	0.095	10000	2500
VOC	Cumene	LS-A-H07	Innovation Campus	2	0.99 - 1.23	1.1	10000	2500
VOC	Cumene	LS-A-I01	Innovation Campus	6	U (1.89) - 2.61	0.49	10000	2500
VOC	Cumene	LS-A-I02	Innovation Campus	1	U (0.18)	0.090	10000	2500
VOC	Cumene	LS-A-I03	Innovation Campus	3	U (1.41)	0.27	10000	2500
VOC	Cumene	LS-B-B01	Innovation Campus	1	U (0.0017)	0.00085	10000	2500
VOC	Cumene	LS-B-C01	Innovation Campus	3	U (0.25)	0.11	10000	2500
VOC	Cumene	LS-B-E01	Innovation Campus	4	1.5 - 7.7	3.9	10000	2500
VOC	Cumene	LS-B-G02	Innovation Campus	1	U (0.0138)	0.0069	10000	2500
VOC	Cumene	LS-B-H02	Innovation Campus	3	7.57 - 7.57	2.6	10000	2500
VOC	Cumene	LS-E-B01	Innovation Campus	94	0.0002 - 92	1.5	10000	2500
VOC	Cumene	LS-E-G01	Innovation Campus	4	U (0.23) - 0.0265	0.066	10000	2500
VOC	Ethyl Benzene	LS-A-A01	Innovation Campus	1	U (0.24)	0.12	880	70
VOC	Ethyl Benzene	LS-A-A02	Innovation Campus	2	U (0.3)	0.075	880	70
VOC	Ethyl Benzene	LS-A-A03	Innovation Campus	1	U (0.0014)	0.00070	880	70
VOC	Ethyl Benzene	LS-A-A04	Innovation Campus	3	U (0.28)	0.093	880	70
VOC	Ethyl Benzene	LS-A-B02	Innovation Campus	14	0.00025 - 0.00052	0.00047	880	70
VOC	Ethyl Benzene	LS-A-B03	Innovation Campus	4	U (0.059) - 1.21	0.30	880	70
VOC	Ethyl Benzene	LS-A-C01	Innovation Campus	28	U (0.22) - 0.0006	0.0057	880	70
VOC	Ethyl Benzene	LS-A-C02	Innovation Campus	12	U (0.3) - 0.114	0.032	880	70
VOC	Ethyl Benzene	LS-A-C04	Innovation Campus	3	U (0.21)	0.039	880	70
VOC	Ethyl Benzene	LS-A-D01	Innovation Campus	5	0.0482 - 1.6	0.39	880	70
VOC	Ethyl Benzene	LS-A-D02	Innovation Campus	1	U (0.23)	0.12	880	70
VOC	Ethyl Benzene	LS-A-D03	Innovation Campus	3	U (0.26)	0.044	880	70
VOC	Ethyl Benzene	LS-A-D04	Innovation Campus	2	U (0.00122)	0.00058	880	70
VOC	Ethyl Benzene	LS-A-D05	Innovation Campus	6	U (0.27) - 0.0397	0.049	880	70
VOC	Ethyl Benzene	LS-A-D06	Innovation Campus	2	U (0.0265)	0.0069	880	70
VOC	Ethyl Benzene	LS-A-D07	Innovation Campus	2	0.375 - 0.375	0.19	880	70
VOC	Ethyl Benzene	LS-A-E01	Innovation Campus	3	U (3.1)	0.53	880	70
VOC	Ethyl Benzene	LS-A-E03	Innovation Campus	1	U (0.23)	0.12	880	70
VOC	Ethyl Benzene	LS-A-E04	Innovation Campus	2	0.0445 - 0.355	0.20	880	70
VOC	Ethyl Benzene	LS-A-E05	Innovation Campus	1	U (0.22)	0.11	880	70
VOC	Ethyl Benzene	LS-A-E07	Innovation Campus	7	U (1.8)	0.27	880	70
VOC	Ethyl Benzene	LS-A-E08	Innovation Campus	6	U (0.77)	0.15	880	70
VOC	Ethyl Benzene	LS-A-F01	Innovation Campus	3	U (0.633)	0.15	880	70
VOC	Ethyl Benzene	LS-A-F02	Innovation Campus	3	U (0.26) - 6.6	2.3	880	70

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	Ethyl Benzene	LS-A-F03	Innovation Campus	1	U (0.19)	0.095	880	70
VOC	Ethyl Benzene	LS-A-F04	Innovation Campus	12	U (0.37)	0.044	880	70
VOC	Ethyl Benzene	LS-A-F05	Innovation Campus	1	U (0.32)	0.16	880	70
VOC	Ethyl Benzene	LS-A-G01	Innovation Campus	3	U (3.1)	0.56	880	70
VOC	Ethyl Benzene	LS-A-G02	Innovation Campus	2	U (0.734)	0.23	880	70
VOC	Ethyl Benzene	LS-A-G03	Innovation Campus	3	U (0.38) - 0.652	0.28	880	70
VOC	Ethyl Benzene	LS-A-G07	Innovation Campus	3	U (0.24)	0.040	880	70
VOC	Ethyl Benzene	LS-A-G08	Innovation Campus	2	0.0124 - 0.0124	0.0065	880	70
VOC	Ethyl Benzene	LS-A-H03	Innovation Campus	2	U (0.00118)	0.00059	880	70
VOC	Ethyl Benzene	LS-A-H04	Innovation Campus	2	U (0.0207)	0.0055	880	70
VOC	Ethyl Benzene	LS-A-H06	Innovation Campus	1	U (0.19)	0.10	880	70
VOC	Ethyl Benzene	LS-A-H07	Innovation Campus	2	U (0.0184) - 0.403	0.21	880	70
VOC	Ethyl Benzene	LS-A-I01	Innovation Campus	6	U (0.38)	0.069	880	70
VOC	Ethyl Benzene	LS-A-I02	Innovation Campus	1	U (0.18)	0.090	880	70
VOC	Ethyl Benzene	LS-A-I03	Innovation Campus	3	U (0.22)	0.060	880	70
VOC	Ethyl Benzene	LS-B-B01	Innovation Campus	1	U (0.0017)	0.00085	880	70
VOC	Ethyl Benzene	LS-B-C01	Innovation Campus	3	U (0.25)	0.049	880	70
VOC	Ethyl Benzene	LS-B-E01	Innovation Campus	4	0.74 - 1.74	0.68	880	70
VOC	Ethyl Benzene	LS-B-G02	Innovation Campus	1	U (0.00138)	0.00069	880	70
VOC	Ethyl Benzene	LS-B-H02	Innovation Campus	3	U (0.29) - 0.34	0.15	880	70
VOC	Ethyl Benzene	LS-E-B01	Innovation Campus	77	U (1.34) - 2.3	0.13	880	70
VOC	Ethyl Benzene	LS-E-G01	Innovation Campus	4	U (0.23)	0.058	880	70
VOC	Methyl tert-butyl ether	LS-A-A01	Innovation Campus	1	U (0.24)	0.12	8500	2
VOC	Methyl tert-butyl ether	LS-A-A02	Innovation Campus	2	U (0.3)	0.075	8500	2
VOC	Methyl tert-butyl ether	LS-A-A03	Innovation Campus	1	U (0.0014)	0.00070	8500	2
VOC	Methyl tert-butyl ether	LS-A-A04	Innovation Campus	3	U (0.28)	0.093	8500	2
VOC	Methyl tert-butyl ether	LS-A-B02	Innovation Campus	14	U (0.0024)	0.00091	8500	2
VOC	Methyl tert-butyl ether	LS-A-B03	Innovation Campus	4	U (0.059)	0.0078	8500	2
VOC	Methyl tert-butyl ether	LS-A-C01	Innovation Campus	28	U (0.22) - 0.0881	0.010	8500	2
VOC	Methyl tert-butyl ether	LS-A-C02	Innovation Campus	12	U (0.3)	0.023	8500	2
VOC	Methyl tert-butyl ether	LS-A-C04	Innovation Campus	3	U (0.21)	0.039	8500	2
VOC	Methyl tert-butyl ether	LS-A-D01	Innovation Campus	5	U (0.24)	0.073	8500	2
VOC	Methyl tert-butyl ether	LS-A-D02	Innovation Campus	1	U (0.23)	0.12	8500	2
VOC	Methyl tert-butyl ether	LS-A-D03	Innovation Campus	3	U (0.26)	0.044	8500	2
VOC	Methyl tert-butyl ether	LS-A-D04	Innovation Campus	2	U (0.00122)	0.00058	8500	2
VOC	Methyl tert-butyl ether	LS-A-D05	Innovation Campus	6	U (0.27)	0.045	8500	2
VOC	Methyl tert-butyl ether	LS-A-D06	Innovation Campus	2	U (0.0265)	0.0069	8500	2
VOC	Methyl tert-butyl ether	LS-A-D07	Innovation Campus	2	U (0.137)	0.035	8500	2
VOC	Methyl tert-butyl ether	LS-A-E01	Innovation Campus	3	U (3.1)	0.53	8500	2
VOC	Methyl tert-butyl ether	LS-A-E03	Innovation Campus	1	U (0.23)	0.12	8500	2
VOC	Methyl tert-butyl ether	LS-A-E04	Innovation Campus	2	U (0.158)	0.045	8500	2
VOC	Methyl tert-butyl ether	LS-A-E05	Innovation Campus	1	U (0.22)	0.11	8500	2
VOC	Methyl tert-butyl ether	LS-A-E07	Innovation Campus	1	U (0.24)	0.12	8500	2
VOC	Methyl tert-butyl ether	LS-A-E08	Innovation Campus	1	U (0.17)	0.085	8500	2
VOC	Methyl tert-butyl ether	LS-A-F01	Innovation Campus	3	U (0.633)	0.15	8500	2
VOC	Methyl tert-butyl ether	LS-A-F02	Innovation Campus	3	U (0.26)	0.13	8500	2
VOC	Methyl tert-butyl ether	LS-A-F03	Innovation Campus	1	U (0.19)	0.095	8500	2
VOC	Methyl tert-butyl ether	LS-A-F04	Innovation Campus	12	U (0.37)	0.044	8500	2
VOC	Methyl tert-butyl ether	LS-A-F05	Innovation Campus	1	U (0.32)	0.16	8500	2
VOC	Methyl tert-butyl ether	LS-A-G01	Innovation Campus	3	U (3.1)	0.56	8500	2
VOC	Methyl tert-butyl ether	LS-A-G02	Innovation Campus	2	U (0.734)	0.23	8500	2
VOC	Methyl tert-butyl ether	LS-A-G03	Innovation Campus	3	U (0.38) - 0.441	0.21	8500	2
VOC	Methyl tert-butyl ether	LS-A-G07	Innovation Campus	3	U (0.24)	0.040	8500	2
VOC	Methyl tert-butyl ether	LS-A-G08	Innovation Campus	2	U (0.00125)	0.00061	8500	2
VOC	Methyl tert-butyl ether	LS-A-H03	Innovation Campus	2	U (0.00118)	0.00059	8500	2
VOC	Methyl tert-butyl ether	LS-A-H04	Innovation Campus	2	U (0.0207)	0.0055	8500	2
VOC	Methyl tert-butyl ether	LS-A-H06	Innovation Campus	1	U (0.19)	0.10	8500	2
VOC	Methyl tert-butyl ether	LS-A-H07	Innovation Campus	2	U (0.0184)	0.0089	8500	2

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	Methyl tert-butyl ether	LS-A-I01	Innovation Campus	6	U (0.38)	0.069	8500	2
VOC	Methyl tert-butyl ether	LS-A-I02	Innovation Campus	1	U (0.18)	0.090	8500	2
VOC	Methyl tert-butyl ether	LS-A-I03	Innovation Campus	3	U (0.22)	0.060	8500	2
VOC	Methyl tert-butyl ether	LS-B-B01	Innovation Campus	1	U (0.0035)	0.0018	8500	2
VOC	Methyl tert-butyl ether	LS-B-C01	Innovation Campus	3	U (0.25)	0.049	8500	2
VOC	Methyl tert-butyl ether	LS-B-E01	Innovation Campus	4	U (0.27)	0.12	8500	2
VOC	Methyl tert-butyl ether	LS-B-G02	Innovation Campus	1	U (0.00138)	0.00069	8500	2
VOC	Methyl tert-butyl ether	LS-B-H02	Innovation Campus	3	U (0.29)	0.088	8500	2
VOC	Methyl tert-butyl ether	LS-E-B01	Innovation Campus	94	U (1.34)	0.030	8500	2
VOC	Methyl tert-butyl ether	LS-E-G01	Innovation Campus	4	U (0.23)	0.058	8500	2
VOC	Toluene	LS-A-A01	Innovation Campus	1	U (0.24)	0.12	10000	100
VOC	Toluene	LS-A-A02	Innovation Campus	2	U (0.3)	0.075	10000	100
VOC	Toluene	LS-A-A03	Innovation Campus	1	U (0.0014)	0.00070	10000	100
VOC	Toluene	LS-A-A04	Innovation Campus	3	U (0.28)	0.093	10000	100
VOC	Toluene	LS-A-B02	Innovation Campus	14	U (0.0012) - 0.00066	0.00050	10000	100
VOC	Toluene	LS-A-B03	Innovation Campus	4	U (0.059) - 0.342	0.087	10000	100
VOC	Toluene	LS-A-C01	Innovation Campus	28	U (0.22)	0.011	10000	100
VOC	Toluene	LS-A-C02	Innovation Campus	12	U (1.5)	0.083	10000	100
VOC	Toluene	LS-A-C04	Innovation Campus	3	U (0.21)	0.056	10000	100
VOC	Toluene	LS-A-D01	Innovation Campus	5	0.176 - 0.42	0.21	10000	100
VOC	Toluene	LS-A-D02	Innovation Campus	1	U (0.23)	0.12	10000	100
VOC	Toluene	LS-A-D03	Innovation Campus	3	U (0.26)	0.045	10000	100
VOC	Toluene	LS-A-D04	Innovation Campus	2	U (0.00608)	0.0029	10000	100
VOC	Toluene	LS-A-D05	Innovation Campus	6	U (0.27)	0.057	10000	100
VOC	Toluene	LS-A-D06	Innovation Campus	4	U (0.132)	0.019	10000	100
VOC	Toluene	LS-A-D07	Innovation Campus	2	U (0.685)	0.17	10000	100
VOC	Toluene	LS-A-E01	Innovation Campus	3	U (3.1)	0.59	10000	100
VOC	Toluene	LS-A-E03	Innovation Campus	1	U (0.23)	0.12	10000	100
VOC	Toluene	LS-A-E04	Innovation Campus	2	U (0.791) - 1.17	0.61	10000	100
VOC	Toluene	LS-A-E05	Innovation Campus	1	U (0.22)	0.11	10000	100
VOC	Toluene	LS-A-E07	Innovation Campus	7	U (1.2)	0.20	10000	100
VOC	Toluene	LS-A-E08	Innovation Campus	6	U (0.51)	0.10	10000	100
VOC	Toluene	LS-A-F01	Innovation Campus	3	U (3.17)	0.57	10000	100
VOC	Toluene	LS-A-F02	Innovation Campus	3	U (0.26) - 4.2	1.5	10000	100
VOC	Toluene	LS-A-F03	Innovation Campus	1	U (0.19)	0.095	10000	100
VOC	Toluene	LS-A-F04	Innovation Campus	12	U (0.37)	0.045	10000	100
VOC	Toluene	LS-A-F05	Innovation Campus	1	U (0.32)	0.16	10000	100
VOC	Toluene	LS-A-G01	Innovation Campus	3	U (3.1)	0.74	10000	100
VOC	Toluene	LS-A-G02	Innovation Campus	2	U (3.67)	1.2	10000	100
VOC	Toluene	LS-A-G03	Innovation Campus	3	U (0.969)	0.23	10000	100
VOC	Toluene	LS-A-G07	Innovation Campus	3	U (0.24)	0.042	10000	100
VOC	Toluene	LS-A-G08	Innovation Campus	2	0.0169 - 0.0169	0.010	10000	100
VOC	Toluene	LS-A-H03	Innovation Campus	2	U (0.00591)	0.0030	10000	100
VOC	Toluene	LS-A-H04	Innovation Campus	2	U (0.103) - 0.00661	0.029	10000	100
VOC	Toluene	LS-A-H06	Innovation Campus	1	U (0.19)	0.10	10000	100
VOC	Toluene	LS-A-H07	Innovation Campus	2	U (0.0918) - 0.122	0.082	10000	100
VOC	Toluene	LS-A-I01	Innovation Campus	6	U (0.946)	0.13	10000	100
VOC	Toluene	LS-A-I02	Innovation Campus	1	U (0.18)	0.090	10000	100
VOC	Toluene	LS-A-I03	Innovation Campus	3	U (0.707)	0.16	10000	100
VOC	Toluene	LS-B-B01	Innovation Campus	1	U (0.0017)	0.00085	10000	100
VOC	Toluene	LS-B-C01	Innovation Campus	3	U (0.25)	0.077	10000	100
VOC	Toluene	LS-B-E01	Innovation Campus	4	0.66 - 2.03	0.84	10000	100
VOC	Toluene	LS-B-G02	Innovation Campus	1	U (0.00691)	0.0035	10000	100
VOC	Toluene	LS-B-H02	Innovation Campus	3	U (1.18)	0.25	10000	100
VOC	Toluene	LS-E-B01	Innovation Campus	94	0.00085 - 1500	16	10000	100
VOC	Toluene	LS-E-G01	Innovation Campus	4	U (0.23)	0.059	10000	100
VOC	1,2,4-Trimethylbenzene	LS-A-A02	Innovation Campus	1	U (0.0018)	0.00090	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-A03	Innovation Campus	1	U (0.0028)	0.0014	4700	300

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	LS-A-A04	Innovation Campus	1	U (0.0019)	0.0010	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-B02	Innovation Campus	14	0.00021 - 0.00021	0.0011	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-B03	Innovation Campus	4	U (0.29) - 3.67	0.92	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-C01	Innovation Campus	27	U (0.0394) - 0.0022	0.0024	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-C02	Innovation Campus	11	U (0.3) - 0.24	0.037	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-C04	Innovation Campus	2	U (0.0246) - 0.0454	0.023	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-D01	Innovation Campus	2	0.163 - 0.179	0.17	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-D03	Innovation Campus	2	U (0.00131)	0.00064	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-D04	Innovation Campus	2	U (0.00122)	0.00058	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-D05	Innovation Campus	4	U (0.0301) - 0.59	0.15	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-D06	Innovation Campus	2	U (0.0265)	0.0069	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-D07	Innovation Campus	2	U (0.137)	0.035	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-E01	Innovation Campus	2	U (0.0836)	0.021	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-E04	Innovation Campus	2	2.01 - 51.8	27	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-F01	Innovation Campus	2	U (0.633)	0.16	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-F04	Innovation Campus	8	U (0.00151)	0.00061	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-G01	Innovation Campus	2	U (0.141) - 0.13	0.10	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-G02	Innovation Campus	2	U (0.734)	0.23	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-G03	Innovation Campus	2	3.52 - 3.52	1.8	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-G07	Innovation Campus	2	U (0.0013)	0.00063	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-G08	Innovation Campus	2	0.0205 - 0.0205	0.011	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-H03	Innovation Campus	2	U (0.00118)	0.00059	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-H04	Innovation Campus	2	U (0.0207)	0.0055	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-H07	Innovation Campus	2	U (0.0184) - 0.0896	0.049	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-I01	Innovation Campus	4	U (0.189)	0.024	4700	300
VOC	1,2,4-Trimethylbenzene	LS-A-I03	Innovation Campus	2	U (0.141)	0.036	4700	300
VOC	1,2,4-Trimethylbenzene	LS-B-B01	Innovation Campus	1	U (0.0035)	0.0018	4700	300
VOC	1,2,4-Trimethylbenzene	LS-B-C01	Innovation Campus	2	U (0.0216)	0.010	4700	300
VOC	1,2,4-Trimethylbenzene	LS-B-E01	Innovation Campus	2	1.47 - 58.7	30	4700	300
VOC	1,2,4-Trimethylbenzene	LS-B-G02	Innovation Campus	1	U (0.00138)	0.00069	4700	300
VOC	1,2,4-Trimethylbenzene	LS-B-H02	Innovation Campus	2	U (0.236)	0.059	4700	300
VOC	1,2,4-Trimethylbenzene	LS-E-B01	Innovation Campus	93	0.0008 - 94	2.1	4700	300
VOC	1,2,4-Trimethylbenzene	LS-E-G01	Innovation Campus	2	U (0.00126)	0.00060	4700	300
VOC	1,3,5-Trimethylbenzene	LS-A-A02	Innovation Campus	1	U (0.0018)	0.00090	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-A03	Innovation Campus	1	U (0.0028)	0.0014	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-A04	Innovation Campus	1	U (0.0019)	0.0010	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-B02	Innovation Campus	14	U (0.0061)	0.0012	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-B03	Innovation Campus	4	U (0.29) - 8.36	2.1	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-C01	Innovation Campus	27	U (0.0394) - 0.0024	0.0024	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-C02	Innovation Campus	11	U (0.3) - 0.0549	0.021	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-C04	Innovation Campus	2	U (0.0246) - 0.0358	0.018	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-D01	Innovation Campus	2	0.0382 - 0.0382	0.026	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-D03	Innovation Campus	2	U (0.00131)	0.00064	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-D04	Innovation Campus	2	U (0.00122)	0.00058	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-D05	Innovation Campus	4	U (0.0301) - 0.473	0.12	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-D06	Innovation Campus	2	U (0.0265)	0.0069	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-D07	Innovation Campus	2	U (0.137)	0.035	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-E01	Innovation Campus	2	U (0.0836)	0.021	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-E04	Innovation Campus	2	0.0962 - 10.8	5.4	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-F01	Innovation Campus	2	U (0.633)	0.16	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-F04	Innovation Campus	8	U (0.00151)	0.00061	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-G01	Innovation Campus	2	U (0.141)	0.066	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-G02	Innovation Campus	2	U (0.734)	0.23	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-G03	Innovation Campus	2	1.75 - 1.75	0.88	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-G07	Innovation Campus	2	U (0.0013)	0.00063	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-G08	Innovation Campus	2	0.00604 - 0.00604	0.0033	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-H03	Innovation Campus	2	U (0.00118)	0.00059	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-H04	Innovation Campus	2	U (0.0207)	0.0055	4700	93

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	1,3,5-Trimethylbenzene	LS-A-H07	Innovation Campus	2	U (0.0184)	0.0089	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-I01	Innovation Campus	4	U (0.189)	0.024	4700	93
VOC	1,3,5-Trimethylbenzene	LS-A-I03	Innovation Campus	2	U (0.141)	0.036	4700	93
VOC	1,3,5-Trimethylbenzene	LS-B-B01	Innovation Campus	1	0.00045 - 0.00045	0.00045	4700	93
VOC	1,3,5-Trimethylbenzene	LS-B-C01	Innovation Campus	2	U (0.0216)	0.010	4700	93
VOC	1,3,5-Trimethylbenzene	LS-B-E01	Innovation Campus	2	0.949 - 19.3	10	4700	93
VOC	1,3,5-Trimethylbenzene	LS-B-G02	Innovation Campus	1	U (0.00138)	0.00069	4700	93
VOC	1,3,5-Trimethylbenzene	LS-B-H02	Innovation Campus	2	U (0.236)	0.059	4700	93
VOC	1,3,5-Trimethylbenzene	LS-E-B01	Innovation Campus	93	0.00044 - 40	0.90	4700	93
VOC	1,3,5-Trimethylbenzene	LS-E-G01	Innovation Campus	2	U (0.00126)	0.00060	4700	93
VOC	Xylenes (total)	LS-A-A01	Innovation Campus	1	U (0.24)	0.12	7900	1000
VOC	Xylenes (total)	LS-A-A02	Innovation Campus	2	U (0.3)	0.075	7900	1000
VOC	Xylenes (total)	LS-A-A03	Innovation Campus	1	U (0.0014)	0.00070	7900	1000
VOC	Xylenes (total)	LS-A-A04	Innovation Campus	3	U (0.28)	0.093	7900	1000
VOC	Xylenes (total)	LS-A-B02	Innovation Campus	14	0.00022 - 0.00022	0.00089	7900	1000
VOC	Xylenes (total)	LS-A-B03	Innovation Campus	4	U (0.059) - 6.12	1.5	7900	1000
VOC	Xylenes (total)	LS-A-C01	Innovation Campus	28	U (0.22) - 0.0048	0.0092	7900	1000
VOC	Xylenes (total)	LS-A-C02	Innovation Campus	12	U (0.9) - 0.451	0.088	7900	1000
VOC	Xylenes (total)	LS-A-C04	Innovation Campus	3	U (0.21)	0.048	7900	1000
VOC	Xylenes (total)	LS-A-D01	Innovation Campus	5	0.346 - 2.7	0.73	7900	1000
VOC	Xylenes (total)	LS-A-D02	Innovation Campus	1	U (0.23)	0.12	7900	1000
VOC	Xylenes (total)	LS-A-D03	Innovation Campus	3	U (0.26)	0.045	7900	1000
VOC	Xylenes (total)	LS-A-D04	Innovation Campus	2	U (0.00365)	0.0017	7900	1000
VOC	Xylenes (total)	LS-A-D05	Innovation Campus	6	0.67 - 0.88	0.28	7900	1000
VOC	Xylenes (total)	LS-A-D06	Innovation Campus	2	U (0.0794)	0.021	7900	1000
VOC	Xylenes (total)	LS-A-D07	Innovation Campus	2	1.32 - 1.32	0.66	7900	1000
VOC	Xylenes (total)	LS-A-E01	Innovation Campus	3	U (3.1)	0.56	7900	1000
VOC	Xylenes (total)	LS-A-E03	Innovation Campus	1	U (0.23)	0.12	7900	1000
VOC	Xylenes (total)	LS-A-E04	Innovation Campus	2	0.11 - 6.54	3.3	7900	1000
VOC	Xylenes (total)	LS-A-E05	Innovation Campus	1	U (0.22)	0.11	7900	1000
VOC	Xylenes (total)	LS-A-E07	Innovation Campus	7	U (7)	1.7	7900	1000
VOC	Xylenes (total)	LS-A-E08	Innovation Campus	6	U (4.5) - 0.24	0.84	7900	1000
VOC	Xylenes (total)	LS-A-F01	Innovation Campus	3	U (1.9)	0.36	7900	1000
VOC	Xylenes (total)	LS-A-F02	Innovation Campus	3	U (0.26) - 34	11	7900	1000
VOC	Xylenes (total)	LS-A-F03	Innovation Campus	1	U (0.19)	0.095	7900	1000
VOC	Xylenes (total)	LS-A-F04	Innovation Campus	12	U (0.37)	0.045	7900	1000
VOC	Xylenes (total)	LS-A-F05	Innovation Campus	1	U (0.32)	0.16	7900	1000
VOC	Xylenes (total)	LS-A-G01	Innovation Campus	3	U (3.1)	0.65	7900	1000
VOC	Xylenes (total)	LS-A-G02	Innovation Campus	2	U (2.2)	0.70	7900	1000
VOC	Xylenes (total)	LS-A-G03	Innovation Campus	3	0.6 - 4.91	1.8	7900	1000
VOC	Xylenes (total)	LS-A-G07	Innovation Campus	3	U (0.24)	0.041	7900	1000
VOC	Xylenes (total)	LS-A-G08	Innovation Campus	2	0.067 - 0.067	0.034	7900	1000
VOC	Xylenes (total)	LS-A-H03	Innovation Campus	2	U (0.00354)	0.0018	7900	1000
VOC	Xylenes (total)	LS-A-H04	Innovation Campus	2	U (0.0621)	0.016	7900	1000
VOC	Xylenes (total)	LS-A-H06	Innovation Campus	1	U (0.19)	0.095	7900	1000
VOC	Xylenes (total)	LS-A-H07	Innovation Campus	2	0.0635 - 0.315	0.19	7900	1000
VOC	Xylenes (total)	LS-A-I01	Innovation Campus	6	U (0.567)	0.10	7900	1000
VOC	Xylenes (total)	LS-A-I02	Innovation Campus	1	0.2 - 0.2	0.20	7900	1000
VOC	Xylenes (total)	LS-A-I03	Innovation Campus	3	U (0.424)	0.11	7900	1000
VOC	Xylenes (total)	LS-B-B01	Innovation Campus	1	U (0.0035)	0.0018	7900	1000
VOC	Xylenes (total)	LS-B-C01	Innovation Campus	3	U (0.25)	0.063	7900	1000
VOC	Xylenes (total)	LS-B-E01	Innovation Campus	4	5.8 - 23.6	7.5	7900	1000
VOC	Xylenes (total)	LS-B-G02	Innovation Campus	1	U (0.00415)	0.0021	7900	1000
VOC	Xylenes (total)	LS-B-H02	Innovation Campus	3	U (0.707) - 0.61	0.32	7900	1000
VOC	Xylenes (total)	LS-E-B01	Innovation Campus	94	0.00172 - 24.1	0.85	7900	1000
VOC	Xylenes (total)	LS-E-G01	Innovation Campus	4	U (0.23) - 0.042	0.068	7900	1000
SVOC	Anthracene	LS-A-A01	Innovation Campus	1	8.1 - 8.1	8.1	190000	350
SVOC	Anthracene	LS-A-A02	Innovation Campus	2	0.35 - 0.35	0.19	190000	350

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	Anthracene	LS-A-A03	Innovation Campus	1	0.5 - 0.5	0.50	190000	350
SVOC	Anthracene	LS-A-A04	Innovation Campus	3	0.32 - 1.7	0.97	190000	350
SVOC	Anthracene	LS-A-B02	Innovation Campus	14	0.0472 - 1.5	0.37	190000	350
SVOC	Anthracene	LS-A-B03	Innovation Campus	4	U (0.211) - 0.0665	0.060	190000	350
SVOC	Anthracene	LS-A-C01	Innovation Campus	28	U (19) - 180	9.1	190000	350
SVOC	Anthracene	LS-A-C02	Innovation Campus	12	0.0588 - 1.2	1.3	190000	350
SVOC	Anthracene	LS-A-C04	Innovation Campus	3	0.0665 - 0.24	0.11	190000	350
SVOC	Anthracene	LS-A-D01	Innovation Campus	5	U (1.99)	0.49	190000	350
SVOC	Anthracene	LS-A-D02	Innovation Campus	1	U (1.9)	1.0	190000	350
SVOC	Anthracene	LS-A-D03	Innovation Campus	3	U (0.95)	0.17	190000	350
SVOC	Anthracene	LS-A-D04	Innovation Campus	2	U (1.84)	0.48	190000	350
SVOC	Anthracene	LS-A-D05	Innovation Campus	6	U (1)	0.24	190000	350
SVOC	Anthracene	LS-A-D06	Innovation Campus	2	U (0.364)	0.14	190000	350
SVOC	Anthracene	LS-A-D07	Innovation Campus	2	U (3.68)	0.97	190000	350
SVOC	Anthracene	LS-A-E01	Innovation Campus	3	0.535 - 0.535	0.64	190000	350
SVOC	Anthracene	LS-A-E03	Innovation Campus	1	0.35 - 0.35	0.35	190000	350
SVOC	Anthracene	LS-A-E04	Innovation Campus	2	U (4.46) - 4.51	2.3	190000	350
SVOC	Anthracene	LS-A-E05	Innovation Campus	1	U (0.94)	0.47	190000	350
SVOC	Anthracene	LS-A-E07	Innovation Campus	1	U (0.2)	0.10	190000	350
SVOC	Anthracene	LS-A-E08	Innovation Campus	1	U (0.98)	0.49	190000	350
SVOC	Anthracene	LS-A-F01	Innovation Campus	3	U (7.96)	2.1	190000	350
SVOC	Anthracene	LS-A-F02	Innovation Campus	3	U (9.7) - 11	4.6	190000	350
SVOC	Anthracene	LS-A-F03	Innovation Campus	1	U (0.98)	0.49	190000	350
SVOC	Anthracene	LS-A-F04	Innovation Campus	12	U (0.94) - 0.0401	0.11	190000	350
SVOC	Anthracene	LS-A-F05	Innovation Campus	1	11 - 11	11	190000	350
SVOC	Anthracene	LS-A-G01	Innovation Campus	3	0.234 - 1.1	0.52	190000	350
SVOC	Anthracene	LS-A-G02	Innovation Campus	2	U (0.391) - 0.249	0.22	190000	350
SVOC	Anthracene	LS-A-G03	Innovation Campus	3	U (4.6)	0.92	190000	350
SVOC	Anthracene	LS-A-G07	Innovation Campus	3	4.37 - 5	3.2	190000	350
SVOC	Anthracene	LS-A-G08	Innovation Campus	2	U (2.06)	1.0	190000	350
SVOC	Anthracene	LS-A-H03	Innovation Campus	2	U (0.195)	0.058	190000	350
SVOC	Anthracene	LS-A-H04	Innovation Campus	2	U (2.02)	0.55	190000	350
SVOC	Anthracene	LS-A-H06	Innovation Campus	1	U (0.94)	0.47	190000	350
SVOC	Anthracene	LS-A-H07	Innovation Campus	2	0.125 - 0.125	0.54	190000	350
SVOC	Anthracene	LS-A-I01	Innovation Campus	6	U (8.23) - 0.235	2.5	190000	350
SVOC	Anthracene	LS-A-I02	Innovation Campus	1	U (5)	2.5	190000	350
SVOC	Anthracene	LS-A-I03	Innovation Campus	3	U (0.94) - 2.35	0.95	190000	350
SVOC	Anthracene	LS-B-B01	Innovation Campus	1	0.0089 - 0.0089	0.0089	190000	350
SVOC	Anthracene	LS-B-C01	Innovation Campus	3	U (0.19)	0.044	190000	350
SVOC	Anthracene	LS-B-E01	Innovation Campus	4	0.159 - 1.5	0.83	190000	350
SVOC	Anthracene	LS-B-G02	Innovation Campus	1	U (2.28)	1.1	190000	350
SVOC	Anthracene	LS-B-H02	Innovation Campus	3	U (1)	0.21	190000	350
SVOC	Anthracene	LS-E-B01	Innovation Campus	81	0.001 - 74	5.1	190000	350
SVOC	Anthracene	LS-E-G01	Innovation Campus	4	U (0.97)	0.44	190000	350
SVOC	Benzo(a)anthracene	LS-A-A01	Innovation Campus	1	16 - 16	16	130	340
SVOC	Benzo(a)anthracene	LS-A-A02	Innovation Campus	2	0.0725 - 0.92	0.50	130	340
SVOC	Benzo(a)anthracene	LS-A-A03	Innovation Campus	1	1.68 - 1.68	1.7	130	340
SVOC	Benzo(a)anthracene	LS-A-A04	Innovation Campus	3	1.1 - 4.6	2.6	130	340
SVOC	Benzo(a)anthracene	LS-A-B02	Innovation Campus	14	0.021 - 3.6	0.66	130	340
SVOC	Benzo(a)anthracene	LS-A-B03	Innovation Campus	4	U (0.211) - 0.301	0.11	130	340
SVOC	Benzo(a)anthracene	LS-A-C01	Innovation Campus	31	U (19) - 220	13	130	340
SVOC	Benzo(a)anthracene	LS-A-C02	Innovation Campus	12	0.0574 - 11	2.8	130	340
SVOC	Benzo(a)anthracene	LS-A-C04	Innovation Campus	3	0.038 - 0.038	0.053	130	340
SVOC	Benzo(a)anthracene	LS-A-D01	Innovation Campus	5	U (1.99) - 2.65	0.92	130	340
SVOC	Benzo(a)anthracene	LS-A-D02	Innovation Campus	1	2 - 2	2.0	130	340
SVOC	Benzo(a)anthracene	LS-A-D03	Innovation Campus	3	U (0.95)	0.17	130	340
SVOC	Benzo(a)anthracene	LS-A-D04	Innovation Campus	2	U (1.84)	0.48	130	340
SVOC	Benzo(a)anthracene	LS-A-D05	Innovation Campus	6	U (1) - 0.962	0.42	130	340

Table 3.3

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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	LS-A-D06	Innovation Campus	2	U (0.364)	0.14	130	340
SVOC	Benzo(a)anthracene	LS-A-D07	Innovation Campus	2	0.225 - 0.225	1.0	130	340
SVOC	Benzo(a)anthracene	LS-A-E01	Innovation Campus	3	U (1.84)	0.53	130	340
SVOC	Benzo(a)anthracene	LS-A-E03	Innovation Campus	1	0.74 - 0.74	0.74	130	340
SVOC	Benzo(a)anthracene	LS-A-E04	Innovation Campus	2	U (22.3)	5.6	130	340
SVOC	Benzo(a)anthracene	LS-A-E05	Innovation Campus	1	U (0.94)	0.47	130	340
SVOC	Benzo(a)anthracene	LS-A-E07	Innovation Campus	1	0.34 - 0.34	0.34	130	340
SVOC	Benzo(a)anthracene	LS-A-E08	Innovation Campus	1	U (0.98)	0.49	130	340
SVOC	Benzo(a)anthracene	LS-A-F01	Innovation Campus	3	U (7.96)	2.1	130	340
SVOC	Benzo(a)anthracene	LS-A-F02	Innovation Campus	3	U (9.7)	2.6	130	340
SVOC	Benzo(a)anthracene	LS-A-F03	Innovation Campus	1	1.1 - 1.1	1.1	130	340
SVOC	Benzo(a)anthracene	LS-A-F04	Innovation Campus	12	U (0.94) - 0.102	0.12	130	340
SVOC	Benzo(a)anthracene	LS-A-F05	Innovation Campus	1	41 - 41	41	130	340
SVOC	Benzo(a)anthracene	LS-A-G01	Innovation Campus	3	U (1) - 0.275	0.34	130	340
SVOC	Benzo(a)anthracene	LS-A-G02	Innovation Campus	2	U (0.391)	0.15	130	340
SVOC	Benzo(a)anthracene	LS-A-G03	Innovation Campus	3	U (4.6) - 2.97	1.8	130	340
SVOC	Benzo(a)anthracene	LS-A-G07	Innovation Campus	3	17 - 24.8	14	130	340
SVOC	Benzo(a)anthracene	LS-A-G08	Innovation Campus	2	2.28 - 3.17	2.7	130	340
SVOC	Benzo(a)anthracene	LS-A-H03	Innovation Campus	2	0.0585 - 0.351	0.20	130	340
SVOC	Benzo(a)anthracene	LS-A-H04	Innovation Campus	2	0.385 - 0.385	0.70	130	340
SVOC	Benzo(a)anthracene	LS-A-H06	Innovation Campus	1	U (0.94)	0.47	130	340
SVOC	Benzo(a)anthracene	LS-A-H07	Innovation Campus	2	0.119 - 0.119	0.54	130	340
SVOC	Benzo(a)anthracene	LS-A-I01	Innovation Campus	6	U (8.23) - 0.222	2.5	130	340
SVOC	Benzo(a)anthracene	LS-A-I02	Innovation Campus	1	U (5)	2.5	130	340
SVOC	Benzo(a)anthracene	LS-A-I03	Innovation Campus	3	U (0.94) - 3.19	1.2	130	340
SVOC	Benzo(a)anthracene	LS-B-B01	Innovation Campus	1	0.0028 - 0.0028	0.0028	130	340
SVOC	Benzo(a)anthracene	LS-B-C01	Innovation Campus	3	U (0.19)	0.044	130	340
SVOC	Benzo(a)anthracene	LS-B-E01	Innovation Campus	4	U (2.32) - 0.0791	0.56	130	340
SVOC	Benzo(a)anthracene	LS-B-G02	Innovation Campus	1	6.77 - 6.77	6.8	130	340
SVOC	Benzo(a)anthracene	LS-B-H02	Innovation Campus	3	U (1) - 1.7	0.61	130	340
SVOC	Benzo(a)anthracene	LS-E-B01	Innovation Campus	81	0.0051 - 130	11	130	340
SVOC	Benzo(a)anthracene	LS-E-G01	Innovation Campus	4	U (0.97) - 2	0.99	130	340
SVOC	Benzo(a)pyrene	LS-A-A01	Innovation Campus	1	11 - 11	11	91	46
SVOC	Benzo(a)pyrene	LS-A-A02	Innovation Campus	2	0.0695 - 0.9	0.48	91	46
SVOC	Benzo(a)pyrene	LS-A-A03	Innovation Campus	1	2.04 - 2.04	2.0	91	46
SVOC	Benzo(a)pyrene	LS-A-A04	Innovation Campus	3	0.92 - 3.6	2.1	91	46
SVOC	Benzo(a)pyrene	LS-A-B02	Innovation Campus	14	U (1.9) - 3	0.61	91	46
SVOC	Benzo(a)pyrene	LS-A-B03	Innovation Campus	4	U (0.211) - 0.305	0.11	91	46
SVOC	Benzo(a)pyrene	LS-A-C01	Innovation Campus	35	U (19) - 110	7.7	91	46
SVOC	Benzo(a)pyrene	LS-A-C02	Innovation Campus	14	U (19) - 13	2.7	91	46
SVOC	Benzo(a)pyrene	LS-A-C04	Innovation Campus	3	U (0.2)	0.046	91	46
SVOC	Benzo(a)pyrene	LS-A-D01	Innovation Campus	5	U (3.98) - 0.475	0.78	91	46
SVOC	Benzo(a)pyrene	LS-A-D02	Innovation Campus	1	5.4 - 5.4	5.4	91	46
SVOC	Benzo(a)pyrene	LS-A-D03	Innovation Campus	3	U (0.95)	0.17	91	46
SVOC	Benzo(a)pyrene	LS-A-D04	Innovation Campus	2	U (1.84)	0.48	91	46
SVOC	Benzo(a)pyrene	LS-A-D05	Innovation Campus	6	U (1) - 0.822	0.37	91	46
SVOC	Benzo(a)pyrene	LS-A-D06	Innovation Campus	2	U (0.202)	0.060	91	46
SVOC	Benzo(a)pyrene	LS-A-D07	Innovation Campus	2	U (3.68)	0.97	91	46
SVOC	Benzo(a)pyrene	LS-A-E01	Innovation Campus	3	U (1.84)	0.53	91	46
SVOC	Benzo(a)pyrene	LS-A-E03	Innovation Campus	1	0.63 - 0.63	0.63	91	46
SVOC	Benzo(a)pyrene	LS-A-E04	Innovation Campus	2	U (4.46)	1.1	91	46
SVOC	Benzo(a)pyrene	LS-A-E05	Innovation Campus	1	U (0.94)	0.47	91	46
SVOC	Benzo(a)pyrene	LS-A-E07	Innovation Campus	1	0.43 - 0.43	0.43	91	46
SVOC	Benzo(a)pyrene	LS-A-E08	Innovation Campus	1	U (0.98)	0.49	91	46
SVOC	Benzo(a)pyrene	LS-A-F01	Innovation Campus	3	U (7.96)	2.1	91	46
SVOC	Benzo(a)pyrene	LS-A-F02	Innovation Campus	3	U (9.7)	2.6	91	46
SVOC	Benzo(a)pyrene	LS-A-F03	Innovation Campus	1	1.3 - 1.3	1.3	91	46
SVOC	Benzo(a)pyrene	LS-A-F04	Innovation Campus	12	U (0.94)	0.15	91	46

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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)pyrene	LS-A-F05	Innovation Campus	1	37 - 37	37	91	46
SVOC	Benzo(a)pyrene	LS-A-G01	Innovation Campus	3	U (1) - 0.635	0.45	91	46
SVOC	Benzo(a)pyrene	LS-A-G02	Innovation Campus	2	U (0.391)	0.15	91	46
SVOC	Benzo(a)pyrene	LS-A-G03	Innovation Campus	3	U (4.6) - 3.42	1.9	91	46
SVOC	Benzo(a)pyrene	LS-A-G07	Innovation Campus	6	2.54 - 34.8	9.6	91	46
SVOC	Benzo(a)pyrene	LS-A-G08	Innovation Campus	2	2.8 - 4.32	3.6	91	46
SVOC	Benzo(a)pyrene	LS-A-H03	Innovation Campus	2	U (0.195) - 0.431	0.23	91	46
SVOC	Benzo(a)pyrene	LS-A-H04	Innovation Campus	2	U (2.02)	0.55	91	46
SVOC	Benzo(a)pyrene	LS-A-H06	Innovation Campus	1	U (0.94)	0.47	91	46
SVOC	Benzo(a)pyrene	LS-A-H07	Innovation Campus	2	0.0748 - 0.0748	0.52	91	46
SVOC	Benzo(a)pyrene	LS-A-I01	Innovation Campus	6	U (8.23)	2.5	91	46
SVOC	Benzo(a)pyrene	LS-A-I02	Innovation Campus	1	U (5)	2.5	91	46
SVOC	Benzo(a)pyrene	LS-A-I03	Innovation Campus	3	U (0.94) - 2.18	0.89	91	46
SVOC	Benzo(a)pyrene	LS-B-B01	Innovation Campus	1	0.0062 - 0.0062	0.0062	91	46
SVOC	Benzo(a)pyrene	LS-B-C01	Innovation Campus	3	U (0.19) - 0.2	0.079	91	46
SVOC	Benzo(a)pyrene	LS-B-E01	Innovation Campus	4	U (2.32) - 0.0573	0.55	91	46
SVOC	Benzo(a)pyrene	LS-B-G02	Innovation Campus	1	9.07 - 9.07	9.1	91	46
SVOC	Benzo(a)pyrene	LS-B-H02	Innovation Campus	3	U (1) - 6	2.0	91	46
SVOC	Benzo(a)pyrene	LS-E-B01	Innovation Campus	107	0.0053 - 140	8.1	91	46
SVOC	Benzo(a)pyrene	LS-E-G01	Innovation Campus	4	U (2.08) - 1.5	0.85	91	46
SVOC	Benzo(b)fluoranthene	LS-A-A01	Innovation Campus	1	12 - 12	12	76	170
SVOC	Benzo(b)fluoranthene	LS-A-A02	Innovation Campus	2	0.0897 - 1.2	0.64	76	170
SVOC	Benzo(b)fluoranthene	LS-A-A03	Innovation Campus	1	3.07 - 3.07	3.1	76	170
SVOC	Benzo(b)fluoranthene	LS-A-A04	Innovation Campus	3	1.2 - 5.4	2.9	76	170
SVOC	Benzo(b)fluoranthene	LS-A-B02	Innovation Campus	14	U (1.9) - 3.9	0.71	76	170
SVOC	Benzo(b)fluoranthene	LS-A-B03	Innovation Campus	4	U (0.211) - 0.348	0.12	76	170
SVOC	Benzo(b)fluoranthene	LS-A-C01	Innovation Campus	35	U (19) - 170	11	76	170
SVOC	Benzo(b)fluoranthene	LS-A-C02	Innovation Campus	14	U (19) - 16	3.5	76	170
SVOC	Benzo(b)fluoranthene	LS-A-C04	Innovation Campus	3	U (0.2)	0.046	76	170
SVOC	Benzo(b)fluoranthene	LS-A-D01	Innovation Campus	5	U (3.98) - 0.667	0.82	76	170
SVOC	Benzo(b)fluoranthene	LS-A-D02	Innovation Campus	1	3.3 - 3.3	3.3	76	170
SVOC	Benzo(b)fluoranthene	LS-A-D03	Innovation Campus	3	U (0.95)	0.17	76	170
SVOC	Benzo(b)fluoranthene	LS-A-D04	Innovation Campus	2	U (1.84)	0.48	76	170
SVOC	Benzo(b)fluoranthene	LS-A-D05	Innovation Campus	6	U (1) - 0.434	0.35	76	170
SVOC	Benzo(b)fluoranthene	LS-A-D06	Innovation Campus	2	U (0.202)	0.060	76	170
SVOC	Benzo(b)fluoranthene	LS-A-D07	Innovation Campus	2	U (3.68)	0.97	76	170
SVOC	Benzo(b)fluoranthene	LS-A-E01	Innovation Campus	3	U (1.84)	0.53	76	170
SVOC	Benzo(b)fluoranthene	LS-A-E03	Innovation Campus	1	0.94 - 0.94	0.94	76	170
SVOC	Benzo(b)fluoranthene	LS-A-E04	Innovation Campus	2	U (4.46)	1.1	76	170
SVOC	Benzo(b)fluoranthene	LS-A-E05	Innovation Campus	1	U (0.94)	0.47	76	170
SVOC	Benzo(b)fluoranthene	LS-A-E07	Innovation Campus	1	0.21 - 0.21	0.21	76	170
SVOC	Benzo(b)fluoranthene	LS-A-E08	Innovation Campus	1	U (0.98)	0.49	76	170
SVOC	Benzo(b)fluoranthene	LS-A-F01	Innovation Campus	3	U (7.96)	2.1	76	170
SVOC	Benzo(b)fluoranthene	LS-A-F02	Innovation Campus	3	U (9.7)	2.6	76	170
SVOC	Benzo(b)fluoranthene	LS-A-F03	Innovation Campus	1	1.1 - 1.1	1.1	76	170
SVOC	Benzo(b)fluoranthene	LS-A-F04	Innovation Campus	12	U (0.94)	0.15	76	170
SVOC	Benzo(b)fluoranthene	LS-A-F05	Innovation Campus	1	44 - 44	44	76	170
SVOC	Benzo(b)fluoranthene	LS-A-G01	Innovation Campus	3	U (1) - 0.658	0.42	76	170
SVOC	Benzo(b)fluoranthene	LS-A-G02	Innovation Campus	2	U (0.391)	0.15	76	170
SVOC	Benzo(b)fluoranthene	LS-A-G03	Innovation Campus	3	U (4.6) - 3.04	1.8	76	170
SVOC	Benzo(b)fluoranthene	LS-A-G07	Innovation Campus	3	0.287 - 50.1	23	76	170
SVOC	Benzo(b)fluoranthene	LS-A-G08	Innovation Campus	2	3.67 - 6.25	5.0	76	170
SVOC	Benzo(b)fluoranthene	LS-A-H03	Innovation Campus	2	U (0.195) - 0.444	0.23	76	170
SVOC	Benzo(b)fluoranthene	LS-A-H04	Innovation Campus	2	U (2.02)	0.55	76	170
SVOC	Benzo(b)fluoranthene	LS-A-H06	Innovation Campus	1	U (0.94)	0.47	76	170
SVOC	Benzo(b)fluoranthene	LS-A-H07	Innovation Campus	2	0.0913 - 0.0913	0.53	76	170
SVOC	Benzo(b)fluoranthene	LS-A-I01	Innovation Campus	6	U (8.23)	2.5	76	170
SVOC	Benzo(b)fluoranthene	LS-A-I02	Innovation Campus	1	U (5)	2.5	76	170

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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(b)fluoranthene	LS-A-I03	Innovation Campus	3	U (0.94) - 3.36	1.3	76	170
SVOC	Benzo(b)fluoranthene	LS-B-B01	Innovation Campus	1	0.0073 - 0.0073	0.0073	76	170
SVOC	Benzo(b)fluoranthene	LS-B-C01	Innovation Campus	3	U (0.19) - 0.32	0.12	76	170
SVOC	Benzo(b)fluoranthene	LS-B-E01	Innovation Campus	4	U (2.32) - 0.0487	0.55	76	170
SVOC	Benzo(b)fluoranthene	LS-B-G02	Innovation Campus	1	14 - 14	14	76	170
SVOC	Benzo(b)fluoranthene	LS-B-H02	Innovation Campus	3	U (1) - 3.3	1.1	76	170
SVOC	Benzo(b)fluoranthene	LS-E-B01	Innovation Campus	99	0.0052 - 170	11	76	170
SVOC	Benzo(b)fluoranthene	LS-E-G01	Innovation Campus	4	U (2.08) - 1.6	1.0	76	170
SVOC	Benzo(g,h,i)perylene	LS-A-A01	Innovation Campus	1	6.9 - 6.9	6.9	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-A02	Innovation Campus	2	0.0557 - 0.73	0.39	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-A03	Innovation Campus	1	2.33 - 2.33	2.3	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-A04	Innovation Campus	3	0.62 - 2.3	1.3	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-B02	Innovation Campus	14	U (1.9) - 2	0.46	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-B03	Innovation Campus	4	U (0.211) - 0.217	0.089	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-C01	Innovation Campus	28	U (19) - 42	4.6	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-C02	Innovation Campus	12	U (19) - 7.4	1.7	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-C04	Innovation Campus	3	U (0.2)	0.046	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-D01	Innovation Campus	5	U (3.98) - 0.148	0.72	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-D02	Innovation Campus	1	20 - 20	20	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-D03	Innovation Campus	3	U (0.95) - 1	0.35	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-D04	Innovation Campus	2	U (1.84)	0.48	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-D05	Innovation Campus	6	U (1)	0.24	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-D06	Innovation Campus	2	U (0.202) - 0.217	0.12	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-D07	Innovation Campus	2	U (3.68)	1.0	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-E01	Innovation Campus	3	U (1.84)	0.53	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-E03	Innovation Campus	1	0.42 - 0.42	0.42	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-E04	Innovation Campus	2	U (4.46)	1.1	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-E05	Innovation Campus	1	U (0.94)	0.47	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-E07	Innovation Campus	1	0.33 - 0.33	0.33	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-E08	Innovation Campus	1	U (0.98)	0.49	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-F01	Innovation Campus	3	U (7.96)	2.1	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-F02	Innovation Campus	3	U (9.7)	2.6	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-F03	Innovation Campus	1	1.1 - 1.1	1.1	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-F04	Innovation Campus	12	U (0.94)	0.15	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-F05	Innovation Campus	1	21 - 21	21	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-G01	Innovation Campus	3	0.503 - 1	0.54	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-G02	Innovation Campus	2	U (0.391)	0.15	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-G03	Innovation Campus	3	U (4.6) - 1.57	1.3	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-G07	Innovation Campus	3	8 - 9.66	5.9	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-G08	Innovation Campus	2	U (2.06)	1.0	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-H03	Innovation Campus	2	U (0.195) - 0.305	0.16	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-H04	Innovation Campus	2	U (2.02)	0.55	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-H06	Innovation Campus	1	U (0.94)	0.47	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-H07	Innovation Campus	2	U (1.92)	0.49	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-I01	Innovation Campus	6	U (8.23)	2.5	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-I02	Innovation Campus	1	U (5)	2.5	190000	180
SVOC	Benzo(g,h,i)perylene	LS-A-I03	Innovation Campus	3	U (0.94)	0.28	190000	180
SVOC	Benzo(g,h,i)perylene	LS-B-B01	Innovation Campus	1	0.0054 - 0.0054	0.0054	190000	180
SVOC	Benzo(g,h,i)perylene	LS-B-C01	Innovation Campus	3	U (0.19)	0.044	190000	180
SVOC	Benzo(g,h,i)perylene	LS-B-E01	Innovation Campus	4	U (2.32)	0.54	190000	180
SVOC	Benzo(g,h,i)perylene	LS-B-G02	Innovation Campus	1	2.72 - 2.72	2.7	190000	180
SVOC	Benzo(g,h,i)perylene	LS-B-H02	Innovation Campus	3	U (1) - 20	6.7	190000	180
SVOC	Benzo(g,h,i)perylene	LS-E-B01	Innovation Campus	81	0.0038 - 84	5.7	190000	180
SVOC	Benzo(g,h,i)perylene	LS-E-G01	Innovation Campus	4	1.7 - 1.7	0.90	190000	180
SVOC	Chrysene	LS-A-A01	Innovation Campus	1	13 - 13	13	760	230
SVOC	Chrysene	LS-A-A02	Innovation Campus	2	0.0679 - 0.95	0.51	760	230
SVOC	Chrysene	LS-A-A03	Innovation Campus	1	2.33 - 2.33	2.3	760	230
SVOC	Chrysene	LS-A-A04	Innovation Campus	3	1.1 - 4.3	2.4	760	230

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	Chrysene	LS-A-B02	Innovation Campus	14	0.0479 - 3.3	0.64	760	230
SVOC	Chrysene	LS-A-B03	Innovation Campus	4	U (0.211) - 0.326	0.12	760	230
SVOC	Chrysene	LS-A-C01	Innovation Campus	31	U (19) - 300	15	760	230
SVOC	Chrysene	LS-A-C02	Innovation Campus	12	0.0626 - 13	3.2	760	230
SVOC	Chrysene	LS-A-C04	Innovation Campus	3	0.072 - 0.25	0.11	760	230
SVOC	Chrysene	LS-A-D01	Innovation Campus	5	U (1.99) - 3.67	1.3	760	230
SVOC	Chrysene	LS-A-D02	Innovation Campus	1	3.8 - 3.8	3.8	760	230
SVOC	Chrysene	LS-A-D03	Innovation Campus	3	U (0.95)	0.17	760	230
SVOC	Chrysene	LS-A-D04	Innovation Campus	2	U (1.84)	0.48	760	230
SVOC	Chrysene	LS-A-D05	Innovation Campus	6	0.229 - 1.9	0.67	760	230
SVOC	Chrysene	LS-A-D06	Innovation Campus	2	U (0.364)	0.14	760	230
SVOC	Chrysene	LS-A-D07	Innovation Campus	2	0.371 - 0.371	1.1	760	230
SVOC	Chrysene	LS-A-E01	Innovation Campus	3	0.486 - 0.486	0.63	760	230
SVOC	Chrysene	LS-A-E03	Innovation Campus	1	0.68 - 0.68	0.68	760	230
SVOC	Chrysene	LS-A-E04	Innovation Campus	2	U (22.3)	5.6	760	230
SVOC	Chrysene	LS-A-E05	Innovation Campus	1	U (0.94)	0.47	760	230
SVOC	Chrysene	LS-A-E07	Innovation Campus	1	0.65 - 0.65	0.65	760	230
SVOC	Chrysene	LS-A-E08	Innovation Campus	1	U (0.98)	0.49	760	230
SVOC	Chrysene	LS-A-F01	Innovation Campus	3	U (7.96)	2.1	760	230
SVOC	Chrysene	LS-A-F02	Innovation Campus	3	U (9.7) - 13	5.3	760	230
SVOC	Chrysene	LS-A-F03	Innovation Campus	1	2.7 - 2.7	2.7	760	230
SVOC	Chrysene	LS-A-F04	Innovation Campus	12	U (0.94) - 0.25	0.13	760	230
SVOC	Chrysene	LS-A-F05	Innovation Campus	1	35 - 35	35	760	230
SVOC	Chrysene	LS-A-G01	Innovation Campus	3	0.51 - 1.4	0.87	760	230
SVOC	Chrysene	LS-A-G02	Innovation Campus	2	U (0.391)	0.15	760	230
SVOC	Chrysene	LS-A-G03	Innovation Campus	3	U (4.6) - 6.08	2.8	760	230
SVOC	Chrysene	LS-A-G07	Innovation Campus	3	0.244 - 20.7	12	760	230
SVOC	Chrysene	LS-A-G08	Innovation Campus	2	2.21 - 3.21	2.7	760	230
SVOC	Chrysene	LS-A-H03	Innovation Campus	2	0.22 - 0.429	0.32	760	230
SVOC	Chrysene	LS-A-H04	Innovation Campus	2	0.69 - 0.69	0.85	760	230
SVOC	Chrysene	LS-A-H06	Innovation Campus	1	U (0.94)	0.47	760	230
SVOC	Chrysene	LS-A-H07	Innovation Campus	2	0.178 - 0.178	0.57	760	230
SVOC	Chrysene	LS-A-I01	Innovation Campus	6	U (8.23) - 0.471	2.5	760	230
SVOC	Chrysene	LS-A-I02	Innovation Campus	1	U (5)	2.5	760	230
SVOC	Chrysene	LS-A-I03	Innovation Campus	3	U (0.94) - 3.62	1.4	760	230
SVOC	Chrysene	LS-B-B01	Innovation Campus	1	0.0024 - 0.0024	0.0024	760	230
SVOC	Chrysene	LS-B-C01	Innovation Campus	3	U (0.19) - 0.27	0.10	760	230
SVOC	Chrysene	LS-B-E01	Innovation Campus	4	0.19 - 2.67	1.6	760	230
SVOC	Chrysene	LS-B-G02	Innovation Campus	1	7.15 - 7.15	7.2	760	230
SVOC	Chrysene	LS-B-H02	Innovation Campus	3	U (1) - 1.9	0.67	760	230
SVOC	Chrysene	LS-E-B01	Innovation Campus	81	0.0045 - 110	10	760	230
SVOC	Chrysene	LS-E-G01	Innovation Campus	4	1 - 3.97	1.9	760	230
SVOC	Fluorene	LS-A-A01	Innovation Campus	1	2 - 2	2.0	130000	3800
SVOC	Fluorene	LS-A-A02	Innovation Campus	2	U (0.17)	0.053	130000	3800
SVOC	Fluorene	LS-A-A03	Innovation Campus	1	0.185 - 0.185	0.19	130000	3800
SVOC	Fluorene	LS-A-A04	Innovation Campus	3	0.226 - 0.72	0.35	130000	3800
SVOC	Fluorene	LS-A-B02	Innovation Campus	14	0.073 - 0.51	0.19	130000	3800
SVOC	Fluorene	LS-A-B03	Innovation Campus	4	U (0.211)	0.039	130000	3800
SVOC	Fluorene	LS-A-C01	Innovation Campus	28	U (19) - 25	2.2	130000	3800
SVOC	Fluorene	LS-A-C02	Innovation Campus	12	0.067 - 0.35	1.1	130000	3800
SVOC	Fluorene	LS-A-C04	Innovation Campus	3	0.101 - 0.28	0.21	130000	3800
SVOC	Fluorene	LS-A-D01	Innovation Campus	5	U (1.99) - 5.95	1.5	130000	3800
SVOC	Fluorene	LS-A-D02	Innovation Campus	1	U (1.9)	0.95	130000	3800
SVOC	Fluorene	LS-A-D03	Innovation Campus	3	U (0.95)	0.17	130000	3800
SVOC	Fluorene	LS-A-D04	Innovation Campus	2	U (1.84)	0.48	130000	3800
SVOC	Fluorene	LS-A-D05	Innovation Campus	6	1.1 - 1.1	0.34	130000	3800
SVOC	Fluorene	LS-A-D06	Innovation Campus	2	0.117 - 0.117	0.11	130000	3800
SVOC	Fluorene	LS-A-D07	Innovation Campus	2	0.733 - 0.733	1.3	130000	3800

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	Fluorene	LS-A-E01	Innovation Campus	3	0.406 - 0.406	0.60	130000	3800
SVOC	Fluorene	LS-A-E03	Innovation Campus	1	U (0.19)	0.10	130000	3800
SVOC	Fluorene	LS-A-E04	Innovation Campus	2	U (4.46) - 19	9.5	130000	3800
SVOC	Fluorene	LS-A-E05	Innovation Campus	1	1.2 - 1.2	1.2	130000	3800
SVOC	Fluorene	LS-A-E07	Innovation Campus	7	2.4 - 7.4	4.4	130000	3800
SVOC	Fluorene	LS-A-E08	Innovation Campus	6	1.6 - 6.5	3.4	130000	3800
SVOC	Fluorene	LS-A-F01	Innovation Campus	3	U (7.96) - 9.05	3.8	130000	3800
SVOC	Fluorene	LS-A-F02	Innovation Campus	3	U (9.7) - 21	8.0	130000	3800
SVOC	Fluorene	LS-A-F03	Innovation Campus	1	U (0.98)	0.49	130000	3800
SVOC	Fluorene	LS-A-F04	Innovation Campus	12	U (0.94)	0.11	130000	3800
SVOC	Fluorene	LS-A-F05	Innovation Campus	1	3.3 - 3.3	3.3	130000	3800
SVOC	Fluorene	LS-A-G01	Innovation Campus	3	0.938 - 1.2	1.1	130000	3800
SVOC	Fluorene	LS-A-G02	Innovation Campus	2	1.12 - 1.39	1.3	130000	3800
SVOC	Fluorene	LS-A-G03	Innovation Campus	3	U (4.6) - 1.06	1.1	130000	3800
SVOC	Fluorene	LS-A-G07	Innovation Campus	3	U (4.28)	0.93	130000	3800
SVOC	Fluorene	LS-A-G08	Innovation Campus	2	U (2.06)	1.0	130000	3800
SVOC	Fluorene	LS-A-H03	Innovation Campus	2	0.337 - 0.337	0.22	130000	3800
SVOC	Fluorene	LS-A-H04	Innovation Campus	2	0.304 - 0.304	0.66	130000	3800
SVOC	Fluorene	LS-A-H06	Innovation Campus	1	U (0.94)	0.47	130000	3800
SVOC	Fluorene	LS-A-H07	Innovation Campus	2	0.166 - 0.166	0.56	130000	3800
SVOC	Fluorene	LS-A-I01	Innovation Campus	6	U (8.23) - 1.09	2.6	130000	3800
SVOC	Fluorene	LS-A-I02	Innovation Campus	1	U (5)	2.5	130000	3800
SVOC	Fluorene	LS-A-I03	Innovation Campus	3	U (0.94) - 2.06	0.85	130000	3800
SVOC	Fluorene	LS-B-B01	Innovation Campus	1	0.018 - 0.018	0.018	130000	3800
SVOC	Fluorene	LS-B-C01	Innovation Campus	3	U (0.19)	0.044	130000	3800
SVOC	Fluorene	LS-B-E01	Innovation Campus	4	0.338 - 5.82	2.3	130000	3800
SVOC	Fluorene	LS-B-G02	Innovation Campus	1	U (2.28)	1.1	130000	3800
SVOC	Fluorene	LS-B-H02	Innovation Campus	3	0.0496 - 0.0496	0.22	130000	3800
SVOC	Fluorene	LS-E-B01	Innovation Campus	81	U (23) - 53	3.4	130000	3800
SVOC	Fluorene	LS-E-G01	Innovation Campus	4	U (0.97) - 0.896	0.56	130000	3800
SVOC	Naphthalene	LS-A-A01	Innovation Campus	1	U (0.92)	0.46	66	25
SVOC	Naphthalene	LS-A-A02	Innovation Campus	2	U (0.17) - 0.0176	0.051	66	25
SVOC	Naphthalene	LS-A-A03	Innovation Campus	1	2.7 - 2.7	2.7	66	25
SVOC	Naphthalene	LS-A-A04	Innovation Campus	3	0.36 - 0.381	0.28	66	25
SVOC	Naphthalene	LS-A-B02	Innovation Campus	14	U (1.9) - 0.0618	0.23	66	25
SVOC	Naphthalene	LS-A-B03	Innovation Campus	4	U (0.33) - 3.32	0.87	66	25
SVOC	Naphthalene	LS-A-C01	Innovation Campus	28	U (19) - 4.4	0.58	66	25
SVOC	Naphthalene	LS-A-C02	Innovation Campus	12	U (19) - 0.186	1.1	66	25
SVOC	Naphthalene	LS-A-C04	Innovation Campus	3	U (0.2)	0.046	66	25
SVOC	Naphthalene	LS-A-D01	Innovation Campus	5	U (1.99) - 0.0498	0.50	66	25
SVOC	Naphthalene	LS-A-D02	Innovation Campus	1	U (1.9)	0.95	66	25
SVOC	Naphthalene	LS-A-D03	Innovation Campus	3	U (0.95)	0.17	66	25
SVOC	Naphthalene	LS-A-D04	Innovation Campus	2	U (1.84)	0.48	66	25
SVOC	Naphthalene	LS-A-D05	Innovation Campus	6	U (1) - 0.241	0.27	66	25
SVOC	Naphthalene	LS-A-D06	Innovation Campus	2	U (0.202)	0.060	66	25
SVOC	Naphthalene	LS-A-D07	Innovation Campus	2	U (3.68)	0.97	66	25
SVOC	Naphthalene	LS-A-E01	Innovation Campus	3	U (1.84)	0.53	66	25
SVOC	Naphthalene	LS-A-E03	Innovation Campus	1	U (0.19)	0.095	66	25
SVOC	Naphthalene	LS-A-E04	Innovation Campus	2	0.0927 - 16.9	8.5	66	25
SVOC	Naphthalene	LS-A-E05	Innovation Campus	1	U (0.94)	0.47	66	25
SVOC	Naphthalene	LS-A-E07	Innovation Campus	7	16 - 48	22	66	25
SVOC	Naphthalene	LS-A-E08	Innovation Campus	6	1.4 - 40	17	66	25
SVOC	Naphthalene	LS-A-F01	Innovation Campus	3	U (7.96)	2.1	66	25
SVOC	Naphthalene	LS-A-F02	Innovation Campus	3	U (9.7) - 18	7.0	66	25
SVOC	Naphthalene	LS-A-F03	Innovation Campus	1	U (0.98)	0.49	66	25
SVOC	Naphthalene	LS-A-F04	Innovation Campus	12	U (0.94)	0.11	66	25
SVOC	Naphthalene	LS-A-F05	Innovation Campus	1	4.7 - 4.7	4.7	66	25
SVOC	Naphthalene	LS-A-G01	Innovation Campus	3	U (1) - 0.319	0.35	66	25

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	Naphthalene	LS-A-G02	Innovation Campus	2	U (0.391)	0.15	66	25
SVOC	Naphthalene	LS-A-G03	Innovation Campus	3	U (4.6) - 4.72	2.3	66	25
SVOC	Naphthalene	LS-A-G07	Innovation Campus	3	U (4.28)	0.93	66	25
SVOC	Naphthalene	LS-A-G08	Innovation Campus	2	U (2.06)	1.0	66	25
SVOC	Naphthalene	LS-A-H03	Innovation Campus	2	U (0.195)	0.058	66	25
SVOC	Naphthalene	LS-A-H04	Innovation Campus	2	U (2.02)	0.55	66	25
SVOC	Naphthalene	LS-A-H06	Innovation Campus	1	U (0.94)	0.47	66	25
SVOC	Naphthalene	LS-A-H07	Innovation Campus	2	U (1.92)	0.49	66	25
SVOC	Naphthalene	LS-A-I01	Innovation Campus	6	U (8.23) - 2.75	2.9	66	25
SVOC	Naphthalene	LS-A-I02	Innovation Campus	1	U (5)	2.5	66	25
SVOC	Naphthalene	LS-A-I03	Innovation Campus	3	U (0.94) - 2.88	1.1	66	25
SVOC	Naphthalene	LS-B-B01	Innovation Campus	1	0.026 - 0.026	0.026	66	25
SVOC	Naphthalene	LS-B-C01	Innovation Campus	3	U (0.19)	0.044	66	25
SVOC	Naphthalene	LS-B-E01	Innovation Campus	4	2.7 - 11.1	3.6	66	25
SVOC	Naphthalene	LS-B-G02	Innovation Campus	1	U (2.28)	1.1	66	25
SVOC	Naphthalene	LS-B-H02	Innovation Campus	3	U (1) - 2.2	0.77	66	25
SVOC	Naphthalene	LS-E-B01	Innovation Campus	109	0.0017 - 160	4.0	66	25
SVOC	Naphthalene	LS-E-G01	Innovation Campus	4	U (0.97)	0.44	66	25
SVOC	Phenanthrene	LS-A-A01	Innovation Campus	1	26 - 26	26	190000	10000
SVOC	Phenanthrene	LS-A-A02	Innovation Campus	2	0.0739 - 1.4	0.74	190000	10000
SVOC	Phenanthrene	LS-A-A03	Innovation Campus	1	3.09 - 3.09	3.1	190000	10000
SVOC	Phenanthrene	LS-A-A04	Innovation Campus	3	1.5 - 7.2	3.8	190000	10000
SVOC	Phenanthrene	LS-A-B02	Innovation Campus	14	0.1 - 4.67	0.98	190000	10000
SVOC	Phenanthrene	LS-A-B03	Innovation Campus	4	U (0.211) - 0.219	0.13	190000	10000
SVOC	Phenanthrene	LS-A-C01	Innovation Campus	28	U (19) - 380	21	190000	10000
SVOC	Phenanthrene	LS-A-C02	Innovation Campus	12	0.0678 - 8.5	2.1	190000	10000
SVOC	Phenanthrene	LS-A-C04	Innovation Campus	3	0.211 - 0.834	0.53	190000	10000
SVOC	Phenanthrene	LS-A-D01	Innovation Campus	5	U (1.99) - 1.5	0.71	190000	10000
SVOC	Phenanthrene	LS-A-D02	Innovation Campus	1	2.1 - 2.1	2.1	190000	10000
SVOC	Phenanthrene	LS-A-D03	Innovation Campus	3	U (0.95)	0.17	190000	10000
SVOC	Phenanthrene	LS-A-D04	Innovation Campus	2	U (1.84) - 3.32	1.7	190000	10000
SVOC	Phenanthrene	LS-A-D05	Innovation Campus	6	0.235 - 2.9	0.95	190000	10000
SVOC	Phenanthrene	LS-A-D06	Innovation Campus	2	U (0.364) - 0.226	0.20	190000	10000
SVOC	Phenanthrene	LS-A-D07	Innovation Campus	2	1.59 - 1.59	1.7	190000	10000
SVOC	Phenanthrene	LS-A-E01	Innovation Campus	3	1.16 - 1.16	0.85	190000	10000
SVOC	Phenanthrene	LS-A-E03	Innovation Campus	1	1.4 - 1.4	1.4	190000	10000
SVOC	Phenanthrene	LS-A-E04	Innovation Campus	2	0.0787 - 54.3	27	190000	10000
SVOC	Phenanthrene	LS-A-E05	Innovation Campus	1	3.7 - 3.7	3.7	190000	10000
SVOC	Phenanthrene	LS-A-E07	Innovation Campus	7	4.7 - 18	12	190000	10000
SVOC	Phenanthrene	LS-A-E08	Innovation Campus	6	4.8 - 26	12	190000	10000
SVOC	Phenanthrene	LS-A-F01	Innovation Campus	3	U (7.96) - 22.2	8.2	190000	10000
SVOC	Phenanthrene	LS-A-F02	Innovation Campus	3	U (9.7) - 58	23	190000	10000
SVOC	Phenanthrene	LS-A-F03	Innovation Campus	1	U (0.98)	0.49	190000	10000
SVOC	Phenanthrene	LS-A-F04	Innovation Campus	12	U (0.94) - 0.33	0.14	190000	10000
SVOC	Phenanthrene	LS-A-F05	Innovation Campus	1	48 - 48	48	190000	10000
SVOC	Phenanthrene	LS-A-G01	Innovation Campus	3	1.1 - 2.76	1.8	190000	10000
SVOC	Phenanthrene	LS-A-G02	Innovation Campus	2	2.08 - 3.3	2.7	190000	10000
SVOC	Phenanthrene	LS-A-G03	Innovation Campus	3	4.81 - 5.9	3.6	190000	10000
SVOC	Phenanthrene	LS-A-G07	Innovation Campus	3	0.246 - 16	9.5	190000	10000
SVOC	Phenanthrene	LS-A-G08	Innovation Campus	2	U (2.06)	1.0	190000	10000
SVOC	Phenanthrene	LS-A-H03	Innovation Campus	2	0.26 - 0.932	0.60	190000	10000
SVOC	Phenanthrene	LS-A-H04	Innovation Campus	2	0.928 - 0.928	0.97	190000	10000
SVOC	Phenanthrene	LS-A-H06	Innovation Campus	1	1.2 - 1.2	1.2	190000	10000
SVOC	Phenanthrene	LS-A-H07	Innovation Campus	2	0.417 - 2.04	1.2	190000	10000
SVOC	Phenanthrene	LS-A-I01	Innovation Campus	6	U (8.23) - 1.49	2.7	190000	10000
SVOC	Phenanthrene	LS-A-I02	Innovation Campus	1	U (5)	2.5	190000	10000
SVOC	Phenanthrene	LS-A-I03	Innovation Campus	3	U (0.94) - 7.1	2.5	190000	10000
SVOC	Phenanthrene	LS-B-B01	Innovation Campus	1	0.045 - 0.045	0.045	190000	10000

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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	LS-B-C01	Innovation Campus	3	U (0.19) - 0.31	0.12	190000	10000
SVOC	Phenanthrene	LS-B-E01	Innovation Campus	4	0.96 - 15.9	6.5	190000	10000
SVOC	Phenanthrene	LS-B-G02	Innovation Campus	1	4.74 - 4.74	4.7	190000	10000
SVOC	Phenanthrene	LS-B-H02	Innovation Campus	3	0.162 - 1.9	0.72	190000	10000
SVOC	Phenanthrene	LS-E-B01	Innovation Campus	81	0.0049 - 320	19	190000	10000
SVOC	Phenanthrene	LS-E-G01	Innovation Campus	4	U (0.97) - 1.6	1.1	190000	10000
SVOC	Pyrene	LS-A-A01	Innovation Campus	1	25 - 25	25	96000	2200
SVOC	Pyrene	LS-A-A02	Innovation Campus	2	0.0991 - 1.6	0.85	96000	2200
SVOC	Pyrene	LS-A-A03	Innovation Campus	1	3.18 - 3.18	3.2	96000	2200
SVOC	Pyrene	LS-A-A04	Innovation Campus	3	1.9 - 7.5	4.1	96000	2200
SVOC	Pyrene	LS-A-B02	Innovation Campus	14	0.054 - 5.77	1.1	96000	2200
SVOC	Pyrene	LS-A-B03	Innovation Campus	4	U (0.211) - 0.426	0.16	96000	2200
SVOC	Pyrene	LS-A-C01	Innovation Campus	28	U (19) - 380	24	96000	2200
SVOC	Pyrene	LS-A-C02	Innovation Campus	12	0.0594 - 15	3.7	96000	2200
SVOC	Pyrene	LS-A-C04	Innovation Campus	3	0.138 - 0.44	0.20	96000	2200
SVOC	Pyrene	LS-A-D01	Innovation Campus	5	U (1.99) - 11.8	3.1	96000	2200
SVOC	Pyrene	LS-A-D02	Innovation Campus	1	U (1.9)	1.0	96000	2200
SVOC	Pyrene	LS-A-D03	Innovation Campus	3	U (0.95)	0.17	96000	2200
SVOC	Pyrene	LS-A-D04	Innovation Campus	2	U (1.84) - 2.23	1.1	96000	2200
SVOC	Pyrene	LS-A-D05	Innovation Campus	6	0.23 - 1.26	0.61	96000	2200
SVOC	Pyrene	LS-A-D06	Innovation Campus	2	U (0.364)	0.14	96000	2200
SVOC	Pyrene	LS-A-D07	Innovation Campus	2	0.56 - 0.56	1.2	96000	2200
SVOC	Pyrene	LS-A-E01	Innovation Campus	3	0.398 - 0.398	0.60	96000	2200
SVOC	Pyrene	LS-A-E03	Innovation Campus	1	1.1 - 1.1	1.1	96000	2200
SVOC	Pyrene	LS-A-E04	Innovation Campus	2	U (22.3)	5.6	96000	2200
SVOC	Pyrene	LS-A-E05	Innovation Campus	1	1.2 - 1.2	1.2	96000	2200
SVOC	Pyrene	LS-A-E07	Innovation Campus	1	0.56 - 0.56	0.56	96000	2200
SVOC	Pyrene	LS-A-E08	Innovation Campus	1	U (0.98)	0.49	96000	2200
SVOC	Pyrene	LS-A-F01	Innovation Campus	3	U (7.96) - 10.3	4.3	96000	2200
SVOC	Pyrene	LS-A-F02	Innovation Campus	3	U (9.7) - 15	6.0	96000	2200
SVOC	Pyrene	LS-A-F03	Innovation Campus	1	2.6 - 2.6	2.6	96000	2200
SVOC	Pyrene	LS-A-F04	Innovation Campus	12	U (0.94) - 0.325	0.16	96000	2200
SVOC	Pyrene	LS-A-F05	Innovation Campus	1	50 - 50	50	96000	2200
SVOC	Pyrene	LS-A-G01	Innovation Campus	3	0.572 - 2.2	1.1	96000	2200
SVOC	Pyrene	LS-A-G02	Innovation Campus	2	0.484 - 0.624	0.55	96000	2200
SVOC	Pyrene	LS-A-G03	Innovation Campus	3	U (4.6) - 4.26	2.2	96000	2200
SVOC	Pyrene	LS-A-G07	Innovation Campus	3	0.282 - 25	15	96000	2200
SVOC	Pyrene	LS-A-G08	Innovation Campus	2	2.15 - 2.94	2.5	96000	2200
SVOC	Pyrene	LS-A-H03	Innovation Campus	2	0.134 - 0.439	0.29	96000	2200
SVOC	Pyrene	LS-A-H04	Innovation Campus	2	0.759 - 0.759	0.88	96000	2200
SVOC	Pyrene	LS-A-H06	Innovation Campus	1	1.4 - 1.4	1.4	96000	2200
SVOC	Pyrene	LS-A-H07	Innovation Campus	2	0.415 - 0.415	0.69	96000	2200
SVOC	Pyrene	LS-A-I01	Innovation Campus	6	U (8.23) - 0.698	2.6	96000	2200
SVOC	Pyrene	LS-A-I02	Innovation Campus	1	U (5)	2.5	96000	2200
SVOC	Pyrene	LS-A-I03	Innovation Campus	3	U (0.94) - 7.84	2.8	96000	2200
SVOC	Pyrene	LS-B-B01	Innovation Campus	1	0.02 - 0.02	0.020	96000	2200
SVOC	Pyrene	LS-B-C01	Innovation Campus	3	U (0.19) - 0.39	0.14	96000	2200
SVOC	Pyrene	LS-B-E01	Innovation Campus	4	0.413 - 3.84	2.2	96000	2200
SVOC	Pyrene	LS-B-G02	Innovation Campus	1	7.04 - 7.04	7.0	96000	2200
SVOC	Pyrene	LS-B-H02	Innovation Campus	3	U (1)	0.21	96000	2200
SVOC	Pyrene	LS-E-B01	Innovation Campus	81	0.0052 - 190	17	96000	2200
SVOC	Pyrene	LS-E-G01	Innovation Campus	4	U (0.97) - 2.5	1.1	96000	2200
INORG	Lead	LS-A-A01	Innovation Campus	2	400 - 1300	850	1000	450
INORG	Lead	LS-A-A02	Innovation Campus	2	128 - 733	431	1000	450
INORG	Lead	LS-A-A03	Innovation Campus	1	84000 - 84000	84000	1000	450
INORG	Lead	LS-A-A04	Innovation Campus	3	135 - 214	174	1000	450
INORG	Lead	LS-A-A05	Innovation Campus	1	38.8 - 38.8	39	1000	450
INORG	Lead	LS-A-B02	Innovation Campus	14	5 - 191	43	1000	450

Table 3.3

Historical and PESRM Sampling Results Summary

Soil Management Plan Addendum No. 5

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)
INORG	Lead	LS-A-B03	Innovation Campus	4	4.2 - 108	51	1000	450
INORG	Lead	LS-A-C01	Innovation Campus	29	5.06 - 202	48	1000	450
INORG	Lead	LS-A-C02	Innovation Campus	18	4.36 - 2220	344	1000	450
INORG	Lead	LS-A-C04	Innovation Campus	3	3.87 - 78.1	31	1000	450
INORG	Lead	LS-A-D01	Innovation Campus	5	19.7 - 625	210	1000	450
INORG	Lead	LS-A-D02	Innovation Campus	1	147 - 147	147	1000	450
INORG	Lead	LS-A-D03	Innovation Campus	3	10.3 - 174	65	1000	450
INORG	Lead	LS-A-D04	Innovation Campus	2	33.4 - 380	207	1000	450
INORG	Lead	LS-A-D05	Innovation Campus	6	10.4 - 405	135	1000	450
INORG	Lead	LS-A-D06	Innovation Campus	2	4.1 - 349	177	1000	450
INORG	Lead	LS-A-D07	Innovation Campus	2	45.7 - 124	85	1000	450
INORG	Lead	LS-A-E01	Innovation Campus	3	12.3 - 294	165	1000	450
INORG	Lead	LS-A-E03	Innovation Campus	1	219 - 219	219	1000	450
INORG	Lead	LS-A-E04	Innovation Campus	2	14.6 - 1420	717	1000	450
INORG	Lead	LS-A-E05	Innovation Campus	1	200 - 200	200	1000	450
INORG	Lead	LS-A-E07	Innovation Campus	1	101 - 101	101	1000	450
INORG	Lead	LS-A-E08	Innovation Campus	1	181 - 181	181	1000	450
INORG	Lead	LS-A-F01	Innovation Campus	3	6.63 - 131	70	1000	450
INORG	Lead	LS-A-F02	Innovation Campus	3	102 - 1380	674	1000	450
INORG	Lead	LS-A-F03	Innovation Campus	1	314 - 314	314	1000	450
INORG	Lead	LS-A-F04	Innovation Campus	12	8.52 - 143	43	1000	450
INORG	Lead	LS-A-F05	Innovation Campus	1	74.6 - 74.6	75	1000	450
INORG	Lead	LS-A-G01	Innovation Campus	3	79.2 - 912	363	1000	450
INORG	Lead	LS-A-G02	Innovation Campus	2	6.75 - 170	88	1000	450
INORG	Lead	LS-A-G03	Innovation Campus	3	21 - 230	141	1000	450
INORG	Lead	LS-A-G07	Innovation Campus	3	9.56 - 254	128	1000	450
INORG	Lead	LS-A-G08	Innovation Campus	2	65.2 - 148	107	1000	450
INORG	Lead	LS-A-H03	Innovation Campus	2	21.5 - 68	45	1000	450
INORG	Lead	LS-A-H04	Innovation Campus	2	11.5 - 30.7	21	1000	450
INORG	Lead	LS-A-H06	Innovation Campus	1	191 - 191	191	1000	450
INORG	Lead	LS-A-H07	Innovation Campus	2	20.7 - 56.5	39	1000	450
INORG	Lead	LS-A-I01	Innovation Campus	7	19.8 - 478	151	1000	450
INORG	Lead	LS-A-I02	Innovation Campus	1	374 - 374	374	1000	450
INORG	Lead	LS-A-I03	Innovation Campus	3	10.3 - 670	341	1000	450
INORG	Lead	LS-B-B01	Innovation Campus	1	26.9 - 26.9	27	1000	450
INORG	Lead	LS-B-C01	Innovation Campus	3	11.4 - 25.6	21	1000	450
INORG	Lead	LS-B-E01	Innovation Campus	4	13.7 - 1250	555	1000	450
INORG	Lead	LS-B-G02	Innovation Campus	1	547 - 547	547	1000	450
INORG	Lead	LS-B-H02	Innovation Campus	3	11.7 - 118	64	1000	450
INORG	Lead	LS-E-B01	Innovation Campus	109	9.14 - 95000	2167	1000	450
INORG	Lead	LS-E-G01	Innovation Campus	4	31.3 - 370	172	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.

Indicates average concentration exceeds the Non-Residential Soil DC and Soil-to-GW Numeric Values.

Table 4.1
Bulk Soil Movement and Placement, Soil Reuse Categories and Volume Estimates
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Area ID	Soil Reuse Category	Description	Previous Volume (yd ³)	Updated Volume (yd ³)
Industrial Development Phase 1				
IP1-A5-01	A		1,819,258	3,007
IP1-A5-02				2,697
IP1-A5-03				1,613
IP1-A5-04				2,786
IP1-A5-05				3,177
IP1-A5-06				14,188
IP1-A5-07				3,561
IP1-A5-08				1,385,713
IP1-A5-09				10,650
IP1-A5-10				31,604
IP1-A5-11				5,958
IP1-A5-12				2,046
IP1-A5-13				12,061
IP1-A5-14				13,160
IP1-A5-15				8,009
IP1-A5-16				5,478
IP1-A5-17				4,586
IP1-A5-18				5,046
IP1-A5-19				56
IP1-A5-20				31,514
IP1-A5-21				11,818
IP1-A5-22				17,735
IP1-A5-23				5,758
IP1-A5-24				14,779
IP1-A5-25				5,930
Category A Total (yd³):			1,819,258	1,602,930
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
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				45,100
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			
Category B Total (yd³):			779,115	725,956

Table 4.1
Bulk Soil Movement and Placement, Soil Reuse Categories and Volume Estimates
Soil Management Plan Addendum No. 5
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Area ID	Soil Reuse Category	Description	Previous Volume (yd ³)	Updated 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
IP1LI-02	8,747			
Category E Total (yd³):			186,596	143,609
--	Not Sampled	Not sampled due to underground utilities.	34,587	34,540
Industrial Development Phase 1 Total (yd³):			2,819,556	2,507,035
Innovation Campus				
LS-A5-17	A	--	446,675	4,419
LS-A5-18				692
LS-A5-19				966
LS-A5-20				95,435
LS-A5-21				12
LS-A5-22				9,766
LS-A5-23				110,088
LS-A5-24				9
LS-A5-25				168,885
LS-A5-26				4,325
Category A Total (yd³):			446,675	394,596
16-C05	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.	90,383	2,177
16-C08				4,895
17-C01				4,105
17-C03				3,241
18A-C01				161
18B-C03				2,891
18B-C04				144
18C-C01				0.4
18C-C02				17
18C-C03				483
LS-A5-03				657
LS-A5-04				2,120
LS-A5-05				2,512
LS-A5-06				20,334
LS-A5-08				14,982
LS-A5-09				85,615
LS-A5-12				3,782
LS-A5-13				1,944
LS-A5-14	4,533			
LS-A5-15	19,044			
Category B Total (yd³):			90,383	173,639
16-C06a	E	To be reused beneath an impervious surface cap that will serve as an engineering control at elevations above the groundwater table.	48,389	1,535
16-C07				487
17-C02				2,748
17-C07				679
18A-C02				4
LS-A5-01				13,049
LS-A5-02				57,676
LS-A5-07				8,187.8
LS-A5-10				7,855
LS-A5-11				2,561
LS-A5-16	11,419			
Category E Total (yd³):			48,389	106,201
--	Not Sampled	Not sampled due to railroad spurs.	--	8,858
Innovation Campus Total (yd³):			585,447	683,294

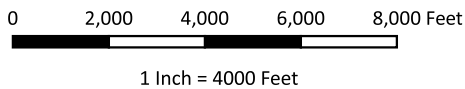
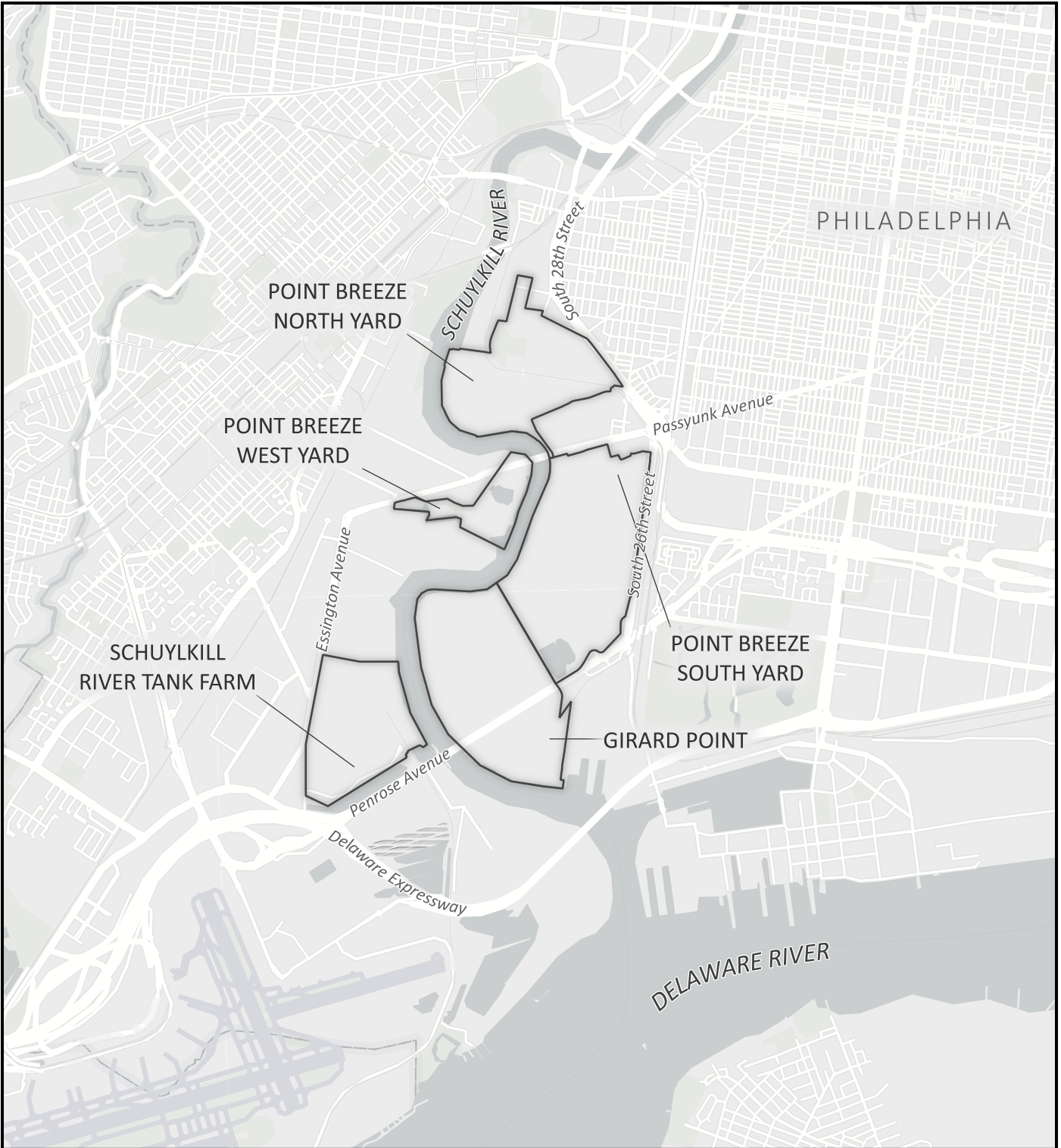
Note:
Area IDs are presented on Figure 4.1.

Figures

- 1.1 Site Location
- 1.2 SMP Addendum No. 5 Development Area (SMP Sampling Area)
- 2.1 SMP Addendum No. 5 Recent Soil Boring Locations
- 2.2 Soil Boring Locations and Cell Boundaries
- 3.1 Soil Management Plan Cell Categorization
- 4.1 Soil Management Plan Management Area Categorization



N:\GIS\PI\P044.001_PESRM-PES\OGIS\OGZ and GPKG\Main Branch\20230607\OGZ328_P044.001_Hlco.ggz Industrial Development Phase I - SMP Addendum - parent - Site Location 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



Legend

 Property Boundary

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CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

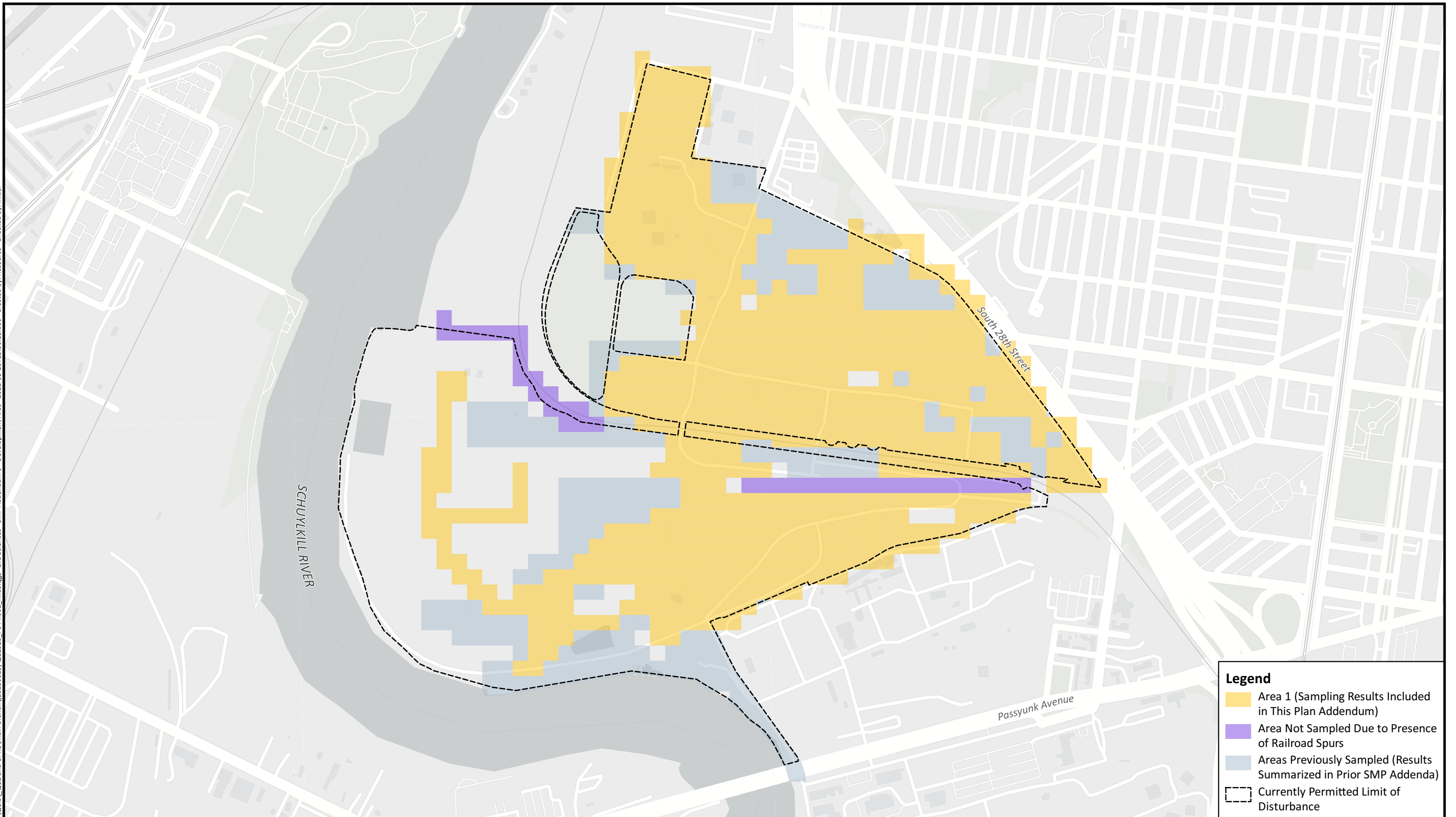
PROJECT: Soil Management Plan Addendum No. 5

PROJECT NUMBER: P044.001.001

Site Location

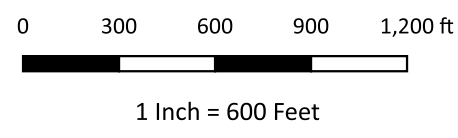
FIGURE 1.1

N:\GIS\Prj\PO44.001_PESRM-PES\OGIS\OGZ and GPKG\Main Branch\20230615\OGZ328_PO44.001_Hilco.ogz Life Sciences - SMP Addendum 5 - Development Area 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



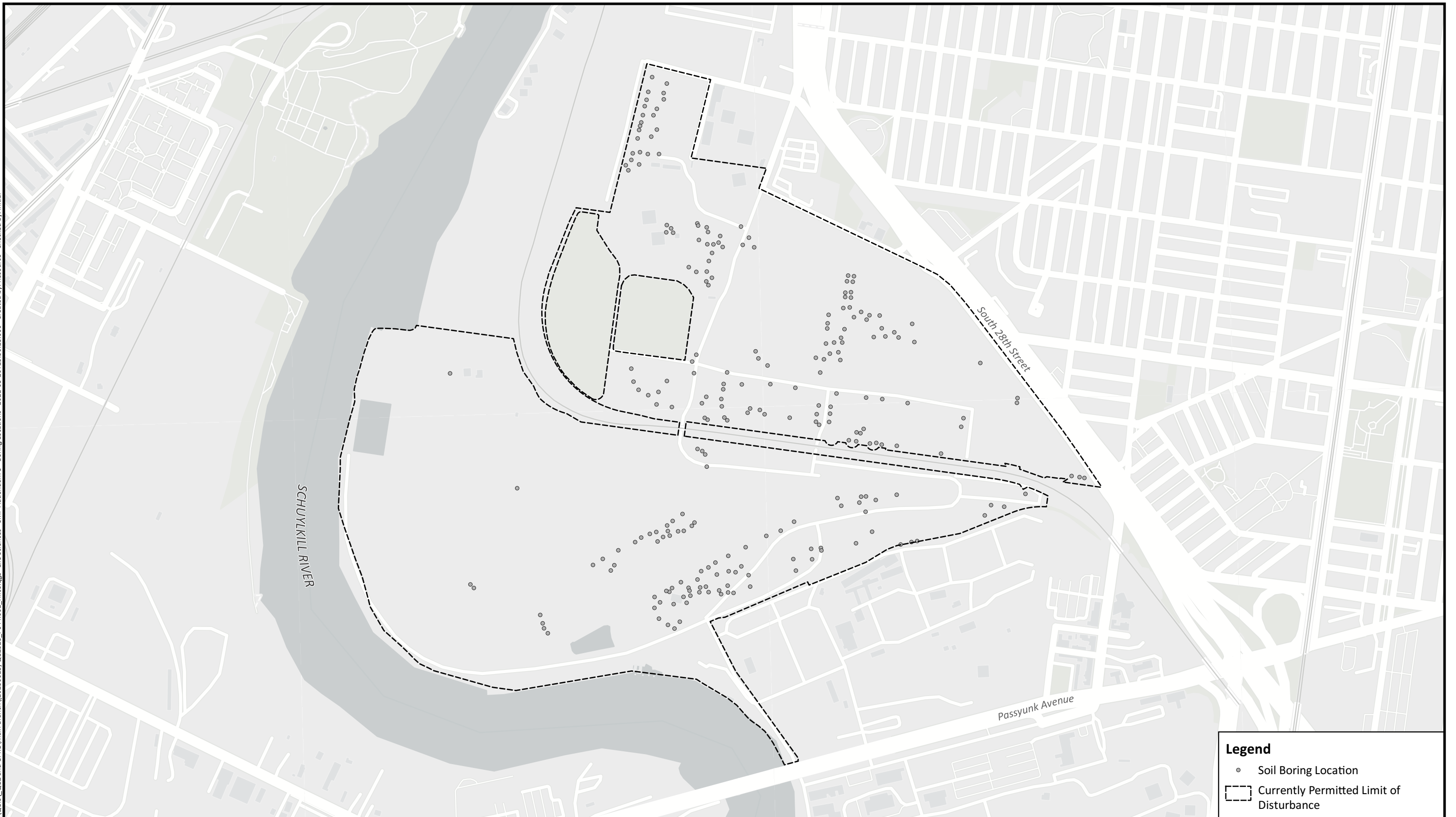
Legend

- Area 1 (Sampling Results Included in This Plan Addendum)
- Area Not Sampled Due to Presence of Railroad Spurs
- Areas Previously Sampled (Results Summarized in Prior SMP Addenda)
- Currently Permitted Limit of Disturbance



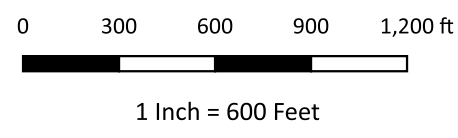
	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	SMP Addendum No. 5 Development Area (SMP Sampling Area)
	PROJECT: Soil Management Plan Addendum No. 5	
PROJECT NUMBER: P044.001.001	FIGURE 1.2	

N:\GIS\Prj\PO44.001_PESRM-PES\OGS\OGZ and GPKG\Main Branch\20230615\OGZ328_PO44.001_Hilco.ogz Life Sciences - SMP Addendum 5 - Boring Locations 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



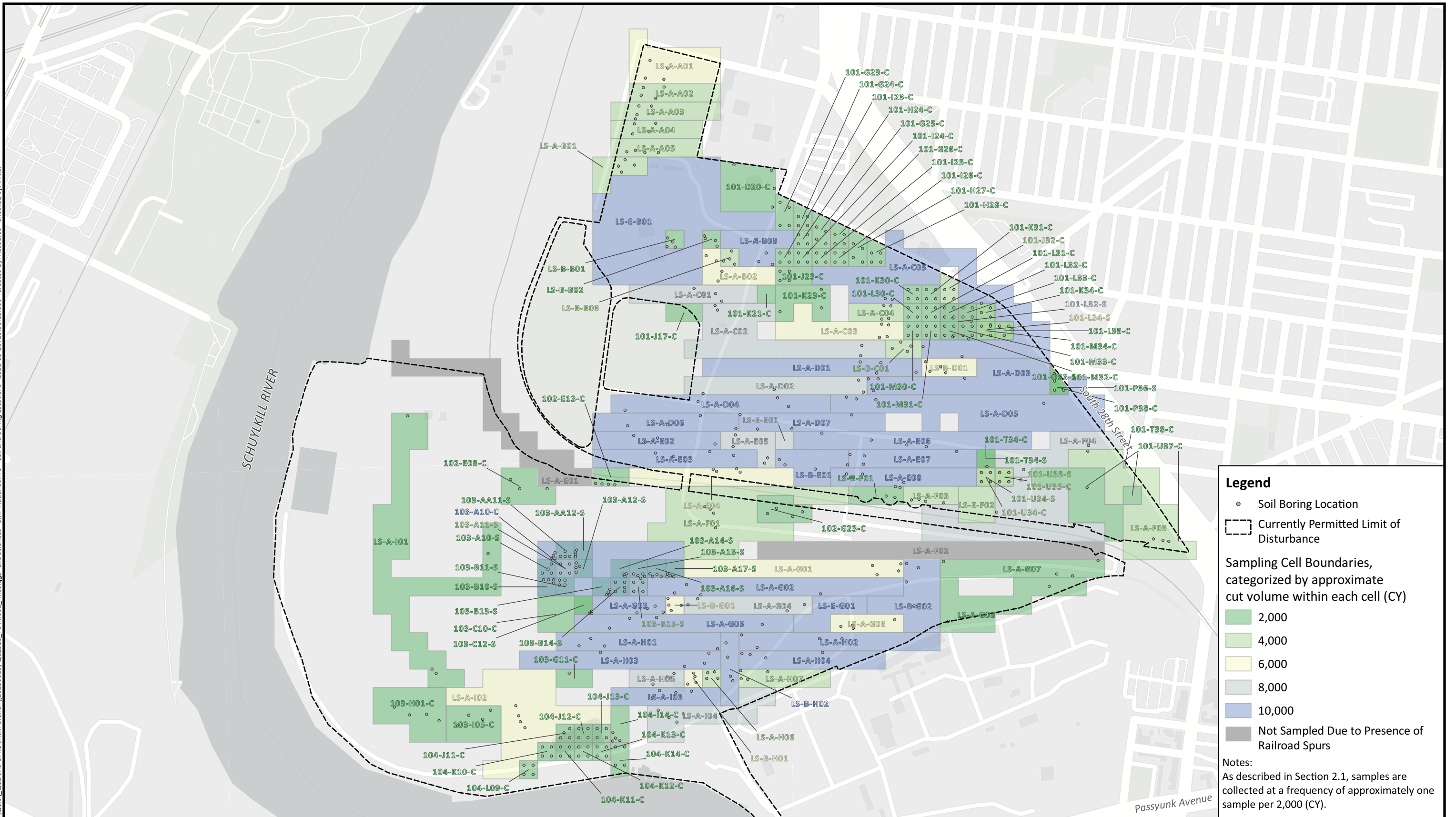
Legend

- Soil Boring Location
- Currently Permitted Limit of Disturbance



	CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC	<p>SMP Addendum No. 5 Recent Soil Boring Locations</p> <p>FIGURE 2.1</p>
	PROJECT:	Soil Management Plan Addendum No. 5	
PROJECT NUMBER:	P044.001.001		

N:\GIS\Prj\PO44.001_PESRM-PES\OGIS\OGZ and GPKS\Main Branch\20230619\OGZ328_PO44.001_Hilco.ogz Life Sciences - SMP Addendum 5 - Cell and Boring Locations 2021-03-26T15:56:13.000 Created by: Resource Checked by: initial



Legend

- Soil Boring Location
 - ▭ Currently Permitted Limit of Disturbance
- Sampling Cell Boundaries, categorized by approximate cut volume within each cell (CY)
- 2,000
 - 4,000
 - 6,000
 - 8,000
 - 10,000
 - Not Sampled Due to Presence of Railroad Spurs

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

0 250 500 750 1,000 ft



1 Inch = 500 Feet



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CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

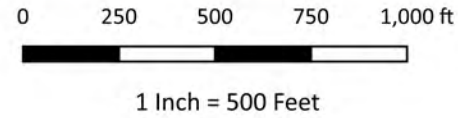
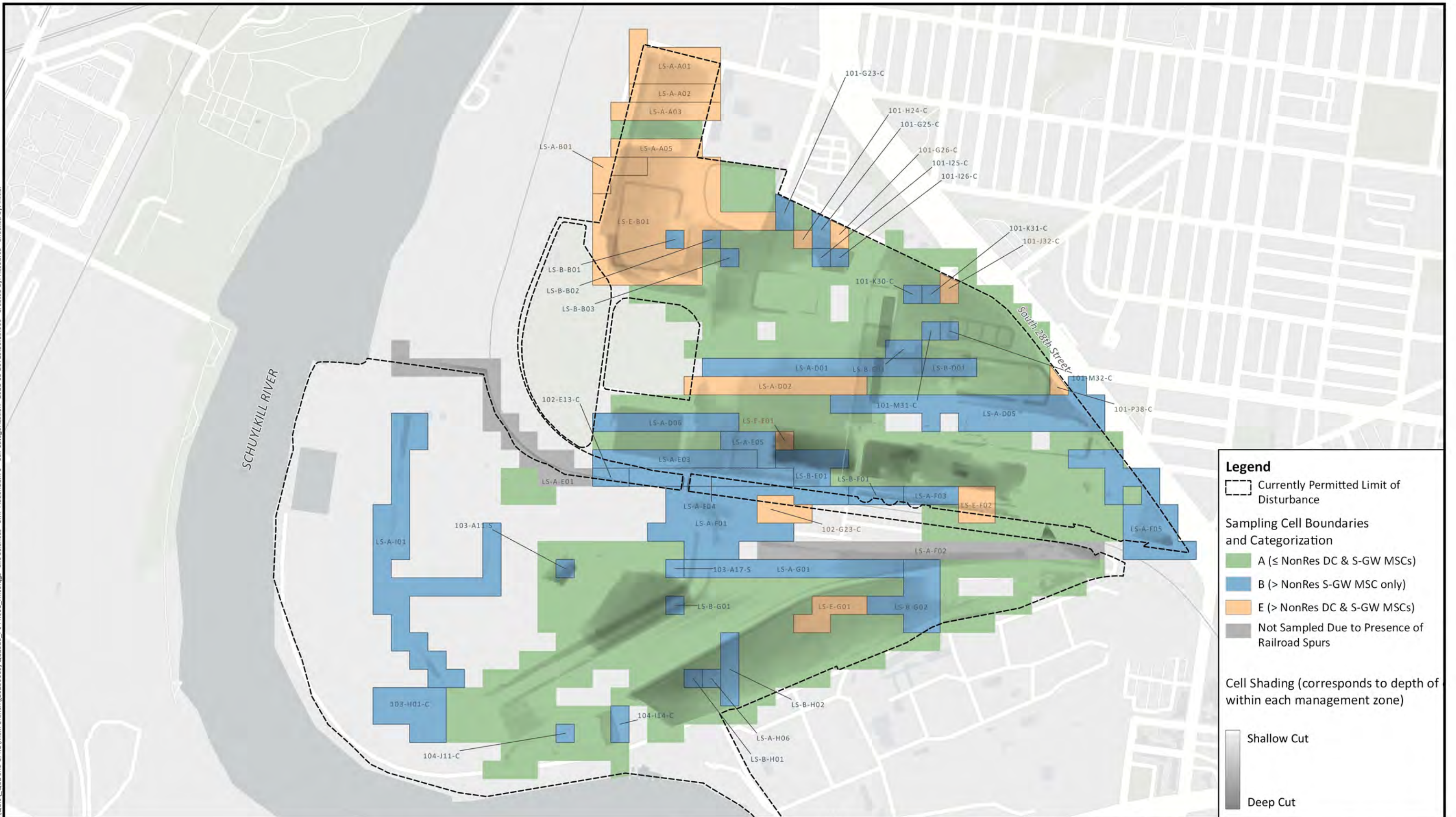
PROJECT: Soil Management Plan Addendum No. 5

PROJECT NUMBER: PO44.001.001

Soil Boring Locations and Cell Boundaries

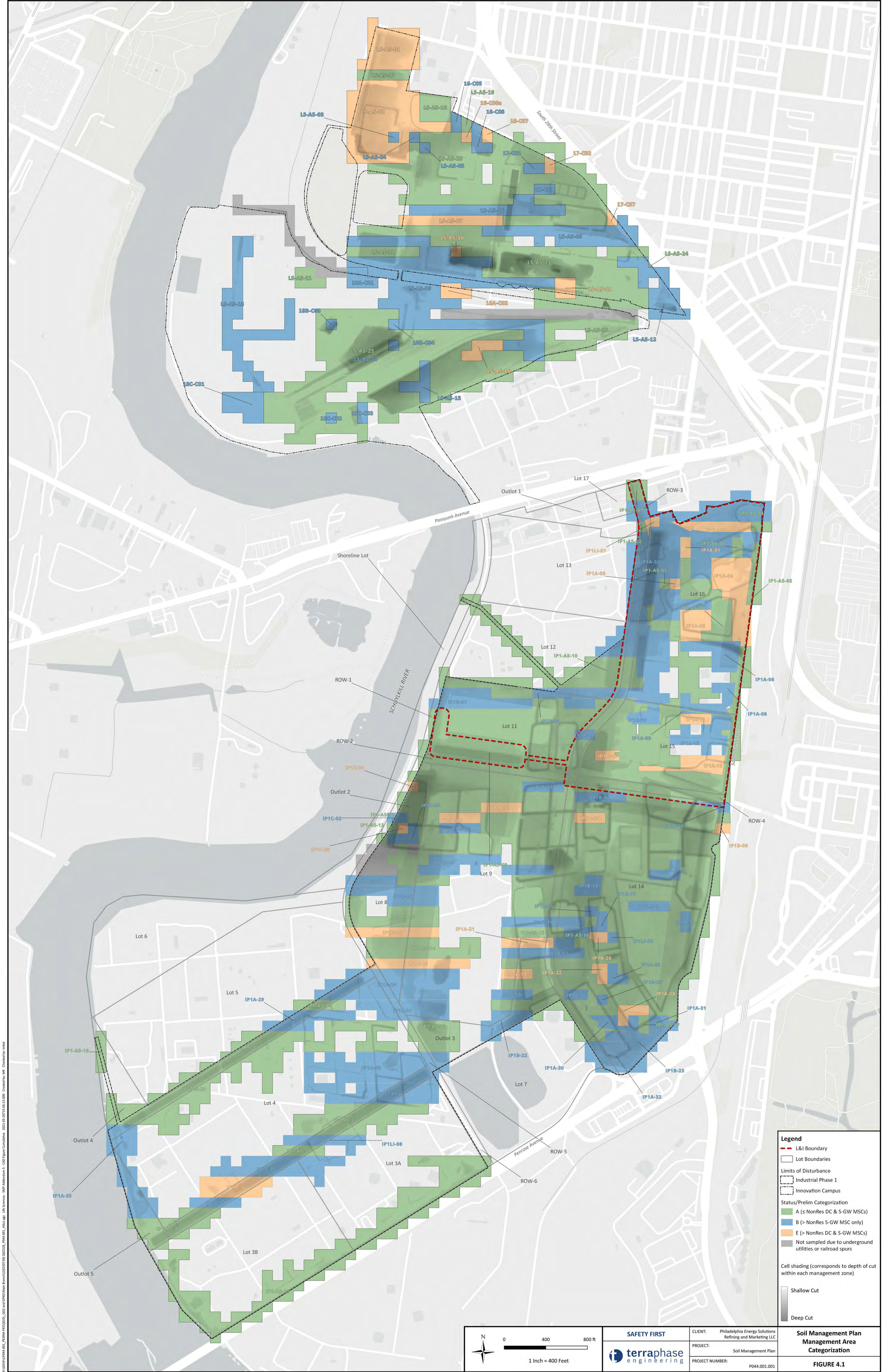
FIGURE 2.2

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SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Soil Management Plan Cell Categorization
	PROJECT: Soil Management Plan Addendum No. 5	
	PROJECT NUMBER: P044.001.001	

FIGURE 3.1



Legend

- L&I Boundary
- Lot Boundaries
- Limits of Disturbance
- Industrial Phase 1
- Innovation Campus

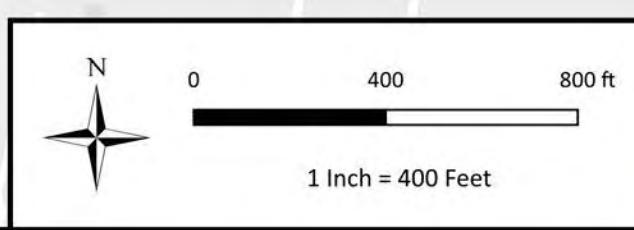
Status/Prelim Categorization

- A (≤ NonRes DC & S-GW MSCs)
- B (> NonRes S-GW MSC only)
- E (> NonRes DC & S-GW MSCs)

Not sampled due to underground utilities or railroad spurs

Cell shading (corresponds to depth of cut within each management zone)

- Shallow Cut
- Deep Cut



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terraphase
engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
 PROJECT: Soil Management Plan
 PROJECT NUMBER: P044.001.001

Soil Management Plan Management Area Categorization
FIGURE 4.1

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Appendix A

Laboratory Reports





ANALYTICAL REPORT

Lab Number:	L2323561
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/08/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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: 200.00135.023

Lab Number: L2323561

Report Date: 05/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2323561-01	LS-A-A01-C1-VOC	SOIL	PHILADELPHIA, PA	05/01/23 09:50	05/01/23
L2323561-02	LS-A-A01-C1-COMP	SOIL	PHILADELPHIA, PA	05/01/23 09:50	05/01/23
L2323561-03	LS-A-A01-C2-VOC	SOIL	PHILADELPHIA, PA	05/01/23 09:56	05/01/23
L2323561-04	LS-A-A01-C2-COMP	SOIL	PHILADELPHIA, PA	05/01/23 09:56	05/01/23
L2323561-05	LS-A-A01-C3-VOC	SOIL	PHILADELPHIA, PA	05/01/23 09:35	05/01/23
L2323561-06	LS-A-A01-C3-COMP	SOIL	PHILADELPHIA, PA	05/01/23 09:35	05/01/23
L2323561-07	LS-A-A02-C1-VOC	SOIL	PHILADELPHIA, PA	05/01/23 10:20	05/01/23
L2323561-08	LS-A-A02-C1-COMP	SOIL	PHILADELPHIA, PA	05/01/23 10:20	05/01/23
L2323561-09	LS-A-A02-C2-VOC	SOIL	PHILADELPHIA, PA	05/01/23 10:25	05/01/23
L2323561-10	LS-A-A02-C2-COMP	SOIL	PHILADELPHIA, PA	05/01/23 10:25	05/01/23
L2323561-11	LS-A-A03-C1-VOC	SOIL	PHILADELPHIA, PA	05/01/23 10:45	05/01/23
L2323561-12	LS-A-A03-C1-COMP	SOIL	PHILADELPHIA, PA	05/01/23 10:45	05/01/23
L2323561-13	LS-A-A03-C2-VOC	SOIL	PHILADELPHIA, PA	05/01/23 10:50	05/01/23
L2323561-14	LS-A-A03-C2-COMP	SOIL	PHILADELPHIA, PA	05/01/23 10:50	05/01/23
L2323561-15	LS-A-A04-C1-VOC	SOIL	PHILADELPHIA, PA	05/01/23 11:35	05/01/23
L2323561-16	LS-A-A04-C1-COMP	SOIL	PHILADELPHIA, PA	05/01/23 11:35	05/01/23
L2323561-17	LS-A-A04-C2-VOC	SOIL	PHILADELPHIA, PA	05/01/23 11:25	05/01/23
L2323561-18	LS-A-A04-C2-COMP	SOIL	PHILADELPHIA, PA	05/01/23 11:25	05/01/23
L2323561-19	LS-A-A05-C1-VOC	SOIL	PHILADELPHIA, PA	05/01/23 12:20	05/01/23
L2323561-20	LS-A-A05-C1-COMP	SOIL	PHILADELPHIA, PA	05/01/23 12:20	05/01/23
L2323561-21	LS-A-A05-C2-VOC	SOIL	PHILADELPHIA, PA	05/01/23 12:30	05/01/23
L2323561-22	LS-A-A05-C2-COMP	SOIL	PHILADELPHIA, PA	05/01/23 12:30	05/01/23
L2323561-23	LS-A-B01-C1-VOC	SOIL	PHILADELPHIA, PA	05/01/23 13:50	05/01/23
L2323561-24	LS-A-B01-C1-COMP	SOIL	PHILADELPHIA, PA	05/01/23 13:50	05/01/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2323561-25	LS-A-B01-C2-VOC	SOIL	PHILADELPHIA, PA	05/01/23 14:00	05/01/23
L2323561-26	LS-A-B01-C2-COMP	SOIL	PHILADELPHIA, PA	05/01/23 14:00	05/01/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

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
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

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

L2323561-05: The internal standard (IS) response(s) for fluorobenzene (41%), chlorobenzene-d5 (19%), and 1,4-dichlorobenzene-d4 (7%) and the surrogate recoveries for 1,2-dichloroethane-d4 (143%), toluene-d8 (192%) and 4-bromofluorobenzene (172%) were outside the acceptance criteria; however, re-analysis achieved the following results: chlorobenzene-d5 (33%), and 1,4-dichlorobenzene-d4 (14%) and toluene-d8 (157%) and 4-bromofluorobenzene (133%). The results of both analyses are reported; however, since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias.

L2323561-09: The internal standard (IS) response(s) for chlorobenzene-d5 (44%), and 1,4-dichlorobenzene-d4 (21%) and the surrogate recoveries for toluene-d8 (146%) and 4-bromofluorobenzene (153%) were outside the acceptance criteria; however, re-analysis achieved the following results: chlorobenzene-d5 (35%), and 1,4-dichlorobenzene-d4 (16%) and toluene-d8 (151%) and 4-bromofluorobenzene (135%). The results of both analyses are reported; however, since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias.

L2323561-25: 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.

Semivolatile Organics

L2323561-20D: The sample has elevated detection limits due to the dilution required by the matrix interferences encountered during the concentration of the sample and the analytical dilution required by the sample matrix.

L2323561-20D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%) and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-

Project Name: PHILADELPHIA REFINERY
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Case Narrative (continued)

extraction was not required; therefore, the results of the original analysis are reported.

Total Metals

The WG1773784-3 MS recovery for lead (0%), performed on L2323561-02, does not apply because the sample concentration is greater than four times the spike amount added.

The WG1773784-4 Laboratory Duplicate RPD for lead (54%), performed on L2323561-02, 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:



Kelly O'Neill

Title: Technical Director/Representative

Date: 05/08/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-01
 Client ID: LS-A-A01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 09:50
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/04/23 21:25
 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	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	123		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	134	Q	70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-03
 Client ID: LS-A-A01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 09:56
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/06/23 02:13
 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	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	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	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-05
 Client ID: LS-A-A01-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 09:35
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/04/23 22:11
 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	0.0029	0.00029	1
Benzene	0.00051	J	mg/kg	0.00073	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00038	1
Toluene	ND		mg/kg	0.0015	0.00079	1
1,2-Dibromoethane	ND		mg/kg	0.00073	0.00043	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0029	0.00082	1
o-Xylene	ND		mg/kg	0.0015	0.00042	1
Xylenes, Total	ND		mg/kg	0.0015	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	143	Q	70-130
Toluene-d8	192	Q	70-130
4-Bromofluorobenzene	172	Q	70-130
Dibromofluoromethane	130		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-05 R
 Client ID: LS-A-A01-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 09:35
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/06/23 02:34
 Analyst: AJK
 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	0.0028	0.00028	1
Benzene	0.00028	J	mg/kg	0.00071	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00077	1
1,2-Dibromoethane	ND		mg/kg	0.00071	0.00041	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00079	1
o-Xylene	ND		mg/kg	0.0014	0.00041	1
Xylenes, Total	ND		mg/kg	0.0014	0.00041	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	157	Q	70-130
4-Bromofluorobenzene	133	Q	70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-07
 Client ID: LS-A-A02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:20
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/06/23 02:55
 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	0.0020	0.00020	1
Benzene	0.00017	J	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	112		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-09
 Client ID: LS-A-A02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:25
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/04/23 22:57
 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	0.0026	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	0.00070	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	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.00046	J	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	112		70-130
Toluene-d8	146	Q	70-130
4-Bromofluorobenzene	153	Q	70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-09 R
 Client ID: LS-A-A02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:25
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/06/23 03:16
 Analyst: AJK
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.00032	J	mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	0.00072	J	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	0.00052	J	mg/kg	0.0013	0.00037	1
Xylenes, Total	0.00052	J	mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.0011	J	mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	0.00052	J	mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	151	Q	70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	114		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-11
 Client ID: LS-A-A03-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:45
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/04/23 23:20
 Analyst: JIC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	134	Q	70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-13
 Client ID: LS-A-A03-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:50
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/04/23 23:43
 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	ND		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	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	130		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-15
 Client ID: LS-A-A04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 11:35
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 00:07
 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	0.0017	0.00017	1
Benzene	0.0094		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-17
 Client ID: LS-A-A04-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 11:25
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/06/23 00:50
 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	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00023	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.00012	J	mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	ND		mg/kg	0.00088	0.00026	1
Isopropylbenzene	0.00020	J	mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	126		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-19
 Client ID: LS-A-A05-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 12:20
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 13:42
 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	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00068	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	ND		mg/kg	0.0014	0.00074	1
1,2-Dibromoethane	ND		mg/kg	0.00068	0.00040	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00076	1
o-Xylene	ND		mg/kg	0.0014	0.00039	1
Xylenes, Total	ND		mg/kg	0.0014	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0014	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	95		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-21
 Client ID: LS-A-A05-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 12:30
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/06/23 00:29
 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	0.0024	0.00025	1
Benzene	0.00020	J	mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00067	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	0.00030	J	mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00069	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	0.00025	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-23
 Client ID: LS-A-B01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 13:50
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/06/23 00:08
 Analyst: AJK
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	0.00035	J	mg/kg	0.00069	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	0.0034		mg/kg	0.0014	0.00075	1
1,2-Dibromoethane	ND		mg/kg	0.00069	0.00041	1
Ethylbenzene	0.00025	J	mg/kg	0.0014	0.00020	1
p/m-Xylene	0.00080	J	mg/kg	0.0028	0.00078	1
o-Xylene	0.00048	J	mg/kg	0.0014	0.00040	1
Xylenes, Total	0.0013	J	mg/kg	0.0014	0.00040	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-25
 Client ID: LS-A-B01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 14:00
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/06/23 01:11
 Analyst: AJK
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.18	0.018	1
Benzene	0.12		mg/kg	0.044	0.015	1
1,2-Dichloroethane	ND		mg/kg	0.088	0.023	1
Toluene	0.12		mg/kg	0.088	0.048	1
1,2-Dibromoethane	ND		mg/kg	0.044	0.026	1
Ethylbenzene	0.11		mg/kg	0.088	0.012	1
p/m-Xylene	0.17	J	mg/kg	0.18	0.049	1
o-Xylene	0.13		mg/kg	0.088	0.026	1
Xylenes, Total	0.30	J	mg/kg	0.088	0.026	1
Isopropylbenzene	0.089		mg/kg	0.088	0.0096	1
1,3,5-Trimethylbenzene	0.46		mg/kg	0.18	0.017	1
1,2,4-Trimethylbenzene	0.92		mg/kg	0.18	0.029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/04/23 21:01
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,05,09,11,13,15 Batch: WG1775287-5					
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	135	Q	70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/05/23 19:38
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,05,07,09,17,21,23 Batch: WG1775944-5					
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	112		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/05/23 10:42
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 19 Batch: WG1775995-5					
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	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/05/23 19:38
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 25 Batch: WG1776009-5					
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	100		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	110		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,05,09,11,13,15 Batch: WG1775287-3 WG1775287-4								
Methyl tert butyl ether	113		113		66-130	0		30
Benzene	119		118		70-130	1		30
1,2-Dichloroethane	114		116		70-130	2		30
Toluene	108		107		70-130	1		30
1,2-Dibromoethane	88		90		70-130	2		30
Ethylbenzene	104		108		70-130	4		30
p/m-Xylene	108		107		70-130	1		30
o-Xylene	108		106		70-130	2		30
Isopropylbenzene	108		108		70-130	0		30
1,3,5-Trimethylbenzene	117		113		70-130	3		30
1,2,4-Trimethylbenzene	115		112		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	111		112		70-130
Toluene-d8	108		106		70-130
4-Bromofluorobenzene	107		109		70-130
Dibromofluoromethane	94		94		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,05,07,09,17,21,23 Batch: WG1775944-3 WG1775944-4								
Methyl tert butyl ether	94		86		66-130	9		30
Benzene	96		94		70-130	2		30
1,2-Dichloroethane	91		90		70-130	1		30
Toluene	84		83		70-130	1		30
1,2-Dibromoethane	86		86		70-130	0		30
Ethylbenzene	90		88		70-130	2		30
p/m-Xylene	90		89		70-130	1		30
o-Xylene	90		89		70-130	1		30
Isopropylbenzene	89		88		70-130	1		30
1,3,5-Trimethylbenzene	89		87		70-130	2		30
1,2,4-Trimethylbenzene	89		87		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		107		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	88		92		70-130
Dibromofluoromethane	109		108		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 19 Batch: WG1775995-3 WG1775995-4								
Methyl tert butyl ether	87		87		66-130	0		30
Benzene	85		84		70-130	1		30
1,2-Dichloroethane	87		87		70-130	0		30
Toluene	85		83		70-130	2		30
1,2-Dibromoethane	93		92		70-130	1		30
Ethylbenzene	88		86		70-130	2		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	88		87		70-130	1		30
Isopropylbenzene	87		86		70-130	1		30
1,3,5-Trimethylbenzene	86		85		70-130	1		30
1,2,4-Trimethylbenzene	89		88		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		94		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	99		99		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 25 Batch: WG1776009-3 WG1776009-4								
Methyl tert butyl ether	94		86		66-130	9		30
Benzene	96		94		70-130	2		30
1,2-Dichloroethane	91		90		70-130	1		30
Toluene	84		83		70-130	1		30
1,2-Dibromoethane	86		86		70-130	0		30
Ethylbenzene	90		88		70-130	2		30
p/m-Xylene	90		89		70-130	1		30
o-Xylene	90		89		70-130	1		30
Isopropylbenzene	89		88		70-130	1		30
1,3,5-Trimethylbenzene	89		87		70-130	2		30
1,2,4-Trimethylbenzene	89		87		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	106		107		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	88		92		70-130
Dibromofluoromethane	109		108		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-02
 Client ID: LS-A-A01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 09:50
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/06/23 17:55
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.073		mg/kg	0.039	0.024	1
Fluorene	0.053	J	mg/kg	0.20	0.019	1
Phenanthrene	0.58		mg/kg	0.12	0.024	1
Anthracene	0.17		mg/kg	0.12	0.038	1
Pyrene	0.81		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.48		mg/kg	0.12	0.022	1
Chrysene	0.47		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.66		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.52		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.35		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	44		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-04
 Client ID: LS-A-A01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 09:56
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/06/23 18:19
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.27		mg/kg	0.039	0.024	1
Fluorene	0.41		mg/kg	0.19	0.019	1
Phenanthrene	5.2		mg/kg	0.12	0.024	1
Anthracene	1.4		mg/kg	0.12	0.038	1
Pyrene	6.1		mg/kg	0.12	0.019	1
Benzo(a)anthracene	3.4		mg/kg	0.12	0.022	1
Chrysene	3.3		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	3.8		mg/kg	0.12	0.033	1
Benzo(a)pyrene	3.2		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	2.0		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	53		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	44		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-06
 Client ID: LS-A-A01-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 09:35
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 00:47
 Analyst: CMM
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.5		mg/kg	0.042	0.025	1
Fluorene	1.7		mg/kg	0.21	0.020	1
Phenanthrene	14.	E	mg/kg	0.12	0.025	1
Anthracene	3.5		mg/kg	0.12	0.041	1
Pyrene	11.	E	mg/kg	0.12	0.021	1
Benzo(a)anthracene	7.4		mg/kg	0.12	0.024	1
Chrysene	6.9		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	8.3		mg/kg	0.12	0.035	1
Benzo(a)pyrene	6.0		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	3.9		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	50		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-06 D
 Client ID: LS-A-A01-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 09:35
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 01:11
 Analyst: CMM
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenanthrene	19.		mg/kg	0.63	0.13	5
Pyrene	16.		mg/kg	0.63	0.10	5

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-08
 Client ID: LS-A-A02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:20
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/06/23 19:07
 Analyst: CMM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.10		mg/kg	0.037	0.022	1
Fluorene	0.093	J	mg/kg	0.18	0.018	1
Phenanthrene	1.0		mg/kg	0.11	0.022	1
Anthracene	0.24		mg/kg	0.11	0.036	1
Pyrene	1.2		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.67		mg/kg	0.11	0.021	1
Chrysene	0.66		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.80		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.66		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.36		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	50		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	47		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-10
 Client ID: LS-A-A02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:25
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/06/23 19:31
 Analyst: CMM
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.41		mg/kg	0.039	0.024	1
Fluorene	0.19		mg/kg	0.19	0.019	1
Phenanthrene	2.2		mg/kg	0.12	0.024	1
Anthracene	0.45		mg/kg	0.12	0.038	1
Pyrene	2.2		mg/kg	0.12	0.019	1
Benzo(a)anthracene	1.1		mg/kg	0.12	0.022	1
Chrysene	1.2		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	1.3		mg/kg	0.12	0.033	1
Benzo(a)pyrene	1.1		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	0.60		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-12
 Client ID: LS-A-A03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:45
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/06/23 19:55
 Analyst: CMM
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.065		mg/kg	0.039	0.024	1
Fluorene	0.13	J	mg/kg	0.20	0.019	1
Phenanthrene	1.5		mg/kg	0.12	0.024	1
Anthracene	0.40		mg/kg	0.12	0.038	1
Pyrene	2.1		mg/kg	0.12	0.019	1
Benzo(a)anthracene	1.3		mg/kg	0.12	0.022	1
Chrysene	1.2		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	1.5		mg/kg	0.12	0.033	1
Benzo(a)pyrene	1.3		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.68		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	47		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-14
 Client ID: LS-A-A03-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:50
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 06:04
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.28		mg/kg	0.039	0.024	1
Fluorene	0.31		mg/kg	0.20	0.019	1
Phenanthrene	2.6		mg/kg	0.12	0.024	1
Anthracene	0.68		mg/kg	0.12	0.038	1
Pyrene	2.8		mg/kg	0.12	0.020	1
Benzo(a)anthracene	1.9		mg/kg	0.12	0.022	1
Chrysene	1.7		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	1.9		mg/kg	0.12	0.033	1
Benzo(a)pyrene	1.5		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.84		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	49		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-16
 Client ID: LS-A-A04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 11:35
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/06/23 20:43
 Analyst: CMM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.086		mg/kg	0.038	0.023	1
Fluorene	0.16	J	mg/kg	0.19	0.018	1
Phenanthrene	1.8		mg/kg	0.11	0.023	1
Anthracene	0.45		mg/kg	0.11	0.037	1
Pyrene	2.2		mg/kg	0.11	0.019	1
Benzo(a)anthracene	1.3		mg/kg	0.11	0.021	1
Chrysene	1.2		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	1.5		mg/kg	0.11	0.032	1
Benzo(a)pyrene	1.3		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.71		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	63		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-18
 Client ID: LS-A-A04-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 11:25
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/06/23 21:07
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.35		mg/kg	0.040	0.025	1
Fluorene	0.98		mg/kg	0.20	0.020	1
Phenanthrene	5.7		mg/kg	0.12	0.025	1
Anthracene	1.2		mg/kg	0.12	0.039	1
Pyrene	4.3		mg/kg	0.12	0.020	1
Benzo(a)anthracene	2.0		mg/kg	0.12	0.023	1
Chrysene	1.8		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	2.1		mg/kg	0.12	0.034	1
Benzo(a)pyrene	1.8		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	1.0		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	44		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-20 D
 Client ID: LS-A-A05-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 12:20
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 15:28
 Analyst: MG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/08/23 07:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	61.		mg/kg	3.0	1.9	80
Fluorene	120		mg/kg	15	1.5	80
Phenanthrene	610		mg/kg	9.2	1.8	80
Anthracene	170		mg/kg	9.2	3.0	80
Pyrene	370		mg/kg	9.2	1.5	80
Benzo(a)anthracene	200		mg/kg	9.2	1.7	80
Chrysene	170		mg/kg	9.2	1.6	80
Benzo(b)fluoranthene	200		mg/kg	9.2	2.6	80
Benzo(a)pyrene	190		mg/kg	12	3.7	80
Benzo(ghi)perylene	82.		mg/kg	12	1.8	80

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	0	Q	23-120
2-Fluorobiphenyl	0	Q	30-120
4-Terphenyl-d14	0	Q	18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-22 D
 Client ID: LS-A-A05-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 12:30
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 03:14
 Analyst: CMM
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	6.1		mg/kg	0.40	0.24	10
Fluorene	9.8		mg/kg	2.0	0.19	10
Phenanthrene	51.		mg/kg	1.2	0.24	10
Anthracene	17.		mg/kg	1.2	0.39	10
Pyrene	53.		mg/kg	1.2	0.20	10
Benzo(a)anthracene	33.		mg/kg	1.2	0.22	10
Chrysene	27.		mg/kg	1.2	0.21	10
Benzo(b)fluoranthene	28.		mg/kg	1.2	0.33	10
Benzo(a)pyrene	25.		mg/kg	1.6	0.48	10
Benzo(ghi)perylene	13.		mg/kg	1.6	0.23	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	23		23-120
2-Fluorobiphenyl	19	Q	30-120
4-Terphenyl-d14	21		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-24 D
 Client ID: LS-A-B01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 13:50
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 01:36
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	4.6		mg/kg	0.20	0.12	5
Fluorene	8.0		mg/kg	1.0	0.097	5
Phenanthrene	36.		mg/kg	0.60	0.12	5
Anthracene	11.		mg/kg	0.60	0.19	5
Pyrene	29.		mg/kg	0.60	0.099	5
Benzo(a)anthracene	19.		mg/kg	0.60	0.11	5
Chrysene	17.		mg/kg	0.60	0.10	5
Benzo(b)fluoranthene	18.		mg/kg	0.60	0.17	5
Benzo(a)pyrene	15.		mg/kg	0.80	0.24	5
Benzo(ghi)perylene	8.1		mg/kg	0.80	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	29		23-120
2-Fluorobiphenyl	26	Q	30-120
4-Terphenyl-d14	24		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-26 D2
 Client ID: LS-A-B01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 14:00
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 04:02
 Analyst: CMM
 Percent Solids: 78%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenanthrene	390		mg/kg	13	2.6	100
Pyrene	260		mg/kg	13	2.1	100
Benzo(a)anthracene	150		mg/kg	13	2.4	100
Benzo(b)fluoranthene	130		mg/kg	13	3.6	100

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-26 D
 Client ID: LS-A-B01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 14:00
 Date Received: 05/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 03:38
 Analyst: CMM
 Percent Solids: 78%

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	32.		mg/kg	0.43	0.26	10
Fluorene	62.		mg/kg	2.1	0.21	10
Phenanthrene	220	E	mg/kg	1.3	0.26	10
Anthracene	74.		mg/kg	1.3	0.42	10
Pyrene	150	E	mg/kg	1.3	0.21	10
Benzo(a)anthracene	100	E	mg/kg	1.3	0.24	10
Chrysene	85.		mg/kg	1.3	0.22	10
Benzo(b)fluoranthene	98.	E	mg/kg	1.3	0.36	10
Benzo(a)pyrene	78.		mg/kg	1.7	0.52	10
Benzo(ghi)perylene	42.		mg/kg	1.7	0.25	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	42		23-120
2-Fluorobiphenyl	19	Q	30-120
4-Terphenyl-d14	20		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E
 Analytical Date: 05/06/23 13:32
 Analyst: CMM

Extraction Method: EPA 3546
 Extraction Date: 05/03/23 17:43

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,22,24,26 Batch: WG1774422-1					
Naphthalene	ND		mg/kg	0.032	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	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	62		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/08/23 14:21
Analyst: MG

Extraction Method: EPA 3546
Extraction Date: 05/08/23 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 20 Batch: WG1776000-1					
Naphthalene	ND		mg/kg	0.033	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	60		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	53		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2323561

Report Date: 05/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,22,24,26 Batch: WG1774422-2 WG1774422-3								
Naphthalene	59		58		40-140	2		50
Fluorene	66		61		40-140	8		50
Phenanthrene	65		61		40-140	6		50
Anthracene	66		62		40-140	6		50
Pyrene	69		62		35-142	11		50
Benzo(a)anthracene	65		61		40-140	6		50
Chrysene	66		60		40-140	10		50
Benzo(b)fluoranthene	66		61		40-140	8		50
Benzo(a)pyrene	74		66		40-140	11		50
Benzo(ghi)perylene	63		58		40-140	8		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	61		58		23-120
2-Fluorobiphenyl	70		64		30-120
4-Terphenyl-d14	69		60		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2323561

Report Date: 05/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 20 Batch: WG1776000-2 WG1776000-3								
Naphthalene	67		67		40-140	0		50
Fluorene	68		69		40-140	1		50
Phenanthrene	68		69		40-140	1		50
Anthracene	71		72		40-140	1		50
Pyrene	67		71		35-142	6		50
Benzo(a)anthracene	74		75		40-140	1		50
Chrysene	70		72		40-140	3		50
Benzo(b)fluoranthene	76		79		40-140	4		50
Benzo(a)pyrene	89		88		40-140	1		50
Benzo(ghi)perylene	65		70		40-140	7		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		74		23-120
2-Fluorobiphenyl	69		69		30-120
4-Terphenyl-d14	62		65		18-120

METALS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-02

Date Collected: 05/01/23 09:50

Client ID: LS-A-A01-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	994		mg/kg	2.25	0.121	1	05/04/23 21:50	05/05/23 16:49	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-04

Date Collected: 05/01/23 09:56

Client ID: LS-A-A01-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	17500		mg/kg	46.4	2.49	20	05/04/23 21:50	05/05/23 19:37	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-06

Date Collected: 05/01/23 09:35

Client ID: LS-A-A01-C3-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	5380		mg/kg	49.0	2.63	20	05/04/23 21:50	05/05/23 19:41	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-08

Date Collected: 05/01/23 10:20

Client ID: LS-A-A02-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	65.3		mg/kg	2.15	0.115	1	05/04/23 21:50	05/05/23 17:30	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-10

Date Collected: 05/01/23 10:25

Client ID: LS-A-A02-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	1520		mg/kg	2.29	0.122	1	05/04/23 21:50	05/05/23 17:35	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-12

Date Collected: 05/01/23 10:45

Client ID: LS-A-A03-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	244		mg/kg	2.32	0.124	1	05/04/23 21:50	05/05/23 17:40	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-14

Date Collected: 05/01/23 10:50

Client ID: LS-A-A03-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	687		mg/kg	2.34	0.125	1	05/04/23 21:50	05/05/23 17:45	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-16

Date Collected: 05/01/23 11:35

Client ID: LS-A-A04-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	121		mg/kg	2.24	0.120	1	05/04/23 21:50	05/05/23 17:50	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-18

Date Collected: 05/01/23 11:25

Client ID: LS-A-A04-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	153		mg/kg	2.36	0.127	1	05/04/23 21:50	05/05/23 17:55	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-20

Date Collected: 05/01/23 12:20

Client ID: LS-A-A05-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	61.8		mg/kg	2.23	0.119	1	05/04/23 21:50	05/05/23 18:00	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-22
 Client ID: LS-A-A05-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 12:30
 Date Received: 05/01/23
 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	158		mg/kg	2.33	0.125	1	05/04/23 21:50	05/05/23 18:05	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-24

Date Collected: 05/01/23 13:50

Client ID: LS-A-B01-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	346		mg/kg	2.39	0.128	1	05/04/23 21:50	05/05/23 18:10	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-26

Date Collected: 05/01/23 14:00

Client ID: LS-A-B01-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	16800		mg/kg	49.3	2.64	20	05/04/23 21:50	05/06/23 14:00	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

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): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1773784-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/04/23 21:50	05/05/23 16:26	1,6010D	MRC

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1773784-2 SRM Lot Number: D119-540								
Lead, Total	98		-		82-118			-



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

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): 02,04,06,08,10,12,14,16,18,20,22,24,26 QC Batch ID: WG1773784-3 QC Sample: L2323561-02 Client ID: LS-A-A01-C1-COMP												
Lead, Total	994	48	793	0	Q	-	-		75-125	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2323561

Report Date: 05/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 QC Batch ID: WG1773784-4 QC Sample: L2323561-02 Client ID: LS-A-A01-C1-COMP						
Lead, Total	994	571	mg/kg	54	Q	20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Project Number:** 200.00135.023**Lab Number:** L2323561**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-01

Client ID: LS-A-A01-C1-VOC

Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 09:50

Date Received: 05/01/23

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	85.3		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-02

Date Collected: 05/01/23 09:50

Client ID: LS-A-A01-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	84.0		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-03

Date Collected: 05/01/23 09:56

Client ID: LS-A-A01-C2-VOC

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	80.6		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-04

Date Collected: 05/01/23 09:56

Client ID: LS-A-A01-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	83.9		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-05

Date Collected: 05/01/23 09:35

Client ID: LS-A-A01-C3-VOC

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	79.2		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-06

Date Collected: 05/01/23 09:35

Client ID: LS-A-A01-C3-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-07
Client ID: LS-A-A02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:20
Date Received: 05/01/23
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	90.4		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-08

Date Collected: 05/01/23 10:20

Client ID: LS-A-A02-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	88.6		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-09
Client ID: LS-A-A02-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:25
Date Received: 05/01/23
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	89.2		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-10

Date Collected: 05/01/23 10:25

Client ID: LS-A-A02-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	84.7		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-11

Date Collected: 05/01/23 10:45

Client ID: LS-A-A03-C1-VOC

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-12

Date Collected: 05/01/23 10:45

Client ID: LS-A-A03-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	84.8		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-13
Client ID: LS-A-A03-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 10:50
Date Received: 05/01/23
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	82.1		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-14

Date Collected: 05/01/23 10:50

Client ID: LS-A-A03-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	83.0		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-15

Date Collected: 05/01/23 11:35

Client ID: LS-A-A04-C1-VOC

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	86.1		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-16

Date Collected: 05/01/23 11:35

Client ID: LS-A-A04-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	86.1		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-17
Client ID: LS-A-A04-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 11:25
Date Received: 05/01/23
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	83.9		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-18

Date Collected: 05/01/23 11:25

Client ID: LS-A-A04-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	80.7		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-19

Date Collected: 05/01/23 12:20

Client ID: LS-A-A05-C1-VOC

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	87.1		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**SAMPLE RESULTS**

Lab ID: L2323561-20

Date Collected: 05/01/23 12:20

Client ID: LS-A-A05-C1-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	86.4		%	0.100	NA	1	-	05/02/23 09:47	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-21
Client ID: LS-A-A05-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 12:30
Date Received: 05/01/23
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	80.0		%	0.100	NA	1	-	05/02/23 09:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-22

Date Collected: 05/01/23 12:30

Client ID: LS-A-A05-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	-	05/02/23 09:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-23
Client ID: LS-A-B01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 13:50
Date Received: 05/01/23
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	77.8		%	0.100	NA	1	-	05/02/23 09:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-24
Client ID: LS-A-B01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 13:50
Date Received: 05/01/23
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	82.7		%	0.100	NA	1	-	05/02/23 09:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323561
Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-25
Client ID: LS-A-B01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/01/23 14:00
Date Received: 05/01/23
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	77.1		%	0.100	NA	1	-	05/02/23 09:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323561

Project Number: 200.00135.023

Report Date: 05/08/23

SAMPLE RESULTS

Lab ID: L2323561-26

Date Collected: 05/01/23 14:00

Client ID: LS-A-B01-C2-COMP

Date Received: 05/01/23

Sample Location: PHILADELPHIA, PA

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	77.5		%	0.100	NA	1	-	05/02/23 09:35	121,2540G	ROI



Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2323561

Report Date: 05/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 21-26 QC Batch ID: WG1773544-1 QC Sample: L2320181-03 Client ID: DUP Sample						
Solids, Total	87.3	83.7	%	4		20
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1773547-1 QC Sample: L2323561-01 Client ID: LS-A-A01-C1-VOC						
Solids, Total	85.3	85.4	%	0		20



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**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(*)
L2323561-01A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-01B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-01C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-01D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-02B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-03A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-03B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-03C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-03D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-04B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-05A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-05B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-05C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-05D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-06B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-07A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-07B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-07C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-07D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2323561-08B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-09A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-09B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-09C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-09D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-10B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-11A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-11B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-11C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-11D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-12B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-13A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-13B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-13C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-13D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-14B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-15A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-15B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-15C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-15D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-16B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-17A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-17B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-17C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323561**Project Number:** 200.00135.023**Report Date:** 05/08/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2323561-17D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-18B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-19A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-19B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-19C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-19D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-20B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-21A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-21B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-21C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-21D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-22B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-23A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-23B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-23C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-23D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-24A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-24B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2323561-25A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2323561-25B	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-25C	Vial water preserved	A	NA		4.7	Y	Absent	02-MAY-23 07:00	PA-8260HLW(14)
L2323561-25D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2323561-26A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2323561-26B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)

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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.

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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

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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.)

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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, SM4500CI-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, **LCHAT 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.



ANALYTICAL REPORT

Lab Number:	L2323969
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/09/23

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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: 200.00135.023

Lab Number: L2323969

Report Date: 05/09/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2323969-01	LS-A-B02-C1-VOC	SOIL	PHILADELPHIA, PA	05/02/23 08:40	05/02/23
L2323969-02	LS-A-B02-C1-COMP	SOIL	PHILADELPHIA, PA	05/02/23 08:40	05/02/23
L2323969-03	LS-A-B03-C1-VOC	SOIL	PHILADELPHIA, PA	05/02/23 09:30	05/02/23
L2323969-04	LS-A-B03-C1-COMP	SOIL	PHILADELPHIA, PA	05/02/23 09:30	05/02/23
L2323969-05	LS-A-C01-C1-VOC	SOIL	PHILADELPHIA, PA	05/02/23 10:40	05/02/23
L2323969-06	LS-A-C01-C1-COMP	SOIL	PHILADELPHIA, PA	05/02/23 10:40	05/02/23
L2323969-07	LS-A-C01-C2-VOC	SOIL	PHILADELPHIA, PA	05/02/23 10:50	05/02/23
L2323969-08	LS-A-C01-C2-COMP	SOIL	PHILADELPHIA, PA	05/02/23 10:50	05/02/23
L2323969-09	LS-A-C02-C1-VOC	SOIL	PHILADELPHIA, PA	05/02/23 11:50	05/02/23
L2323969-10	LS-A-C02-C1-COMP	SOIL	PHILADELPHIA, PA	05/02/23 11:50	05/02/23
L2323969-11	LS-A-C02-C2-VOC	SOIL	PHILADELPHIA, PA	05/02/23 12:00	05/02/23
L2323969-12	LS-A-C02-C2-COMP	SOIL	PHILADELPHIA, PA	05/02/23 12:00	05/02/23
L2323969-13	LS-A-C03-C1-VOC	SOIL	PHILADELPHIA, PA	05/02/23 13:05	05/02/23
L2323969-14	LS-A-C03-C1-COMP	SOIL	PHILADELPHIA, PA	05/02/23 13:05	05/02/23
L2323969-15	LS-A-C03-C2-VOC	SOIL	PHILADELPHIA, PA	05/02/23 13:15	05/02/23
L2323969-16	LS-A-C03-C2-COMP	SOIL	PHILADELPHIA, PA	05/02/23 13:15	05/02/23
L2323969-17	LS-A-C04-C1-VOC	SOIL	PHILADELPHIA, PA	05/02/23 13:50	05/02/23
L2323969-18	LS-A-C04-C1-COMP	SOIL	PHILADELPHIA, PA	05/02/23 13:50	05/02/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

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
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

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

L2323969-03: The surrogate recovery is outside the acceptance criteria for 1,2-dichloroethane-d4 (141%); 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.

L2323969-11: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (262%) and 4-bromofluorobenzene (283%); 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.

L2323969-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (194%); 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.

Semivolatile Organics

L2323969-14D and -16D: 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:

Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative

Date: 05/09/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-01
 Client ID: LS-A-B02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 08:40
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 11:08
 Analyst: JIC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	ND		mg/kg	0.00088	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-03
 Client ID: LS-A-B03-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 09:30
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 11:33
 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	0.0018	0.00018	1
Benzene	0.0079		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	0.0014		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.00082	J	mg/kg	0.00088	0.00012	1
p/m-Xylene	0.0026		mg/kg	0.0018	0.00049	1
o-Xylene	0.00055	J	mg/kg	0.00088	0.00026	1
Xylenes, Total	0.0032	J	mg/kg	0.00088	0.00026	1
Isopropylbenzene	0.0020		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	0.00050	J	mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.00048	J	mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	141	Q	70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-05
 Client ID: LS-A-C01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 10:40
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 11:59
 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	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00070	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00076	1
1,2-Dibromoethane	ND		mg/kg	0.00070	0.00041	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00079	1
o-Xylene	ND		mg/kg	0.0014	0.00041	1
Xylenes, Total	ND		mg/kg	0.0014	0.00041	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-07
 Client ID: LS-A-C01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 10:50
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 12:25
 Analyst: JIC
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	ND		mg/kg	0.00088	0.00026	1
Isopropylbenzene	0.00053	J	mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-09
 Client ID: LS-A-C02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 11:50
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 12:51
 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	0.0023	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	0.00034	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	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-11
 Client ID: LS-A-C02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 12:00
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 13:17
 Analyst: JIC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles 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	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	0.0023	J	mg/kg	0.0024	0.00066	1
o-Xylene	0.0028		mg/kg	0.0012	0.00035	1
Xylenes, Total	0.0051	J	mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.023		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.00071	J	mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	262	Q	70-130
4-Bromofluorobenzene	283	Q	70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-13
 Client ID: LS-A-C03-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 13:05
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 14:35
 Analyst: JIC
 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	0.12		mg/kg	0.026	0.0086	1
1,2-Dichloroethane	ND		mg/kg	0.052	0.013	1
Toluene	0.073		mg/kg	0.052	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	0.14		mg/kg	0.052	0.0073	1
p/m-Xylene	0.17		mg/kg	0.10	0.029	1
o-Xylene	0.12		mg/kg	0.052	0.015	1
Xylenes, Total	0.29		mg/kg	0.052	0.015	1
Isopropylbenzene	3.6		mg/kg	0.052	0.0056	1
1,3,5-Trimethylbenzene	0.12		mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	1.5		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	128		70-130
4-Bromofluorobenzene	130		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-15
 Client ID: LS-A-C03-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 13:15
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 15:00
 Analyst: JIC
 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	0.028	0.0094	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.015	1
Toluene	0.034	J	mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.017	1
Ethylbenzene	0.015	J	mg/kg	0.057	0.0080	1
p/m-Xylene	0.18		mg/kg	0.11	0.032	1
o-Xylene	0.28		mg/kg	0.057	0.016	1
Xylenes, Total	0.46		mg/kg	0.057	0.016	1
Isopropylbenzene	3.4		mg/kg	0.057	0.0062	1
1,3,5-Trimethylbenzene	0.015	J	mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	194	Q	70-130
Dibromofluoromethane	81		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-17
 Client ID: LS-A-C04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 13:50
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 14:08
 Analyst: JIC
 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	0.0019	0.00020	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	0.00053	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	94		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/05/23 10:42
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,17 Batch: WG1775995-5					
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	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/05/23 10:42
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13,15 Batch: WG1776250-5					
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	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,17 Batch: WG1775995-3 WG1775995-4								
Methyl tert butyl ether	87		87		66-130	0		30
Benzene	85		84		70-130	1		30
1,2-Dichloroethane	87		87		70-130	0		30
Toluene	85		83		70-130	2		30
1,2-Dibromoethane	93		92		70-130	1		30
Ethylbenzene	88		86		70-130	2		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	88		87		70-130	1		30
Isopropylbenzene	87		86		70-130	1		30
1,3,5-Trimethylbenzene	86		85		70-130	1		30
1,2,4-Trimethylbenzene	89		88		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		94		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	99		99		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13,15 Batch: WG1776250-3 WG1776250-4								
Methyl tert butyl ether	87		87		66-130	0		30
Benzene	85		84		70-130	1		30
1,2-Dichloroethane	87		87		70-130	0		30
Toluene	85		83		70-130	2		30
1,2-Dibromoethane	93		92		70-130	1		30
Ethylbenzene	88		86		70-130	2		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	88		87		70-130	1		30
Isopropylbenzene	87		86		70-130	1		30
1,3,5-Trimethylbenzene	86		85		70-130	1		30
1,2,4-Trimethylbenzene	89		88		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		94		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		100		70-130
Dibromofluoromethane	99		99		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-02
 Client ID: LS-A-B02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 08:40
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/07/23 20:18
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	2.9		mg/kg	0.037	0.023	1
Fluorene	3.5		mg/kg	0.19	0.018	1
Phenanthrene	15.	E	mg/kg	0.11	0.023	1
Anthracene	6.0		mg/kg	0.11	0.036	1
Pyrene	15.	E	mg/kg	0.11	0.018	1
Benzo(a)anthracene	13.	E	mg/kg	0.11	0.021	1
Chrysene	13.	E	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	15.	E	mg/kg	0.11	0.031	1
Benzo(a)pyrene	10.	E	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	5.9		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-02 D
 Client ID: LS-A-B02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 08:40
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 15:31
 Analyst: MG
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenanthrene	20.		mg/kg	1.1	0.23	10
Pyrene	21.		mg/kg	1.1	0.18	10
Benzo(a)anthracene	14.		mg/kg	1.1	0.21	10
Chrysene	12.		mg/kg	1.1	0.19	10
Benzo(b)fluoranthene	15.		mg/kg	1.1	0.31	10
Benzo(a)pyrene	11.		mg/kg	1.5	0.46	10

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-04
 Client ID: LS-A-B03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 09:30
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/07/23 20:42
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.038	0.023	1
Fluorene	0.022	J	mg/kg	0.19	0.018	1
Phenanthrene	0.35		mg/kg	0.11	0.023	1
Anthracene	0.064	J	mg/kg	0.11	0.037	1
Pyrene	0.94		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.64		mg/kg	0.11	0.021	1
Chrysene	0.79		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	1.1		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.86		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.51		mg/kg	0.15	0.022	1

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

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-06
 Client ID: LS-A-C01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 10:40
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/07/23 21:05
 Analyst: IM
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.33		mg/kg	0.039	0.024	1
Fluorene	0.31		mg/kg	0.19	0.019	1
Phenanthrene	2.7		mg/kg	0.12	0.024	1
Anthracene	0.69		mg/kg	0.12	0.038	1
Pyrene	2.3		mg/kg	0.12	0.019	1
Benzo(a)anthracene	1.5		mg/kg	0.12	0.022	1
Chrysene	1.5		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	1.8		mg/kg	0.12	0.033	1
Benzo(a)pyrene	1.5		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.77		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-08
 Client ID: LS-A-C01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 10:50
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 17:55
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.058		mg/kg	0.038	0.023	1
Fluorene	0.49		mg/kg	0.19	0.018	1
Phenanthrene	1.1		mg/kg	0.11	0.023	1
Anthracene	0.19		mg/kg	0.11	0.037	1
Pyrene	0.16		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.056	J	mg/kg	0.11	0.021	1
Chrysene	0.062	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.049	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.026	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-10
 Client ID: LS-A-C02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 11:50
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/07/23 21:52
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.085		mg/kg	0.037	0.023	1
Fluorene	0.057	J	mg/kg	0.19	0.018	1
Phenanthrene	0.69		mg/kg	0.11	0.023	1
Anthracene	0.40		mg/kg	0.11	0.036	1
Pyrene	1.5		mg/kg	0.11	0.018	1
Benzo(a)anthracene	1.0		mg/kg	0.11	0.021	1
Chrysene	1.0		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	1.4		mg/kg	0.11	0.031	1
Benzo(a)pyrene	1.2		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.69		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-12
 Client ID: LS-A-C02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 12:00
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 18:19
 Analyst: IM
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.14		mg/kg	0.037	0.022	1
Fluorene	0.047	J	mg/kg	0.18	0.018	1
Phenanthrene	0.34		mg/kg	0.11	0.022	1
Anthracene	0.10	J	mg/kg	0.11	0.036	1
Pyrene	0.40		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.29		mg/kg	0.11	0.021	1
Chrysene	0.30		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.31		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.28		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.23		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	79		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-14 D
 Client ID: LS-A-C03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 13:05
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/09/23 11:12
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.25		mg/kg	0.19	0.12	5
Fluorene	2.5		mg/kg	0.95	0.092	5
Phenanthrene	5.6		mg/kg	0.57	0.12	5
Anthracene	0.52	J	mg/kg	0.57	0.18	5
Pyrene	1.5		mg/kg	0.57	0.094	5
Benzo(a)anthracene	0.82		mg/kg	0.57	0.11	5
Chrysene	2.0		mg/kg	0.57	0.099	5
Benzo(b)fluoranthene	0.75		mg/kg	0.57	0.16	5
Benzo(a)pyrene	0.81		mg/kg	0.76	0.23	5
Benzo(ghi)perylene	0.49	J	mg/kg	0.76	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	76		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-16 D
 Client ID: LS-A-C03-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 13:15
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/09/23 11:29
 Analyst: IM
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.11	5
Fluorene	1.3		mg/kg	0.90	0.087	5
Phenanthrene	4.6		mg/kg	0.54	0.11	5
Anthracene	0.33	J	mg/kg	0.54	0.17	5
Pyrene	0.61		mg/kg	0.54	0.089	5
Benzo(a)anthracene	0.34	J	mg/kg	0.54	0.10	5
Chrysene	0.94		mg/kg	0.54	0.093	5
Benzo(b)fluoranthene	ND		mg/kg	0.54	0.15	5
Benzo(a)pyrene	ND		mg/kg	0.72	0.22	5
Benzo(ghi)perylene	ND		mg/kg	0.72	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	106		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-18
 Client ID: LS-A-C04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 13:50
 Date Received: 05/02/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 19:32
 Analyst: IM
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.035	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	67		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/07/23 19:08
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 05/05/23 20:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1775473-1					
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	0.027
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	55		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	67		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1775473-2 WG1775473-3								
Naphthalene	66		52		40-140	24		50
Fluorene	74		57		40-140	26		50
Phenanthrene	73		55		40-140	28		50
Anthracene	76		57		40-140	29		50
Pyrene	77		57		35-142	30		50
Benzo(a)anthracene	78		58		40-140	29		50
Chrysene	77		57		40-140	30		50
Benzo(b)fluoranthene	82		56		40-140	38		50
Benzo(a)pyrene	85		62		40-140	31		50
Benzo(ghi)perylene	73		54		40-140	30		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	66		49		23-120
2-Fluorobiphenyl	73		52		30-120
4-Terphenyl-d14	74		50		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-02

Date Collected: 05/02/23 08:40

Client ID: LS-A-B02-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	79.8		mg/kg	2.15	0.115	1	05/05/23 22:19	05/07/23 16:13	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-04

Date Collected: 05/02/23 09:30

Client ID: LS-A-B03-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	36.2		mg/kg	2.27	0.122	1	05/05/23 22:19	05/07/23 16:18	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-06

Date Collected: 05/02/23 10:40

Client ID: LS-A-C01-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	291		mg/kg	2.20	0.118	1	05/05/23 22:19	05/07/23 16:22	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-08
 Client ID: LS-A-C01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 10:50
 Date Received: 05/02/23
 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	51.6		mg/kg	2.29	0.123	1	05/05/23 22:19	05/07/23 16:27	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-10

Date Collected: 05/02/23 11:50

Client ID: LS-A-C02-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	96.4		mg/kg	2.23	0.119	1	05/05/23 22:19	05/07/23 17:17	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-12

Date Collected: 05/02/23 12:00

Client ID: LS-A-C02-C2-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	277		mg/kg	2.21	0.118	1	05/05/23 22:19	05/07/23 17:22	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-14

Date Collected: 05/02/23 13:05

Client ID: LS-A-C03-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	177		mg/kg	2.24	0.120	1	05/05/23 22:19	05/07/23 17:27	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-16
 Client ID: LS-A-C03-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 13:15
 Date Received: 05/02/23
 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	15.4		mg/kg	2.08	0.111	1	05/05/23 22:19	05/07/23 17:32	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-18

Date Collected: 05/02/23 13:50

Client ID: LS-A-C04-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	7.87		mg/kg	2.09	0.112	1	05/05/23 22:19	05/07/23 17:36	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

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): 02,04,06,08,10,12,14,16,18 Batch: WG1774399-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/05/23 22:19	05/07/23 14:47	1,6010D	AMW

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1774399-2 SRM Lot Number: D119-540								
Lead, Total	100		-		82-118	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

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): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1774399-3 WG1774399-4 QC Sample: L2322284-02 Client ID: MS Sample												
Lead, Total	298	173	755	265	Q	712	238	Q	75-125	6		20



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Serial Dilution**Analysis**

Batch Quality Control

Lab Number: L2323969

Report Date: 05/09/23

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1774399-6 QC Sample: L2322284-02 Client ID: DUP Sample						
Lead, Total	298	299	mg/kg	0		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-01

Date Collected: 05/02/23 08:40

Client ID: LS-A-B02-C1-VOC

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	87.5		%	0.100	NA	1	-	05/03/23 12:42	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-02

Date Collected: 05/02/23 08:40

Client ID: LS-A-B02-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	-	05/03/23 12:54	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2323969-03

Date Collected: 05/02/23 09:30

Client ID: LS-A-B03-C1-VOC

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	87.0		%	0.100	NA	1	-	05/03/23 12:42	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2323969-04

Date Collected: 05/02/23 09:30

Client ID: LS-A-B03-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	86.9		%	0.100	NA	1	-	05/03/23 12:54	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-05
 Client ID: LS-A-C01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 10:40
 Date Received: 05/02/23
 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	86.8		%	0.100	NA	1	-	05/03/23 12:42	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2323969-06

Date Collected: 05/02/23 10:40

Client ID: LS-A-C01-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	-	05/03/23 12:54	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2323969-07

Date Collected: 05/02/23 10:50

Client ID: LS-A-C01-C2-VOC

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	88.6		%	0.100	NA	1	-	05/03/23 12:42	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-08

Date Collected: 05/02/23 10:50

Client ID: LS-A-C01-C2-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	86.8		%	0.100	NA	1	-	05/03/23 12:54	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-09

Date Collected: 05/02/23 11:50

Client ID: LS-A-C02-C1-VOC

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	87.2		%	0.100	NA	1	-	05/03/23 12:42	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2323969-10

Date Collected: 05/02/23 11:50

Client ID: LS-A-C02-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	86.8		%	0.100	NA	1	-	05/03/23 12:54	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2323969-11

Date Collected: 05/02/23 12:00

Client ID: LS-A-C02-C2-VOC

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	-	05/03/23 12:42	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-12
Client ID: LS-A-C02-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 12:00
Date Received: 05/02/23
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	89.5		%	0.100	NA	1	-	05/03/23 12:54	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2323969-13

Date Collected: 05/02/23 13:05

Client ID: LS-A-C03-C1-VOC

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	91.4		%	0.100	NA	1	-	05/03/23 12:42	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-14
Client ID: LS-A-C03-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 13:05
Date Received: 05/02/23
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	86.5		%	0.100	NA	1	-	05/03/23 12:54	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-15
Client ID: LS-A-C03-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/02/23 13:15
Date Received: 05/02/23
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	88.6		%	0.100	NA	1	-	05/03/23 12:42	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2323969-16

Date Collected: 05/02/23 13:15

Client ID: LS-A-C03-C2-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	91.8		%	0.100	NA	1	-	05/03/23 12:54	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2323969-17

Date Collected: 05/02/23 13:50

Client ID: LS-A-C04-C1-VOC

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	94.0		%	0.100	NA	1	-	05/03/23 12:42	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

SAMPLE RESULTS

Lab ID: L2323969-18

Date Collected: 05/02/23 13:50

Client ID: LS-A-C04-C1-COMP

Date Received: 05/02/23

Sample Location: PHILADELPHIA, PA

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	-	05/03/23 12:54	121,2540G	ROI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2323969

Report Date: 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17 QC Batch ID: WG1774148-1 QC Sample: L2323969-01 Client ID: LS-A-B02-C1-VOC						
Solids, Total	87.5	88.7	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1774168-1 QC Sample: L2323882-01 Client ID: DUP Sample						
Solids, Total	84.4	85.8	%	2		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**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(*)
L2323969-01A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2323969-01B	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-01C	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-01D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2323969-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2323969-02B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2323969-03A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2323969-03B	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-03C	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-03D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2323969-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2323969-04B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2323969-05A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2323969-05B	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-05C	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-05D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2323969-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2323969-06B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2323969-07A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2323969-07B	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-07C	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-07D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2323969-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2323969-08B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2323969-09A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2323969-09B	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-09C	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-09D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2323969-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2323969-10B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2323969-11A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2323969-11B	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-11C	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-11D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2323969-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2323969-12B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2323969-13A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2323969-13B	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-13C	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-13D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2323969-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2323969-14B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2323969-15A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2323969-15B	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-15C	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-15D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2323969-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2323969-16B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2323969-17A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2323969-17B	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)
L2323969-17C	Vial water preserved	A	NA		2.7	Y	Absent	03-MAY-23 08:31	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2323969**Project Number:** 200.00135.023**Report Date:** 05/09/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2323969-17D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2323969-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2323969-18B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2323969
Report Date: 05/09/23

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
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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

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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.)

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Project Name: PHILADELPHIA REFINERY

Lab Number: L2323969

Project Number: 200.00135.023

Report Date: 05/09/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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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Date Rec'd in Lab: 5/3/23 ALPHA Job #: L2323969

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

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3286

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.0035.023
Project Manager: William Schmidt
ALPHA Quote #: 18559

Report Information - Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #:

Client Information

Client: Rensselaer Consulting LLC
Address: 2125 Hamilton Ave
Hamilton, NJ 08619
Phone: 215-901-4974
Fax:
Email: william.schmidt@rensselaer.com
 These samples have been previously analyzed by Alpha

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
Date Due: Time:

Regulatory Requirements/Report Limits

State/Fed Program: Criteria:

Other Project Specific Requirements/Comments/Detection Limits:

Report only project specific analytes at PADEP unadulterated/loaded gasoline & No. 2 diesel fuels at standard. Run samples using method 8270 DMV. Email results to add@terraphase.com, william.schmidt@rensselaer.com & jrc@philco.com

ANALYSIS	SAMPLE HANDLING										TOTAL # BOTTLES	
	Filtration _____ <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)											
VOCs (8260)												
SVOCs (8270)												
Lead												

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments										TOTAL # BOTTLES
-----------------------------	-----------	-----------------	-----------------	---------------	--------------------	--------------------------	--	--	--	--	--	--	--	--	--	-----------------

23969-01	LS-A-B02-C1-VOC	05/02/23	8:40	S	ND	X															4
02	LS-A-B02-C1-comp		8:40				X	X													2
03	LS-A-B03-C1-VOC		9:30			X															4
04	LS-A-B03-C1-comp		9:30				X	X													2
05	LS-A-C01-C1-VOC		10:40			X															4
06	LS-A-C01-C1-comp		10:40				X	X													2
07	LS-A-C01-C2-VOC		10:50			X															4
08	LS-A-C01-C2-comp		10:50				X	X													2
09	LS-A-C02-C1-VOC		11:50			X															4
10	LS-A-C02-C1-comp	✓	11:50	✓	✓		X	X													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 Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time
William Schmidt	05/02/23 15:55	D. Roberson AAL	5/2/23 1535
D. Roberson AAL	5/2/23 1800	M. [Signature] ML	5/2/23 1800
[Signature]	5/2/23 2100	[Signature]	5-2-23 2100



CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 5/3/23 ALPHA Job #: L2323969

WESTBORO, 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 #: 200,00135,023
Project Manager: William Schmidt
ALPHA Quote #: 18559

Report Information - Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client Info PO #:

Client Information

Client: Ransom Consulting LLC
Address: 2127 Hamilton Ave
Hamilton, NJ 08619
Phone: 215-901-4974
Fax:
Email: William.Schmidt@ransom.com
 These samples have been previously analyzed by Alpha

Turn-Around Time

Standard RUSH (only confirmed if pre-approved!)
Date Due: Time:

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project specific analyte list of PDEP unless needed for site & this is a soil only analysis. Run only use soil method 8270 only!
Email results to add@terryhose.com, William.Schmidt@ransom.com or jerry@hilco.global.com

ANALYSIS	SAMPLE HANDLING										TOTAL # BOTTLES	
	Filtration _____ <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)											
<u>VOCs (8260)</u>												
<u>SVOCs (8270)</u>												
<u>Lead</u>												

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										Sample Specific Comments	TOTAL # BOTTLES		
		Date	Time			VOCs (8260)	SVOCs (8270)	Lead											
<u>23969</u>	<u>11</u>	<u>LS-A-C02-C2-VOC</u>	<u>05/02/23</u>	<u>12:00</u>	<u>S</u>	<u>MD</u>	<u>X</u>												<u>4</u>
	<u>12</u>	<u>LS-A-C02-C2-comp</u>		<u>12:00</u>				<u>X</u>	<u>X</u>										<u>2</u>
	<u>13</u>	<u>LS-A-C03-C1-VOC</u>		<u>13:05</u>			<u>X</u>												<u>4</u>
	<u>14</u>	<u>LS-A-C03-C1-comp</u>		<u>13:05</u>				<u>X</u>	<u>X</u>										<u>2</u>
	<u>15</u>	<u>LS-A-C03-C2-VOC</u>		<u>13:15</u>			<u>X</u>												<u>4</u>
	<u>16</u>	<u>LS-A-C03-C2-comp</u>		<u>13:15</u>				<u>X</u>	<u>X</u>										<u>2</u>
	<u>17</u>	<u>LS-A-C04-C1-VOC</u>		<u>13:50</u>			<u>X</u>												<u>4</u>
	<u>18</u>	<u>LS-A-C04-C1-comp</u>		<u>13:50</u>				<u>X</u>	<u>X</u>										<u>2</u>

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 Terms and Conditions. See reverse side.

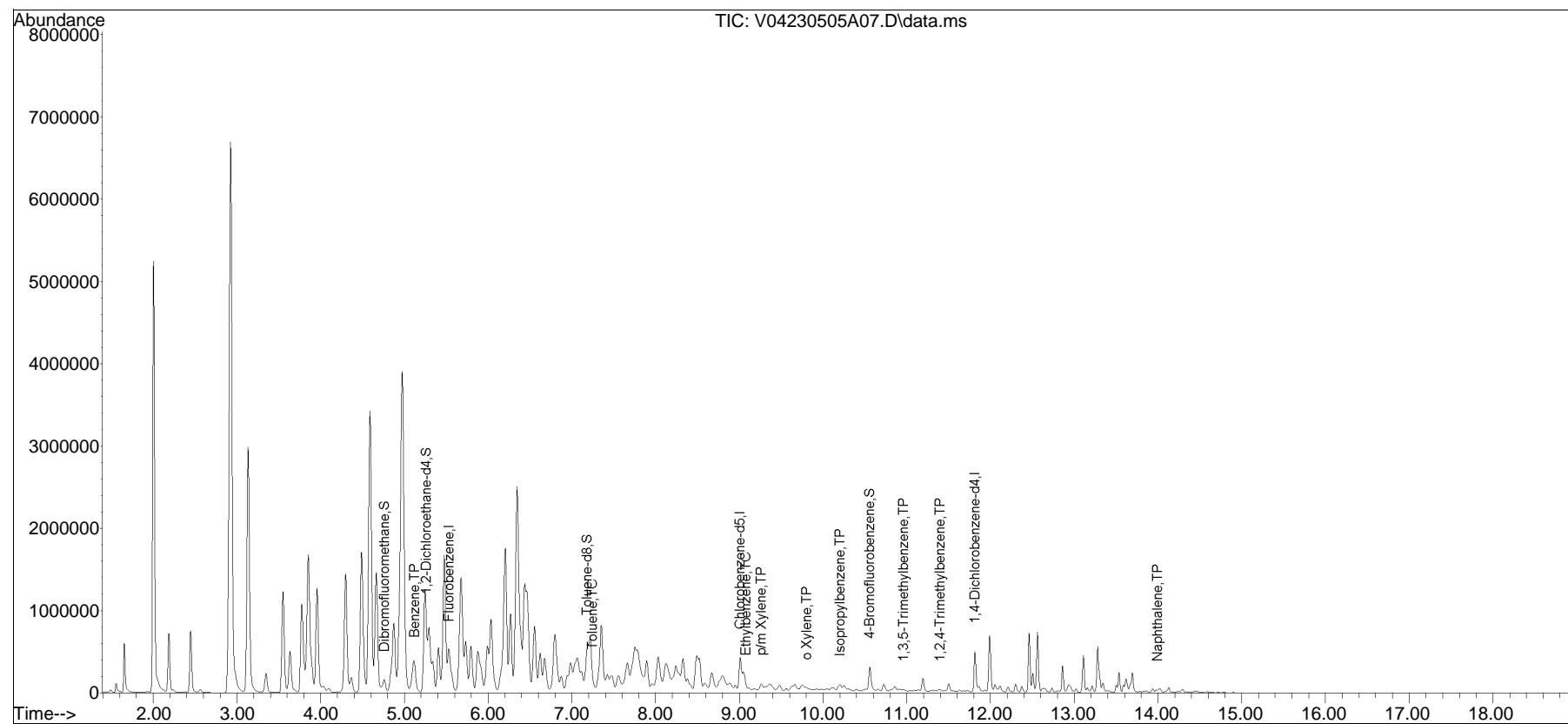
Relinquished By:	Date/Time	Received By:	Date/Time
<u>MD</u>	<u>05/02/23 15:35</u>	<u>D. Robinson, AAAL</u>	<u>5/2/23 15:35</u>
<u>D. Robinson AAAL</u>	<u>5/2/23 18:00</u>	<u>AAAL</u>	<u>5/2/23 18:00</u>
<u>AAAL</u>	<u>5/2/23 21:00</u>	<u>AAAL</u>	<u>5-2-23 21:00</u>

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2023\230505A\
Data File : V04230505A07.D
Acq On : 5 May 2023 11:33 am
Operator : VOA104:JIC
Sample : L2323969-03,31,6.54,5,,B
Misc : WG1775995,ICAL19908
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 08 06:39:38 2023
Quant Method : I:\VOLATILES\VOA104\2023\230505A\V104_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Apr 11 16:51:00 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list05A\V04230505A01.D•

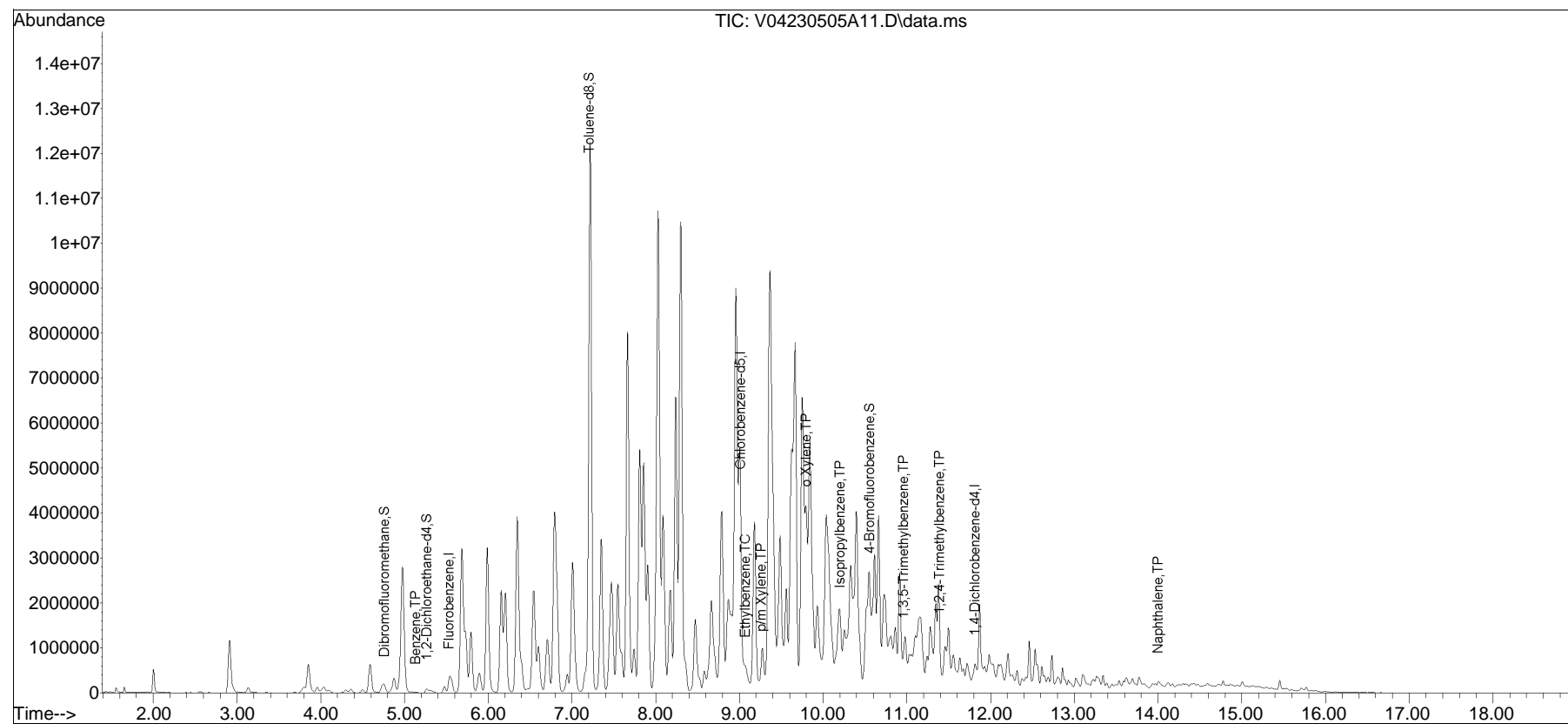


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2023\230505A\
Data File : V04230505A11.D
Acq On : 5 May 2023 1:17 pm
Operator : VOA104:JIC
Sample : L2323969-11,31,4.80,5,,B
Misc : WG1775995,ICAL19908
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 08 06:41:10 2023
Quant Method : I:\VOLATILES\VOA104\2023\230505A\V104_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Apr 11 16:51:00 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list05A\V04230505A01.D•

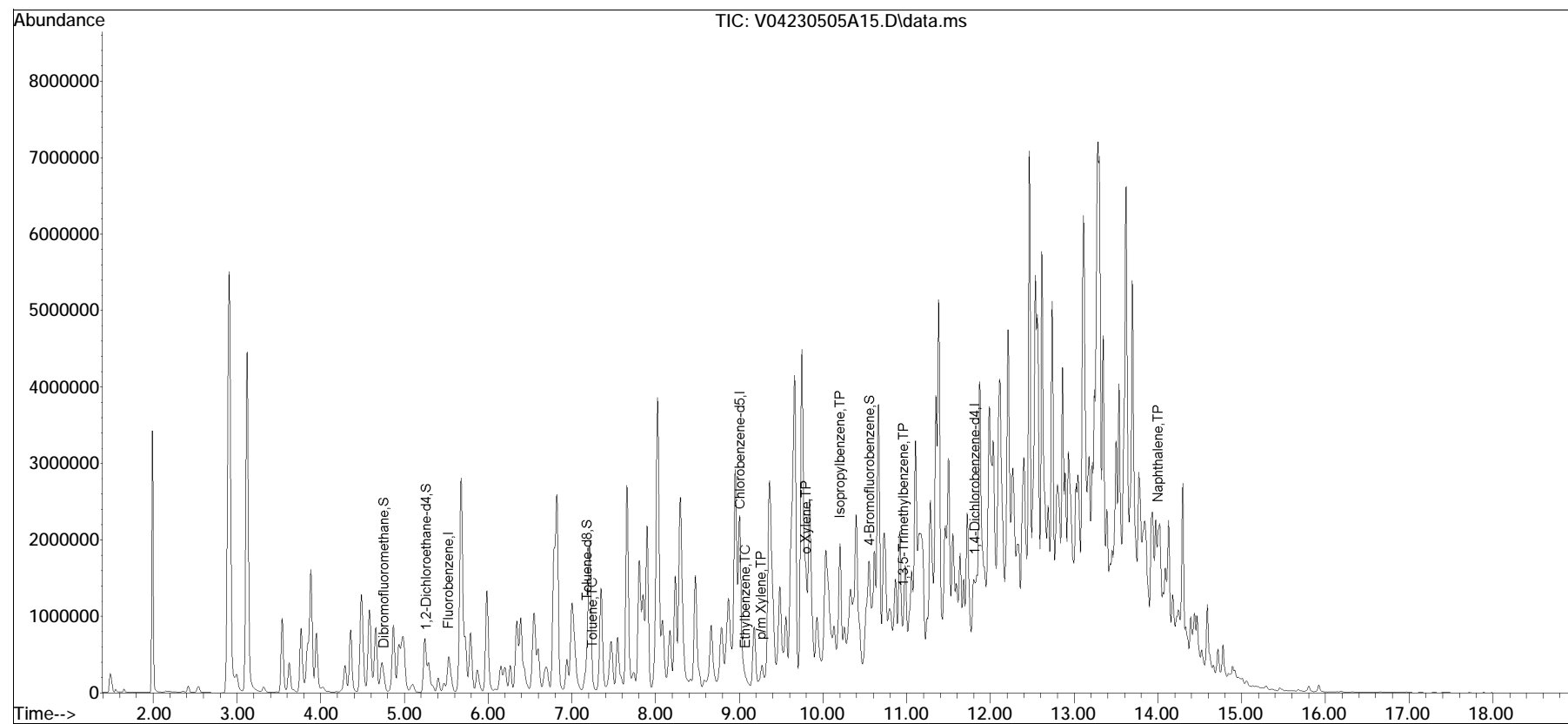


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2023\230505A\
Data File : V04230505A15.D
Acq On : 5 May 2023 3:00 pm
Operator : VOA104:JIC
Sample : L2323969-15,31H,5.60,5,0.100,,A
Misc : WG1776250,ICAL19908
ALS Vial : 15 Sample Multiplier: 1

Quant Time: May 08 06:43:41 2023
Quant Method : I:\VOLATILES\VOA104\2023\230505A\V104_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Apr 11 16:51:00 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list05A\V04230505A01.D•





ANALYTICAL REPORT

Lab Number:	L2324304
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/10/23

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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: 200.00135.023

Lab Number: L2324304

Report Date: 05/10/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2324304-01	LS-A-C05-C1-VOC	SOIL	PHILADELPHIA, PA	05/03/23 09:30	05/03/23
L2324304-02	LS-A-C05-C1-COMP	SOIL	PHILADELPHIA, PA	05/03/23 09:30	05/03/23
L2324304-03	LS-A-D02-C1-VOC	SOIL	PHILADELPHIA, PA	05/03/23 12:30	05/03/23
L2324304-04	LS-A-D02-C1-COMP	SOIL	PHILADELPHIA, PA	05/03/23 12:30	05/03/23
L2324304-05	LS-A-D02-C2-VOC	SOIL	PHILADELPHIA, PA	05/03/23 12:35	05/03/23
L2324304-06	LS-A-D02-C2-COMP	SOIL	PHILADELPHIA, PA	05/03/23 12:35	05/03/23
L2324304-07	LS-A-D02-C3-VOC	SOIL	PHILADELPHIA, PA	05/03/23 12:45	05/03/23
L2324304-08	LS-A-D02-C3-COMP	SOIL	PHILADELPHIA, PA	05/03/23 12:45	05/03/23
L2324304-09	LS-A-D02-C4-VOC	SOIL	PHILADELPHIA, PA	05/03/23 12:55	05/03/23
L2324304-10	LS-A-D02-C4-COMP	SOIL	PHILADELPHIA, PA	05/03/23 12:55	05/03/23
L2324304-11	LS-A-D03-C1-VOC	SOIL	PHILADELPHIA, PA	05/03/23 14:15	05/03/23
L2324304-12	LS-A-D03-C1-COMP	SOIL	PHILADELPHIA, PA	05/03/23 14:15	05/03/23
L2324304-13	LS-A-D03-C2-VOC	SOIL	PHILADELPHIA, PA	05/03/23 14:25	05/03/23
L2324304-14	LS-A-D03-C2-COMP	SOIL	PHILADELPHIA, PA	05/03/23 14:25	05/03/23
L2324304-15	LS-A-D04-C1-VOC	SOIL	PHILADELPHIA, PA	05/03/23 15:15	05/03/23
L2324304-16	LS-A-D04-C1-COMP	SOIL	PHILADELPHIA, PA	05/03/23 15:15	05/03/23
L2324304-17	LS-A-D04-C2-VOC	SOIL	PHILADELPHIA, PA	05/03/23 15:20	05/03/23
L2324304-18	LS-A-D04-C2-COMP	SOIL	PHILADELPHIA, PA	05/03/23 15:20	05/03/23
L2324304-19	LS-A-D04-C3-VOC	SOIL	PHILADELPHIA, PA	05/03/23 15:25	05/03/23
L2324304-20	LS-A-D04-C3-COMP	SOIL	PHILADELPHIA, PA	05/03/23 15:25	05/03/23
L2324304-21	LS-A-D04-C4-VOC	SOIL	PHILADELPHIA, PA	05/03/23 15:30	05/03/23
L2324304-22	LS-A-D04-C4-COMP	SOIL	PHILADELPHIA, PA	05/03/23 15:30	05/03/23
L2324304-23	LS-A-D04-C5-VOC	SOIL	PHILADELPHIA, PA	05/03/23 15:35	05/03/23
L2324304-24	LS-A-D04-C5-COMP	SOIL	PHILADELPHIA, PA	05/03/23 15:35	05/03/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

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
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

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

L2324304-01: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2324304-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (164%); 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.

L2324304-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (292%); 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.

Semivolatile Organics

L2324304-10D: 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:



Kelly O'Neill

Title: Technical Director/Representative

Date: 05/10/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-01
 Client ID: LS-A-C05-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 09:30
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 19:20
 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	0.11	0.011	1
Benzene	0.34		mg/kg	0.028	0.0093	1
1,2-Dichloroethane	ND		mg/kg	0.056	0.014	1
Toluene	0.13		mg/kg	0.056	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	0.24		mg/kg	0.056	0.0079	1
p/m-Xylene	1.2		mg/kg	0.11	0.031	1
o-Xylene	0.35		mg/kg	0.056	0.016	1
Xylenes, Total	1.6		mg/kg	0.056	0.016	1
Isopropylbenzene	1.6		mg/kg	0.056	0.0061	1
1,3,5-Trimethylbenzene	0.52		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	1.5		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	124		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-01
 Client ID: LS-A-C05-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 09:30
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 15:45
 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	0.12		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.032		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	0.032		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.12		mg/kg	0.0020	0.00056	1
o-Xylene	0.061		mg/kg	0.0010	0.00029	1
Xylenes, Total	0.18		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.28		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.028		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.14		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	164	Q	70-130
Dibromofluoromethane	77		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-03
 Client ID: LS-A-D02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:30
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 15:26
 Analyst: JIC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00029	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00024	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	0.00013	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	107		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-05
 Client ID: LS-A-D02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:35
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 15:52
 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	0.0024	0.00024	1
Benzene	0.0026		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	0.00086	J	mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	0.0011	J	mg/kg	0.0024	0.00068	1
o-Xylene	0.00068	J	mg/kg	0.0012	0.00035	1
Xylenes, Total	0.0018	J	mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.00049	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00064	J	mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.00060	J	mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-07
 Client ID: LS-A-D02-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:45
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 16:18
 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	0.00038	J	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	0.00022	J	mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	0.00024	J	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	98		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-09
 Client ID: LS-A-D02-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:55
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 16:44
 Analyst: JIC
 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	0.0019	0.00019	1
Benzene	0.0014		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	0.00027	1
Ethylbenzene	0.00030	J	mg/kg	0.00094	0.00013	1
p/m-Xylene	0.00076	J	mg/kg	0.0019	0.00052	1
o-Xylene	0.00061	J	mg/kg	0.00094	0.00027	1
Xylenes, Total	0.0014	J	mg/kg	0.00094	0.00027	1
Isopropylbenzene	0.00051	J	mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	0.00061	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.00031	J	mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-11
 Client ID: LS-A-D03-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 14:15
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 17:10
 Analyst: JIC
 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	0.0018	0.00018	1
Benzene	0.00036	J	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	0.00093		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	0.00018	J	mg/kg	0.00089	0.00012	1
p/m-Xylene	0.00099	J	mg/kg	0.0018	0.00050	1
o-Xylene	0.00029	J	mg/kg	0.00089	0.00026	1
Xylenes, Total	0.0013	J	mg/kg	0.00089	0.00026	1
Isopropylbenzene	0.025		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	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	100		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-13
 Client ID: LS-A-D03-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 14:25
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 17:36
 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	0.0018	0.00018	1
Benzene	0.00081		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	0.00077	J	mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00016	J	mg/kg	0.00091	0.00013	1
p/m-Xylene	0.0032		mg/kg	0.0018	0.00051	1
o-Xylene	0.00088	J	mg/kg	0.00091	0.00026	1
Xylenes, Total	0.0041	J	mg/kg	0.00091	0.00026	1
Isopropylbenzene	0.0022		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	0.00018	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	82		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-15
 Client ID: LS-A-D04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:15
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 18:02
 Analyst: JIC
 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	0.0022	0.00022	1
Benzene	0.00028	J	mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00060	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	0.0022	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	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-17
 Client ID: LS-A-D04-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:20
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 18:28
 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	0.0023	0.00023	1
Benzene	0.00019	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	0.00018	J	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	104		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-19
 Client ID: LS-A-D04-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:25
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/05/23 18:54
 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	0.0020	0.00020	1
Benzene	0.0050		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.00064	J	mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	0.00019	J	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	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-21
 Client ID: LS-A-D04-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:30
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 14:59
 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	0.0018	0.00018	1
Benzene	0.0073		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	0.0020		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	0.0013		mg/kg	0.00090	0.00013	1
p/m-Xylene	0.0039		mg/kg	0.0018	0.00050	1
o-Xylene	0.0039		mg/kg	0.00090	0.00026	1
Xylenes, Total	0.0078		mg/kg	0.00090	0.00026	1
Isopropylbenzene	0.026		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	0.00039	J	mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	128		70-130
Toluene-d8	86		70-130
4-Bromofluorobenzene	292	Q	70-130
Dibromofluoromethane	127		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-23
 Client ID: LS-A-D04-C5-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:35
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 15:22
 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	0.0018	0.00018	1
Benzene	0.00026	J	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	0.00034	J	mg/kg	0.00092	0.00013	1
p/m-Xylene	0.00065	J	mg/kg	0.0018	0.00052	1
o-Xylene	0.00047	J	mg/kg	0.00092	0.00027	1
Xylenes, Total	0.0011	J	mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.0056		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	0.00021	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.00064	J	mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/05/23 10:42
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,05,07,09,11,13,15,17,19 Batch: WG1775995-5					
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	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/05/23 10:42
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1776250-5					
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	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/08/23 11:28
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,21,23 Batch: WG1776704-5					
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	114		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	114		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,05,07,09,11,13,15,17,19 Batch: WG1775995-3 WG1775995-4								
Methyl tert butyl ether	87		87		66-130	0		30
Benzene	85		84		70-130	1		30
1,2-Dichloroethane	87		87		70-130	0		30
Toluene	85		83		70-130	2		30
1,2-Dibromoethane	93		92		70-130	1		30
Ethylbenzene	88		86		70-130	2		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	88		87		70-130	1		30
Isopropylbenzene	87		86		70-130	1		30
1,3,5-Trimethylbenzene	86		85		70-130	1		30
1,2,4-Trimethylbenzene	89		88		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	92		94		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	99		99		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

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: WG1776250-3 WG1776250-4								
Methyl tert butyl ether	87		87		66-130	0		30
Benzene	85		84		70-130	1		30
1,2-Dichloroethane	87		87		70-130	0		30
Toluene	85		83		70-130	2		30
1,2-Dibromoethane	93		92		70-130	1		30
Ethylbenzene	88		86		70-130	2		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	88		87		70-130	1		30
Isopropylbenzene	87		86		70-130	1		30
1,3,5-Trimethylbenzene	86		85		70-130	1		30
1,2,4-Trimethylbenzene	89		88		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		94		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		100		70-130
Dibromofluoromethane	99		99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,21,23 Batch: WG1776704-3 WG1776704-4								
Methyl tert butyl ether	97		98		66-130	1		30
Benzene	99		101		70-130	2		30
1,2-Dichloroethane	94		96		70-130	2		30
Toluene	87		86		70-130	1		30
1,2-Dibromoethane	80		81		70-130	1		30
Ethylbenzene	88		87		70-130	1		30
p/m-Xylene	93		90		70-130	3		30
o-Xylene	92		89		70-130	3		30
Isopropylbenzene	88		83		70-130	6		30
1,3,5-Trimethylbenzene	92		85		70-130	8		30
1,2,4-Trimethylbenzene	91		85		70-130	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		100		70-130
Toluene-d8	95		93		70-130
4-Bromofluorobenzene	90		89		70-130
Dibromofluoromethane	98		102		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-02
 Client ID: LS-A-C05-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 09:30
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 13:09
 Analyst: LJJ
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.31		mg/kg	0.038	0.023	1
Fluorene	0.16	J	mg/kg	0.19	0.018	1
Phenanthrene	0.37		mg/kg	0.11	0.023	1
Anthracene	0.051	J	mg/kg	0.11	0.037	1
Pyrene	0.15		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.066	J	mg/kg	0.11	0.021	1
Chrysene	0.16		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.072	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.075	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.14	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-04
 Client ID: LS-A-D02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:30
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 13:33
 Analyst: LJJ
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.33		mg/kg	0.038	0.023	1
Fluorene	0.044	J	mg/kg	0.19	0.018	1
Phenanthrene	0.51		mg/kg	0.11	0.023	1
Anthracene	0.13		mg/kg	0.11	0.037	1
Pyrene	0.67		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.47		mg/kg	0.11	0.021	1
Chrysene	0.54		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.66		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.60		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.55		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-06
 Client ID: LS-A-D02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:35
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 13:57
 Analyst: LJJ
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.63		mg/kg	0.038	0.023	1
Fluorene	0.33		mg/kg	0.19	0.018	1
Phenanthrene	2.6		mg/kg	0.11	0.023	1
Anthracene	0.62		mg/kg	0.11	0.036	1
Pyrene	3.4		mg/kg	0.11	0.019	1
Benzo(a)anthracene	2.5		mg/kg	0.11	0.021	1
Chrysene	2.7		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	3.4		mg/kg	0.11	0.032	1
Benzo(a)pyrene	2.8		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	1.9		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-08
 Client ID: LS-A-D02-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:45
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 14:20
 Analyst: LJJ
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.59		mg/kg	0.038	0.023	1
Fluorene	0.21		mg/kg	0.19	0.019	1
Phenanthrene	0.49		mg/kg	0.12	0.023	1
Anthracene	0.065	J	mg/kg	0.12	0.038	1
Pyrene	0.27		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.18		mg/kg	0.12	0.022	1
Chrysene	0.19		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.23		mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.18		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.14	J	mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-10 D
 Client ID: LS-A-D02-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:55
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 12:29
 Analyst: LJJ
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	4.0		mg/kg	0.37	0.22	10
Fluorene	1.8		mg/kg	1.8	0.18	10
Phenanthrene	3.0		mg/kg	1.1	0.22	10
Anthracene	0.37	J	mg/kg	1.1	0.36	10
Pyrene	0.60	J	mg/kg	1.1	0.18	10
Benzo(a)anthracene	0.33	J	mg/kg	1.1	0.21	10
Chrysene	0.61	J	mg/kg	1.1	0.19	10
Benzo(b)fluoranthene	ND		mg/kg	1.1	0.31	10
Benzo(a)pyrene	ND		mg/kg	1.5	0.45	10
Benzo(ghi)perylene	ND		mg/kg	1.5	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	156	Q	23-120
2-Fluorobiphenyl	101		30-120
4-Terphenyl-d14	108		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-12
 Client ID: LS-A-D03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 14:15
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 15:09
 Analyst: LJJ
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.071		mg/kg	0.037	0.022	1
Fluorene	0.17	J	mg/kg	0.18	0.018	1
Phenanthrene	0.82		mg/kg	0.11	0.022	1
Anthracene	0.11		mg/kg	0.11	0.036	1
Pyrene	0.44		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.13		mg/kg	0.11	0.021	1
Chrysene	0.17		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.10	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.098	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.081	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-14
 Client ID: LS-A-D03-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 14:25
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 15:33
 Analyst: LJG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.025	J	mg/kg	0.038	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.080	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.12		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.11		mg/kg	0.11	0.021	1
Chrysene	0.12		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.20		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.20		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.14	J	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	64		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-16
 Client ID: LS-A-D04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:15
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 15:57
 Analyst: LJJ
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.28		mg/kg	0.037	0.022	1
Fluorene	0.023	J	mg/kg	0.18	0.018	1
Phenanthrene	0.24		mg/kg	0.11	0.022	1
Anthracene	0.12		mg/kg	0.11	0.036	1
Pyrene	0.51		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.48		mg/kg	0.11	0.021	1
Chrysene	0.46		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.69		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.68		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.68		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	52		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-18
 Client ID: LS-A-D04-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:20
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 16:21
 Analyst: LJJ
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.12		mg/kg	0.037	0.022	1
Fluorene	0.031	J	mg/kg	0.18	0.018	1
Phenanthrene	0.18		mg/kg	0.11	0.022	1
Anthracene	0.052	J	mg/kg	0.11	0.036	1
Pyrene	0.23		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.12		mg/kg	0.11	0.021	1
Chrysene	0.17		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.14		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.14	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.18		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-20
 Client ID: LS-A-D04-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:25
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/08/23 16:45
 Analyst: LJJ
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.56		mg/kg	0.038	0.023	1
Fluorene	0.20		mg/kg	0.19	0.018	1
Phenanthrene	1.0		mg/kg	0.11	0.023	1
Anthracene	0.35		mg/kg	0.11	0.037	1
Pyrene	1.6		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.89		mg/kg	0.11	0.021	1
Chrysene	1.2		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.74		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.98		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	1.4		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	65		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-22
 Client ID: LS-A-D04-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:30
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/09/23 17:08
 Analyst: JG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.7		mg/kg	0.038	0.023	1
Fluorene	1.6		mg/kg	0.19	0.019	1
Phenanthrene	4.0		mg/kg	0.12	0.023	1
Anthracene	1.9		mg/kg	0.12	0.037	1
Pyrene	4.1		mg/kg	0.12	0.019	1
Benzo(a)anthracene	1.7		mg/kg	0.12	0.022	1
Chrysene	2.4		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	1.3		mg/kg	0.12	0.032	1
Benzo(a)pyrene	1.6		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	1.3		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	114		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-24
 Client ID: LS-A-D04-C5-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:35
 Date Received: 05/03/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/09/23 17:32
 Analyst: JG
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.14		mg/kg	0.038	0.023	1
Fluorene	0.16	J	mg/kg	0.19	0.018	1
Phenanthrene	0.47		mg/kg	0.11	0.023	1
Anthracene	0.16		mg/kg	0.11	0.037	1
Pyrene	0.42		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.21		mg/kg	0.11	0.021	1
Chrysene	0.34		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.26		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.21		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.18		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	98		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/08/23 10:44
Analyst: LJG

Extraction Method: EPA 3546
Extraction Date: 05/05/23 20:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1775479-1					
Naphthalene	ND		mg/kg	0.033	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	75		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	90		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1775479-2 WG1775479-3								
Naphthalene	73		75		40-140	3		50
Fluorene	77		79		40-140	3		50
Phenanthrene	78		78		40-140	0		50
Anthracene	78		80		40-140	3		50
Pyrene	81		80		35-142	1		50
Benzo(a)anthracene	76		78		40-140	3		50
Chrysene	76		78		40-140	3		50
Benzo(b)fluoranthene	78		79		40-140	1		50
Benzo(a)pyrene	86		89		40-140	3		50
Benzo(ghi)perylene	74		77		40-140	4		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	71		70		23-120
2-Fluorobiphenyl	81		82		30-120
4-Terphenyl-d14	78		76		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-02

Date Collected: 05/03/23 09:30

Client ID: LS-A-C05-C1-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	15.1		mg/kg	2.21	0.119	1	05/09/23 23:21	05/10/23 10:57	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-04

Date Collected: 05/03/23 12:30

Client ID: LS-A-D02-C1-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	105		mg/kg	2.19	0.117	1	05/09/23 23:21	05/10/23 11:00	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-06
 Client ID: LS-A-D02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:35
 Date Received: 05/03/23
 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	1120		mg/kg	2.22	0.119	1	05/09/23 23:21	05/10/23 11:03	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-08

Date Collected: 05/03/23 12:45

Client ID: LS-A-D02-C3-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	352		mg/kg	2.26	0.121	1	05/09/23 23:21	05/10/23 11:05	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-10
 Client ID: LS-A-D02-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:55
 Date Received: 05/03/23
 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	82.8		mg/kg	2.25	0.121	1	05/09/23 23:21	05/10/23 11:08	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-12

Date Collected: 05/03/23 14:15

Client ID: LS-A-D03-C1-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	90.8		mg/kg	2.19	0.117	1	05/09/23 23:21	05/10/23 11:11	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-14

Date Collected: 05/03/23 14:25

Client ID: LS-A-D03-C2-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	43.6		mg/kg	2.24	0.120	1	05/09/23 23:21	05/10/23 11:14	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-16

Date Collected: 05/03/23 15:15

Client ID: LS-A-D04-C1-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	105		mg/kg	2.23	0.120	1	05/09/23 23:21	05/10/23 11:27	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-18

Date Collected: 05/03/23 15:20

Client ID: LS-A-D04-C2-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	180		mg/kg	2.12	0.114	1	05/09/23 23:21	05/10/23 11:30	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-20

Date Collected: 05/03/23 15:25

Client ID: LS-A-D04-C3-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	98.1		mg/kg	2.21	0.118	1	05/09/23 23:21	05/10/23 11:33	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-22

Date Collected: 05/03/23 15:30

Client ID: LS-A-D04-C4-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	88.6		mg/kg	2.28	0.122	1	05/09/23 23:21	05/10/23 11:35	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-24

Date Collected: 05/03/23 15:35

Client ID: LS-A-D04-C5-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	336		mg/kg	2.22	0.119	1	05/09/23 23:21	05/10/23 11:38	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

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): 02,04,06,08,10,12,14,16,18,20,22,24						Batch: WG1774735-1			
Lead, Total	ND	mg/kg	2.00	0.107	1	05/09/23 23:21	05/10/23 10:14	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1774735-2 SRM Lot Number: D119-540								
Lead, Total	102		-		82-118			-

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

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): 02,04,06,08,10,12,14,16,18,20,22,24 QC Batch ID: WG1774735-3 QC Sample: L2324020-01 Client ID: MS Sample												
Lead, Total	4.19	43.2	52.7	112		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2324304

Report Date: 05/10/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 QC Batch ID: WG1774735-4 QC Sample: L2324020-01 Client ID: DUP Sample						
Lead, Total	4.19	4.47	mg/kg	6		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-01

Date Collected: 05/03/23 09:30

Client ID: LS-A-C05-C1-VOC

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	85.4		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-02

Date Collected: 05/03/23 09:30

Client ID: LS-A-C05-C1-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	86.5		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-03
Client ID: LS-A-D02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:30
Date Received: 05/03/23
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	88.1		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-04

Date Collected: 05/03/23 12:30

Client ID: LS-A-D02-C1-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-05

Date Collected: 05/03/23 12:35

Client ID: LS-A-D02-C2-VOC

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	87.2		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-06

Date Collected: 05/03/23 12:35

Client ID: LS-A-D02-C2-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-07

Date Collected: 05/03/23 12:45

Client ID: LS-A-D02-C3-VOC

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	86.4		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-08
Client ID: LS-A-D02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 12:45
Date Received: 05/03/23
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	86.3		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-09

Date Collected: 05/03/23 12:55

Client ID: LS-A-D02-C4-VOC

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-10

Date Collected: 05/03/23 12:55

Client ID: LS-A-D02-C4-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	87.4		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-11
Client ID: LS-A-D03-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 14:15
Date Received: 05/03/23
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	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-12
Client ID: LS-A-D03-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 14:15
Date Received: 05/03/23
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	88.2		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-13

Date Collected: 05/03/23 14:25

Client ID: LS-A-D03-C2-VOC

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-14
Client ID: LS-A-D03-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 14:25
Date Received: 05/03/23
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	86.4		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-15

Date Collected: 05/03/23 15:15

Client ID: LS-A-D04-C1-VOC

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	87.5		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-16
 Client ID: LS-A-D04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:15
 Date Received: 05/03/23
 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	89.1		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324304
Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-17
Client ID: LS-A-D04-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/03/23 15:20
Date Received: 05/03/23
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	90.2		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-18

Date Collected: 05/03/23 15:20

Client ID: LS-A-D04-C2-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-19

Date Collected: 05/03/23 15:25

Client ID: LS-A-D04-C3-VOC

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	87.4		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-20

Date Collected: 05/03/23 15:25

Client ID: LS-A-D04-C3-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	87.5		%	0.100	NA	1	-	05/04/23 08:20	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-21

Date Collected: 05/03/23 15:30

Client ID: LS-A-D04-C4-VOC

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	87.0		%	0.100	NA	1	-	05/04/23 08:30	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324304

Project Number: 200.00135.023

Report Date: 05/10/23

SAMPLE RESULTS

Lab ID: L2324304-22

Date Collected: 05/03/23 15:30

Client ID: LS-A-D04-C4-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	85.6		%	0.100	NA	1	-	05/04/23 08:30	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-23

Date Collected: 05/03/23 15:35

Client ID: LS-A-D04-C5-VOC

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	-	05/04/23 08:30	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**SAMPLE RESULTS**

Lab ID: L2324304-24

Date Collected: 05/03/23 15:35

Client ID: LS-A-D04-C5-COMP

Date Received: 05/03/23

Sample Location: PHILADELPHIA, PA

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	87.4		%	0.100	NA	1	-	05/04/23 08:30	121,2540G	ROI



Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2324304

Report Date: 05/10/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1774613-1 QC Sample: L2324304-01 Client ID: LS-A-C05-C1-VOC						
Solids, Total	85.4	83.5	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 21-24 QC Batch ID: WG1774616-1 QC Sample: L2324221-01 Client ID: DUP Sample						
Solids, Total	74.6	78.6	%	5		20



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**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(*)
L2324304-01A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2324304-01B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260H(14),PA-8260HLW(14)
L2324304-01C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260H(14),PA-8260HLW(14)
L2324304-01D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-02B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-03A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-03B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-03C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-03D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-04B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-05A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-05B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-05C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-05D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-06B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-07A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-07B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-07C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-07D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2324304-08B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-09A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-09B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-09C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-09D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-10B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-11A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-11B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-11C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-11D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-12B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-13A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-13B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-13C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-13D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-14B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-15A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-15B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-15C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-15D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-16B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-17A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-17B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-17C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324304**Project Number:** 200.00135.023**Report Date:** 05/10/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2324304-17D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-18B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-19A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-19B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-19C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-19D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-20B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-21A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-21B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-21C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-21D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-22B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2324304-23A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2324304-23B	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-23C	Vial water preserved	A	NA		3.2	Y	Absent	04-MAY-23 08:11	PA-8260HLW(14)
L2324304-23D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2324304-24A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2324304-24B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)

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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



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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.)

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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, SM4500CI-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, **LCHAT 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 2 OF 3

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: 5/4/23

ALPHA Job #: L2324304

Client Information

Client: Ransom Consulting LLC

Address: 2127 Hamilton Avenue
Hamilton, NJ 08619

Phone: 215-201-4924

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, 623

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 analysis list of PADEP based/unleaded gasoline + No. 2
45 iso fuel oil. Run methylene using method 8270 ONLY!
Email results to a.d@ransomphse.com, william.schmidt@ransomenv.com, &
jjeray@hiloglobal.com*

ANALYSIS VOCs (8260) SVOCs (8270) Lead							SAMPLE HANDLING Filtration _____ <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES
	Sample Specific Comments							

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials								
		Date	Time										
24304-11	LS-A-D03-C1-VOC	05/03/23	14:15	S	MD	X							4
12	LS-A-D03-C1-comp		14:15				X	X					2
13	LS-A-D03-C2-VOC		14:25			X							4
14	LS-A-D03-C2-comp		14:25				X	X					2
15	LS-A-D04-C1-VOC		15:15			X							4
16	LS-A-D04-C1-comp		15:15				X	X					2
17	LS-A-D04-C2-VOC		15:20			X							4
18	LS-A-D04-C2-comp		15:20				X	X					2
19	LS-A-D04-C3-VOC		15:25			X							4
20	LS-A-D04-C3-comp		15:25				X	X					2

Cellt 5/4/23 02:20

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 Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	05/03/23 16:27	<i>[Signature]</i>	5/3/23 16:27
<i>[Signature]</i>	5/3/23 1800	<i>[Signature]</i>	5/3/23 1800
<i>[Signature]</i>	5/3/23 21:00	<i>[Signature]</i>	5-3-23 2100



CHAIN OF CUSTODY

PAGE 3 OF 3

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: 5/4/23

ALPHA Job #: L2324304

Client Information

Client: Ransom Consulting LLC
Address: 2127 Hamilton Avenue
Hamilton, NJ 08619
Phone: 215-901-4924
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 #: 200.00135.023
Project Manager: William Schmidt
ALPHA Quote #: 18559

Report Information - Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
Date Due: Time:

Regulatory Requirements/Report Limits

State /Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report only project specific analyte list of PASEP leaded/unleaded g-resolve No.2
4.5 ulc fuel oils short list. Run naphthalene focusing method 8220 ONLY!
Email results to caldet@alphalab.com, william.schmidt@ransomenv.com, &
jjanus@hilcoanal.com

ANALYSIS
Vocs (8220)
S.VOCs (8220)
Lead

SAMPLE HANDLING

Filtration _____
 Done
 Not needed
 Lab to do
Preservation
 Lab to do
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		

ALPHA Lab ID (Lab Use Only)	Sample ID	Date	Time	Sample Matrix	Sampler's Initials														TOTAL # BOTTLES
<u>24304.21</u>	<u>LS-A-D04-C4-VOC</u>	<u>05/03/23</u>	<u>15:30</u>	<u>S</u>	<u>ND</u>	<u>X</u>													<u>4</u>
<u>22</u>	<u>LS-A-D04-C4-comp</u>	<u>↓</u>	<u>15:30</u>	<u>↓</u>	<u>↓</u>		<u>X</u>	<u>X</u>											<u>2</u>
<u>23</u>	<u>LS-A-D04-C5-VOC</u>	<u>↓</u>	<u>15:35</u>	<u>↓</u>	<u>↓</u>	<u>X</u>													<u>4</u>
<u>24</u>	<u>LS-A-D04-C5-comp</u>	<u>↓</u>	<u>15:35</u>	<u>↓</u>	<u>↓</u>	<u>X</u>	<u>X</u>												<u>2</u>

cut 05/04/23 02:20

Container Type G G G
Preservative FAA

Relinquished By:	Date/Time	Received By:	Date/Time
<u>[Signature]</u>	<u>05/03/23 16:52</u>	<u>[Signature]</u>	<u>5/3/23 16:27</u>
<u>[Signature]</u>	<u>5/3/23 18:00</u>	<u>[Signature]</u>	<u>5/3/23 18:26</u>
<u>[Signature]</u>	<u>5/3/23 2:50</u>	<u>[Signature]</u>	<u>5-3-23 2:00</u>
<u>[Signature]</u>	<u>5/4/23 00:00</u>	<u>[Signature]</u>	<u>5-4-23 00:00</u>

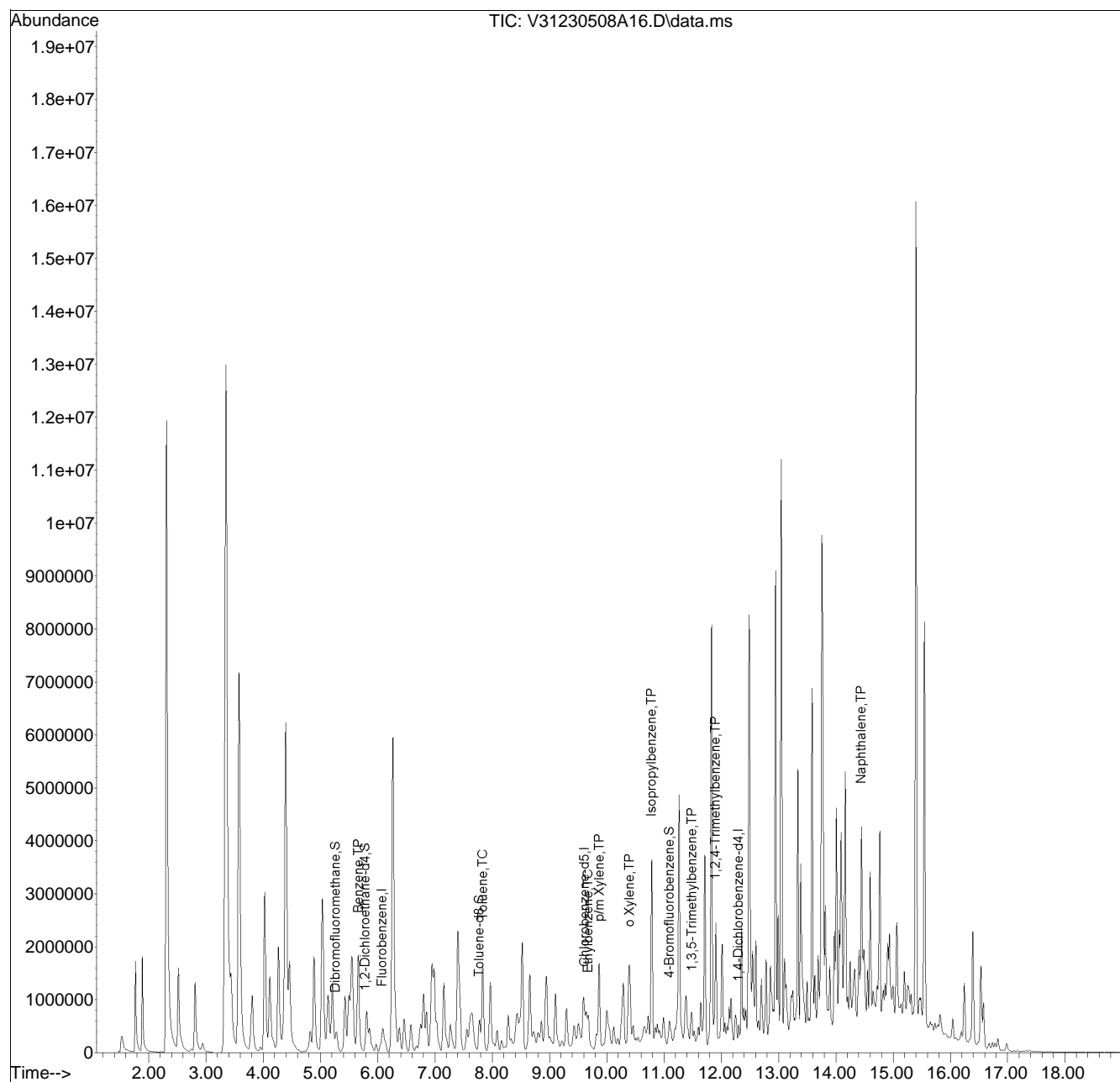
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2023\230508A\
 Data File : V31230508A16.D
 Acq On : 08 May 2023 03:45 pm
 Operator : VOA131:JIC
 Sample : 12324304-01,31,5.80,5,,b
 Misc : WG1776704,ICAL19865
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: May 09 11:36:37 2023
 Quant Method : I:\VOLATILES\VOA131\2023\230508A\V31_230328A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Wed Mar 29 10:40:23 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list08A\V31230508A01.D•

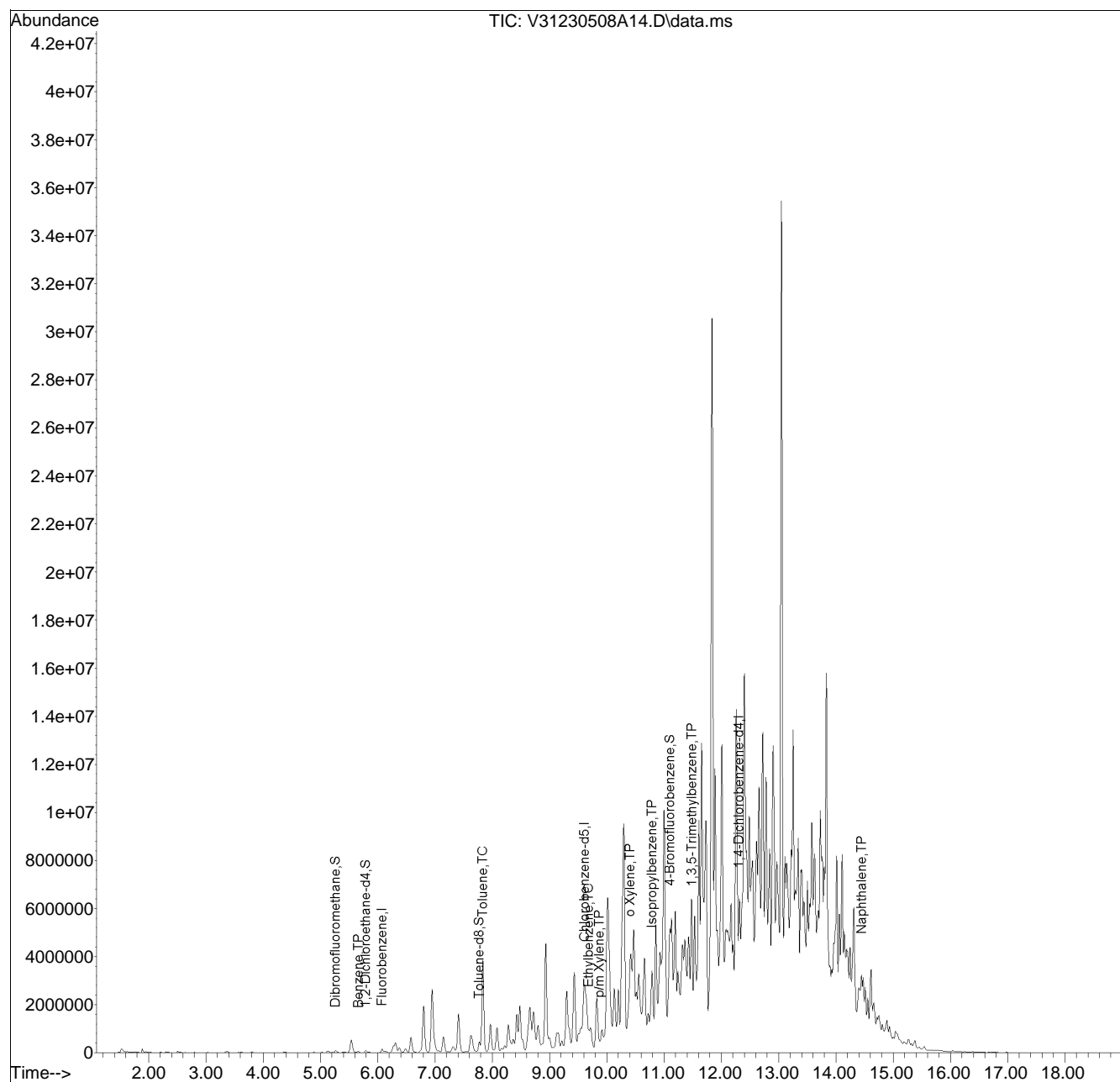


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2023\230508A\
 Data File : V31230508A14.D
 Acq On : 08 May 2023 02:59 pm
 Operator : VOA131:JIC
 Sample : 12324304-21,31,6.42,5,,b
 Misc : WG1776704,ICAL19865
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: May 09 11:36:12 2023
 Quant Method : I:\VOLATILES\VOA131\2023\230508A\V31_230328A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Wed Mar 29 10:40:23 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list08A\V31230508A01.D•





ANALYTICAL REPORT

Lab Number:	L2324723
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/11/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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: 200.00135.023

Lab Number: L2324723

Report Date: 05/11/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2324723-01	LS-A-D05-C1-VOC	SOIL	PHILADELPHIA, PA	05/04/23 10:10	05/04/23
L2324723-02	LS-A-D05-C1-COMP	SOIL	PHILADELPHIA, PA	05/04/23 10:10	05/04/23
L2324723-03	LS-A-D05-C2-VOC	SOIL	PHILADELPHIA, PA	05/04/23 10:20	05/04/23
L2324723-04	LS-A-D05-C2-COMP	SOIL	PHILADELPHIA, PA	05/04/23 10:20	05/04/23
L2324723-05	LS-A-D05-C3-VOC	SOIL	PHILADELPHIA, PA	05/04/23 10:30	05/04/23
L2324723-06	LS-A-D05-C3-COMP	SOIL	PHILADELPHIA, PA	05/04/23 10:30	05/04/23
L2324723-07	LS-A-D05-C4-VOC	SOIL	PHILADELPHIA, PA	05/04/23 10:40	05/04/23
L2324723-08	LS-A-D05-C4-COMP	SOIL	PHILADELPHIA, PA	05/04/23 10:40	05/04/23
L2324723-09	LS-A-D06-C1-VOC	SOIL	PHILADELPHIA, PA	05/04/23 11:40	05/04/23
L2324723-10	LS-A-D06-C1-COMP	SOIL	PHILADELPHIA, PA	05/04/23 11:40	05/04/23
L2324723-11	LS-A-D06-C2-VOC	SOIL	PHILADELPHIA, PA	05/04/23 11:50	05/04/23
L2324723-12	LS-A-D06-C2-COMP	SOIL	PHILADELPHIA, PA	05/04/23 11:50	05/04/23
L2324723-13	LS-A-D06-C3-VOC	SOIL	PHILADELPHIA, PA	05/04/23 12:00	05/04/23
L2324723-14	LS-A-D06-C3-COMP	SOIL	PHILADELPHIA, PA	05/04/23 12:00	05/04/23
L2324723-15	LS-A-D06-C4-VOC	SOIL	PHILADELPHIA, PA	05/04/23 12:15	05/04/23
L2324723-16	LS-A-D06-C4-COMP	SOIL	PHILADELPHIA, PA	05/04/23 12:15	05/04/23
L2324723-17	LS-A-D06-C5-VOC	SOIL	PHILADELPHIA, PA	05/04/23 12:25	05/04/23
L2324723-18	LS-A-D06-C5-COMP	SOIL	PHILADELPHIA, PA	05/04/23 12:25	05/04/23
L2324723-19	LS-A-D07-C1-VOC	SOIL	PHILADELPHIA, PA	05/04/23 14:05	05/04/23
L2324723-20	LS-A-D07-C1-COMP	SOIL	PHILADELPHIA, PA	05/04/23 14:05	05/04/23
L2324723-21	LS-A-D07-C2-VOC	SOIL	PHILADELPHIA, PA	05/04/23 14:15	05/04/23
L2324723-22	LS-A-D07-C2-COMP	SOIL	PHILADELPHIA, PA	05/04/23 14:15	05/04/23
L2324723-23	LS-A-D07-C3-VOC	SOIL	PHILADELPHIA, PA	05/04/23 14:25	05/04/23
L2324723-24	LS-A-D07-C3-COMP	SOIL	PHILADELPHIA, PA	05/04/23 14:25	05/04/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2324723-25	LS-A-D07-C4-VOC	SOIL	PHILADELPHIA, PA	05/04/23 14:35	05/04/23
L2324723-26	LS-A-D07-C4-COMP	SOIL	PHILADELPHIA, PA	05/04/23 14:35	05/04/23
L2324723-27	LS-A-D07-C5-VOC	SOIL	PHILADELPHIA, PA	05/04/23 14:45	05/04/23
L2324723-28	LS-A-D07-C5-COMP	SOIL	PHILADELPHIA, PA	05/04/23 14:45	05/04/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

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
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

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

L2324723-03: The surrogate recovery is outside the method acceptance criteria for 1,2-dichloroethane-d4 (66%) due to interference with the Internal Standard.

L2324723-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (132%); 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.

L2324723-05, -15, -21, -25, and -27: 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.

L2324723-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (152%); 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.

L2324723-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (156%); 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.

L2324723-13D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2324723-13D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (179%); 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.

L2324723-15 and -25: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (137%); 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.

L2324723-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (303%);

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

Case Narrative (continued)

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.

L2324723-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (141%); 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.

L2324723-23: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (206%); 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.

L2324723-27: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (183%); 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.

Semivolatile Organics

L2324723-02D and -22D: The sample has elevated detection limits due to the dilution required by the sample matrix.

Total Metals

The WG1776197-3 MS recovery for lead (0%), performed on L2324723-02, does not apply because the sample concentration is greater than four times the spike amount added.

The WG1776197-4 Laboratory Duplicate RPD for lead (23%), performed on L2324723-02, 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

Title: Technical Director/Representative

Date: 05/11/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-01
 Client ID: LS-A-D05-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 10:10
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/09/23 21:59
 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	0.0032		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	0.0049		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.010		mg/kg	0.00096	0.00014	1
p/m-Xylene	0.011		mg/kg	0.0019	0.00054	1
o-Xylene	0.012		mg/kg	0.00096	0.00028	1
Xylenes, Total	0.023		mg/kg	0.00096	0.00028	1
Isopropylbenzene	0.00049	J	mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	0.012		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.015		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-03
 Client ID: LS-A-D05-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 10:20
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/09/23 21:38
 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	0.00018	1
Benzene	0.00037	J	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00024	1
Toluene	0.00062	J	mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00040	J	mg/kg	0.00091	0.00013	1
p/m-Xylene	0.0018		mg/kg	0.0018	0.00051	1
o-Xylene	0.00069	J	mg/kg	0.00091	0.00027	1
Xylenes, Total	0.0025	J	mg/kg	0.00091	0.00027	1
Isopropylbenzene	0.00043	J	mg/kg	0.00091	0.00010	1
1,3,5-Trimethylbenzene	0.00051	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	66	Q	70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	132	Q	70-130
Dibromofluoromethane	78		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-05
 Client ID: LS-A-D05-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 10:30
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 13:13
 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	0.14	0.014	1
Benzene	0.031	J	mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.072	0.018	1
Toluene	0.050	J	mg/kg	0.072	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	ND		mg/kg	0.072	0.010	1
p/m-Xylene	0.068	J	mg/kg	0.14	0.040	1
o-Xylene	0.12		mg/kg	0.072	0.021	1
Xylenes, Total	0.19	J	mg/kg	0.072	0.021	1
Isopropylbenzene	0.012	J	mg/kg	0.072	0.0078	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	152	Q	70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-07
 Client ID: LS-A-D05-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 10:40
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 13:33
 Analyst: JIC
 Percent Solids: 87%

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	0.013	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.063	0.016	1
Toluene	ND		mg/kg	0.063	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	0.040	J	mg/kg	0.063	0.0089	1
p/m-Xylene	0.46		mg/kg	0.12	0.035	1
o-Xylene	0.11		mg/kg	0.063	0.018	1
Xylenes, Total	0.57		mg/kg	0.063	0.018	1
Isopropylbenzene	4.9		mg/kg	0.063	0.0068	1
1,3,5-Trimethylbenzene	0.45		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	0.27		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	156	Q	70-130
Dibromofluoromethane	85		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-09
 Client ID: LS-A-D06-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 11:40
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 11:15
 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	0.00018	1
Benzene	0.00017	J	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-11
 Client ID: LS-A-D06-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 11:50
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 11:34
 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	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	133	Q	70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-13 D
 Client ID: LS-A-D06-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 12:00
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 13:53
 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	1.2	0.12	10
Benzene	0.21	J	mg/kg	0.30	0.10	10
1,2-Dichloroethane	ND		mg/kg	0.61	0.16	10
Toluene	0.67		mg/kg	0.61	0.33	10
1,2-Dibromoethane	ND		mg/kg	0.30	0.18	10
Ethylbenzene	0.95		mg/kg	0.61	0.086	10
p/m-Xylene	3.1		mg/kg	1.2	0.34	10
o-Xylene	0.68		mg/kg	0.61	0.18	10
Xylenes, Total	3.8		mg/kg	0.61	0.18	10
Isopropylbenzene	20.		mg/kg	0.61	0.067	10
1,3,5-Trimethylbenzene	0.55	J	mg/kg	1.2	0.12	10
1,2,4-Trimethylbenzene	2.0		mg/kg	1.2	0.20	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	179	Q	70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-15
 Client ID: LS-A-D06-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 12:15
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 14:13
 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	0.14	0.014	1
Benzene	0.033	J	mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.068	0.017	1
Toluene	0.041	J	mg/kg	0.068	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	0.17		mg/kg	0.068	0.0096	1
p/m-Xylene	0.12	J	mg/kg	0.14	0.038	1
o-Xylene	0.095		mg/kg	0.068	0.020	1
Xylenes, Total	0.22	J	mg/kg	0.068	0.020	1
Isopropylbenzene	1.2		mg/kg	0.068	0.0074	1
1,3,5-Trimethylbenzene	0.020	J	mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	0.16		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	137	Q	70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-17
 Client ID: LS-A-D06-C5-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 12:25
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 14:32
 Analyst: JIC
 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	0.14	0.014	1
Benzene	0.17		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.068	0.017	1
Toluene	0.56		mg/kg	0.068	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	0.31		mg/kg	0.068	0.0096	1
p/m-Xylene	0.83		mg/kg	0.14	0.038	1
o-Xylene	0.22		mg/kg	0.068	0.020	1
Xylenes, Total	1.0		mg/kg	0.068	0.020	1
Isopropylbenzene	4.3		mg/kg	0.068	0.0074	1
1,3,5-Trimethylbenzene	0.11	J	mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	0.37		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	303	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-19
 Client ID: LS-A-D07-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:05
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 10:55
 Analyst: JIC
 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	0.00018	J	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	131	Q	70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-21
 Client ID: LS-A-D07-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:15
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 14:52
 Analyst: JIC
 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	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	0.015	1
Ethylbenzene	0.0088	J	mg/kg	0.050	0.0071	1
p/m-Xylene	0.053	J	mg/kg	0.10	0.028	1
o-Xylene	0.097		mg/kg	0.050	0.015	1
Xylenes, Total	0.15	J	mg/kg	0.050	0.015	1
Isopropylbenzene	0.64		mg/kg	0.050	0.0055	1
1,3,5-Trimethylbenzene	0.028	J	mg/kg	0.10	0.0097	1
1,2,4-Trimethylbenzene	0.057	J	mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	141	Q	70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-23
 Client ID: LS-A-D07-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:25
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 15:12
 Analyst: JIC
 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	0.47		mg/kg	0.027	0.0090	1
1,2-Dichloroethane	ND		mg/kg	0.054	0.014	1
Toluene	0.14		mg/kg	0.054	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	0.22		mg/kg	0.054	0.0076	1
p/m-Xylene	0.30		mg/kg	0.11	0.030	1
o-Xylene	0.17		mg/kg	0.054	0.016	1
Xylenes, Total	0.47		mg/kg	0.054	0.016	1
Isopropylbenzene	2.2		mg/kg	0.054	0.0059	1
1,3,5-Trimethylbenzene	0.022	J	mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	0.10	J	mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	118		70-130
4-Bromofluorobenzene	206	Q	70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-25
 Client ID: LS-A-D07-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:35
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 15:32
 Analyst: JIC
 Percent Solids: 87%

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	0.017	J	mg/kg	0.025	0.0084	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	0.015	1
Ethylbenzene	0.0089	J	mg/kg	0.050	0.0071	1
p/m-Xylene	0.053	J	mg/kg	0.10	0.028	1
o-Xylene	0.085		mg/kg	0.050	0.015	1
Xylenes, Total	0.14	J	mg/kg	0.050	0.015	1
Isopropylbenzene	0.55		mg/kg	0.050	0.0055	1
1,3,5-Trimethylbenzene	0.026	J	mg/kg	0.10	0.0097	1
1,2,4-Trimethylbenzene	0.062	J	mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	137	Q	70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-27
 Client ID: LS-A-D07-C5-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:45
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/08/23 15:51
 Analyst: JIC
 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	0.096	0.0096	1
Benzene	0.092		mg/kg	0.024	0.0080	1
1,2-Dichloroethane	ND		mg/kg	0.048	0.012	1
Toluene	0.071		mg/kg	0.048	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	0.062		mg/kg	0.048	0.0068	1
p/m-Xylene	0.15		mg/kg	0.096	0.027	1
o-Xylene	0.030	J	mg/kg	0.048	0.014	1
Xylenes, Total	0.18	J	mg/kg	0.048	0.014	1
Isopropylbenzene	0.77		mg/kg	0.048	0.0052	1
1,3,5-Trimethylbenzene	0.20		mg/kg	0.096	0.0092	1
1,2,4-Trimethylbenzene	0.70		mg/kg	0.096	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	183	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/08/23 09:16
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09,11,19 Batch: WG1776758-5					
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	124		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/08/23 09:16
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05,07,13,15,17,21,23,25,27 Batch: WG1776760-5					
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	124		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/09/23 17:05
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03 Batch: WG1777176-5					
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	105		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	108		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09,11,19 Batch: WG1776758-3 WG1776758-4								
Methyl tert butyl ether	123		121		66-130	2		30
Benzene	109		113		70-130	4		30
1,2-Dichloroethane	123		124		70-130	1		30
Toluene	94		97		70-130	3		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	98		101		70-130	3		30
p/m-Xylene	97		99		70-130	2		30
o-Xylene	99		102		70-130	3		30
Isopropylbenzene	97		98		70-130	1		30
1,3,5-Trimethylbenzene	101		102		70-130	1		30
1,2,4-Trimethylbenzene	101		102		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	121		123		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	103		100		70-130
Dibromofluoromethane	106		106		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05,07,13,15,17,21,23,25,27 Batch: WG1776760-3 WG1776760-4								
Methyl tert butyl ether	123		121		66-130	2		30
Benzene	109		113		70-130	4		30
1,2-Dichloroethane	123		124		70-130	1		30
Toluene	94		97		70-130	3		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	98		101		70-130	3		30
p/m-Xylene	97		99		70-130	2		30
o-Xylene	99		102		70-130	3		30
Isopropylbenzene	97		98		70-130	1		30
1,3,5-Trimethylbenzene	101		102		70-130	1		30
1,2,4-Trimethylbenzene	101		102		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	121		123		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	103		100		70-130
Dibromofluoromethane	106		106		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03 Batch: WG1777176-3 WG1777176-4								
Methyl tert butyl ether	91		104		66-130	13		30
Benzene	90		97		70-130	7		30
1,2-Dichloroethane	97		92		70-130	5		30
Toluene	85		86		70-130	1		30
1,2-Dibromoethane	93		97		70-130	4		30
Ethylbenzene	90		92		70-130	2		30
p/m-Xylene	91		92		70-130	1		30
o-Xylene	92		94		70-130	2		30
Isopropylbenzene	88		89		70-130	1		30
1,3,5-Trimethylbenzene	88		88		70-130	0		30
1,2,4-Trimethylbenzene	87		88		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		101		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	94		94		70-130
Dibromofluoromethane	95		110		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-02 D
 Client ID: LS-A-D05-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 10:10
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 14:10
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.25	J	mg/kg	0.38	0.23	10
Fluorene	0.59	J	mg/kg	1.9	0.19	10
Phenanthrene	2.5		mg/kg	1.2	0.23	10
Anthracene	0.65	J	mg/kg	1.2	0.38	10
Pyrene	5.0		mg/kg	1.2	0.19	10
Benzo(a)anthracene	4.2		mg/kg	1.2	0.22	10
Chrysene	8.4		mg/kg	1.2	0.20	10
Benzo(b)fluoranthene	2.6		mg/kg	1.2	0.32	10
Benzo(a)pyrene	3.7		mg/kg	1.5	0.47	10
Benzo(ghi)perylene	2.3		mg/kg	1.5	0.23	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-04
 Client ID: LS-A-D05-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 10:20
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 18:32
 Analyst: LJJ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.074		mg/kg	0.039	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.085	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.13		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.10	J	mg/kg	0.12	0.022	1
Chrysene	0.12		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.11	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.13	J	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	82		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	67		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-06
 Client ID: LS-A-D05-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 10:30
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 18:49
 Analyst: LJJ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.043		mg/kg	0.039	0.024	1
Fluorene	0.10	J	mg/kg	0.19	0.019	1
Phenanthrene	0.53		mg/kg	0.12	0.024	1
Anthracene	0.17		mg/kg	0.12	0.038	1
Pyrene	1.1		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.75		mg/kg	0.12	0.022	1
Chrysene	0.84		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.94		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.77		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	0.51		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-08
 Client ID: LS-A-D05-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 10:40
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 19:06
 Analyst: LJJ
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.037	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.029	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.22		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.12		mg/kg	0.11	0.021	1
Chrysene	0.51		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.31		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.69		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.94		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	36		30-120
4-Terphenyl-d14	28		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-10
 Client ID: LS-A-D06-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 11:40
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 19:22
 Analyst: LJJ
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.057		mg/kg	0.038	0.023	1
Fluorene	0.032	J	mg/kg	0.19	0.019	1
Phenanthrene	0.56		mg/kg	0.11	0.023	1
Anthracene	0.12		mg/kg	0.11	0.037	1
Pyrene	0.49		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.32		mg/kg	0.11	0.022	1
Chrysene	0.32		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.34		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.32		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.21		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-12
 Client ID: LS-A-D06-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 11:50
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 19:39
 Analyst: LJJ
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.76		mg/kg	0.038	0.023	1
Fluorene	0.19		mg/kg	0.19	0.018	1
Phenanthrene	0.62		mg/kg	0.11	0.023	1
Anthracene	0.15		mg/kg	0.11	0.037	1
Pyrene	0.40		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.15		mg/kg	0.11	0.021	1
Chrysene	0.22		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.13		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.19		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	94		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-14
 Client ID: LS-A-D06-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 12:00
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 19:56
 Analyst: LJJ
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	2.2		mg/kg	0.038	0.023	1
Fluorene	0.47		mg/kg	0.19	0.018	1
Phenanthrene	0.76		mg/kg	0.11	0.023	1
Anthracene	0.23		mg/kg	0.11	0.037	1
Pyrene	0.39		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.14		mg/kg	0.11	0.021	1
Chrysene	0.28		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.14		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.25		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.32		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	278	Q	23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	50		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-16
 Client ID: LS-A-D06-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 12:15
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 20:12
 Analyst: LJJ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	3.1		mg/kg	0.039	0.024	1
Fluorene	0.63		mg/kg	0.19	0.019	1
Phenanthrene	1.3		mg/kg	0.12	0.024	1
Anthracene	0.37		mg/kg	0.12	0.038	1
Pyrene	0.79		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.29		mg/kg	0.12	0.022	1
Chrysene	0.54		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.30		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.39		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.34		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	264	Q	23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	53		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-18
 Client ID: LS-A-D06-C5-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 12:25
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 20:29
 Analyst: LJJ
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.6		mg/kg	0.039	0.024	1
Fluorene	0.35		mg/kg	0.19	0.019	1
Phenanthrene	0.76		mg/kg	0.12	0.023	1
Anthracene	0.26		mg/kg	0.12	0.038	1
Pyrene	0.47		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.16		mg/kg	0.12	0.022	1
Chrysene	0.24		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.087	J	mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.18		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.24		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	51		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-20
 Client ID: LS-A-D07-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:05
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 20:46
 Analyst: LJJ
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.69		mg/kg	0.038	0.023	1
Fluorene	0.50		mg/kg	0.19	0.018	1
Phenanthrene	8.7	E	mg/kg	0.11	0.023	1
Anthracene	1.9		mg/kg	0.11	0.037	1
Pyrene	7.1		mg/kg	0.11	0.019	1
Benzo(a)anthracene	3.8		mg/kg	0.11	0.021	1
Chrysene	3.5		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	3.9		mg/kg	0.11	0.032	1
Benzo(a)pyrene	3.7		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	1.5		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	53		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-20 D
 Client ID: LS-A-D07-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:05
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 14:27
 Analyst: JG
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenanthrene	8.9		mg/kg	1.1	0.23	10

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-22 D
 Client ID: LS-A-D07-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:15
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 14:44
 Analyst: JG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.41		mg/kg	0.37	0.22	10
Fluorene	3.6		mg/kg	1.8	0.18	10
Phenanthrene	9.7		mg/kg	1.1	0.22	10
Anthracene	2.5		mg/kg	1.1	0.36	10
Pyrene	4.7		mg/kg	1.1	0.18	10
Benzo(a)anthracene	0.71	J	mg/kg	1.1	0.21	10
Chrysene	0.82	J	mg/kg	1.1	0.19	10
Benzo(b)fluoranthene	0.40	J	mg/kg	1.1	0.31	10
Benzo(a)pyrene	0.54	J	mg/kg	1.5	0.45	10
Benzo(ghi)perylene	0.36	J	mg/kg	1.5	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-24
 Client ID: LS-A-D07-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:25
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 21:19
 Analyst: LJJ
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.036	0.022	1
Fluorene	1.1		mg/kg	0.18	0.017	1
Phenanthrene	1.4		mg/kg	0.11	0.022	1
Anthracene	0.23		mg/kg	0.11	0.035	1
Pyrene	0.32		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.092	J	mg/kg	0.11	0.020	1
Chrysene	0.30		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	0.044	1
Benzo(ghi)perylene	0.15		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	46		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-26
 Client ID: LS-A-D07-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:35
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 21:36
 Analyst: LJJ
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:37

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	0.69		mg/kg	0.19	0.018	1
Phenanthrene	1.7		mg/kg	0.11	0.023	1
Anthracene	0.38		mg/kg	0.11	0.037	1
Pyrene	0.70		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.12		mg/kg	0.11	0.021	1
Chrysene	0.15		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.075	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.11	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.10	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	51		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-28
 Client ID: LS-A-D07-C5-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 14:45
 Date Received: 05/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/10/23 21:53
 Analyst: LJJ
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/06/23 20:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.23		mg/kg	0.037	0.022	1
Fluorene	0.23		mg/kg	0.18	0.018	1
Phenanthrene	0.65		mg/kg	0.11	0.022	1
Anthracene	0.13		mg/kg	0.11	0.036	1
Pyrene	0.65		mg/kg	0.11	0.018	1
Benzo(a)anthracene	1.5		mg/kg	0.11	0.021	1
Chrysene	3.1		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.91		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.90		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.38		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/10/23 12:25
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 05/06/23 20:34

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1775746-1					
Naphthalene	ND		mg/kg	0.033	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	57		23-120
2-Fluorobiphenyl	49		30-120
4-Terphenyl-d14	50		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2324723

Report Date: 05/11/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1775746-2 WG1775746-3								
Naphthalene	62		63		40-140	2		50
Fluorene	63		65		40-140	3		50
Phenanthrene	65		66		40-140	2		50
Anthracene	66		68		40-140	3		50
Pyrene	66		67		35-142	2		50
Benzo(a)anthracene	70		73		40-140	4		50
Chrysene	67		68		40-140	1		50
Benzo(b)fluoranthene	65		75		40-140	14		50
Benzo(a)pyrene	74		83		40-140	11		50
Benzo(ghi)perylene	64		69		40-140	8		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	76		72		23-120
2-Fluorobiphenyl	65		64		30-120
4-Terphenyl-d14	60		57		18-120

METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-02

Date Collected: 05/04/23 10:10

Client ID: LS-A-D05-C1-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	488		mg/kg	2.34	0.125	1	05/10/23 09:21	05/10/23 19:00	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-04

Date Collected: 05/04/23 10:20

Client ID: LS-A-D05-C2-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	53.7		mg/kg	2.27	0.122	1	05/10/23 09:21	05/10/23 19:25	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-06

Date Collected: 05/04/23 10:30

Client ID: LS-A-D05-C3-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	122		mg/kg	2.34	0.125	1	05/10/23 09:21	05/10/23 19:28	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-08

Date Collected: 05/04/23 10:40

Client ID: LS-A-D05-C4-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	36.9		mg/kg	2.18	0.117	1	05/10/23 09:21	05/10/23 19:31	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-10

Date Collected: 05/04/23 11:40

Client ID: LS-A-D06-C1-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	156		mg/kg	2.24	0.120	1	05/10/23 09:21	05/10/23 19:58	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-12

Date Collected: 05/04/23 11:50

Client ID: LS-A-D06-C2-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	194		mg/kg	2.27	0.121	1	05/10/23 09:21	05/10/23 20:04	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-14

Date Collected: 05/04/23 12:00

Client ID: LS-A-D06-C3-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	684		mg/kg	2.22	0.119	1	05/10/23 09:21	05/10/23 20:08	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-16

Date Collected: 05/04/23 12:15

Client ID: LS-A-D06-C4-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	158		mg/kg	2.31	0.124	1	05/10/23 09:21	05/10/23 20:11	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-18

Date Collected: 05/04/23 12:25

Client ID: LS-A-D06-C5-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	489		mg/kg	2.32	0.124	1	05/10/23 09:21	05/10/23 20:20	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-20

Date Collected: 05/04/23 14:05

Client ID: LS-A-D07-C1-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	274		mg/kg	2.25	0.121	1	05/10/23 09:21	05/10/23 20:23	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-22

Date Collected: 05/04/23 14:15

Client ID: LS-A-D07-C2-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	145		mg/kg	2.09	0.112	1	05/10/23 09:21	05/10/23 20:26	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-24

Date Collected: 05/04/23 14:25

Client ID: LS-A-D07-C3-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	177		mg/kg	2.11	0.113	1	05/10/23 09:21	05/10/23 20:29	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-26

Date Collected: 05/04/23 14:35

Client ID: LS-A-D07-C4-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	70.6		mg/kg	2.15	0.115	1	05/10/23 09:21	05/10/23 20:57	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-28

Date Collected: 05/04/23 14:45

Client ID: LS-A-D07-C5-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	104		mg/kg	2.12	0.114	1	05/10/23 09:21	05/10/23 21:00	EPA 3050B	1,6010D	TAA



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

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): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1776197-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/10/23 09:21	05/10/23 18:54	1,6010D	TAA

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1776197-2 SRM Lot Number: D119-540								
Lead, Total	98		-		82-118			-

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1776197-3 QC Sample: L2324723-02 Client ID: LS-A-D05-C1-COMP												
Lead, Total	488	48	246	0	Q	-	-		75-125	-		20



Lab Duplicate Analysis *Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2324723

Report Date: 05/11/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1776197-4 QC Sample: L2324723-02 Client ID: LS-A-D05-C1-COMP						
Lead, Total	488	386	mg/kg	23	Q	20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-01

Date Collected: 05/04/23 10:10

Client ID: LS-A-D05-C1-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-02

Date Collected: 05/04/23 10:10

Client ID: LS-A-D05-C1-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-03

Date Collected: 05/04/23 10:20

Client ID: LS-A-D05-C2-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**SAMPLE RESULTS**

Lab ID: L2324723-04

Date Collected: 05/04/23 10:20

Client ID: LS-A-D05-C2-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-05

Date Collected: 05/04/23 10:30

Client ID: LS-A-D05-C3-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	84.1		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-06

Date Collected: 05/04/23 10:30

Client ID: LS-A-D05-C3-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-07

Date Collected: 05/04/23 10:40

Client ID: LS-A-D05-C4-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	86.7		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-08
Client ID: LS-A-D05-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 10:40
Date Received: 05/04/23
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	88.3		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-09

Date Collected: 05/04/23 11:40

Client ID: LS-A-D06-C1-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	85.6		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-10

Date Collected: 05/04/23 11:40

Client ID: LS-A-D06-C1-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	85.6		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-11
Client ID: LS-A-D06-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 11:50
Date Received: 05/04/23
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	87.3		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-12

Date Collected: 05/04/23 11:50

Client ID: LS-A-D06-C2-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-13
Client ID: LS-A-D06-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/04/23 12:00
Date Received: 05/04/23
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	86.0		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**SAMPLE RESULTS**

Lab ID: L2324723-14

Date Collected: 05/04/23 12:00

Client ID: LS-A-D06-C3-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	86.8		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-15

Date Collected: 05/04/23 12:15

Client ID: LS-A-D06-C4-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	86.2		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**SAMPLE RESULTS**

Lab ID: L2324723-16

Date Collected: 05/04/23 12:15

Client ID: LS-A-D06-C4-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-17

Date Collected: 05/04/23 12:25

Client ID: LS-A-D06-C5-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**SAMPLE RESULTS**

Lab ID: L2324723-18

Date Collected: 05/04/23 12:25

Client ID: LS-A-D06-C5-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	84.4		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-19

Date Collected: 05/04/23 14:05

Client ID: LS-A-D07-C1-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	88.4		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-20

Date Collected: 05/04/23 14:05

Client ID: LS-A-D07-C1-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	86.7		%	0.100	NA	1	-	05/05/23 14:23	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**SAMPLE RESULTS**

Lab ID: L2324723-21

Date Collected: 05/04/23 14:15

Client ID: LS-A-D07-C2-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	89.9		%	0.100	NA	1	-	05/05/23 14:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-22

Date Collected: 05/04/23 14:15

Client ID: LS-A-D07-C2-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-23

Date Collected: 05/04/23 14:25

Client ID: LS-A-D07-C3-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	89.3		%	0.100	NA	1	-	05/05/23 14:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**SAMPLE RESULTS**

Lab ID: L2324723-24

Date Collected: 05/04/23 14:25

Client ID: LS-A-D07-C3-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	90.9		%	0.100	NA	1	-	05/05/23 14:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-25

Date Collected: 05/04/23 14:35

Client ID: LS-A-D07-C4-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	87.1		%	0.100	NA	1	-	05/05/23 14:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

SAMPLE RESULTS

Lab ID: L2324723-26

Date Collected: 05/04/23 14:35

Client ID: LS-A-D07-C4-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	87.5		%	0.100	NA	1	-	05/05/23 14:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**SAMPLE RESULTS**

Lab ID: L2324723-27

Date Collected: 05/04/23 14:45

Client ID: LS-A-D07-C5-VOC

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	-	05/05/23 14:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**SAMPLE RESULTS**

Lab ID: L2324723-28

Date Collected: 05/04/23 14:45

Client ID: LS-A-D07-C5-COMP

Date Received: 05/04/23

Sample Location: PHILADELPHIA, PA

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	89.0		%	0.100	NA	1	-	05/05/23 14:33	121,2540G	ROI



Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2324723

Report Date: 05/11/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1775186-1 QC Sample: L2324723-01 Client ID: LS-A-D05-C1-VOC						
Solids, Total	85.5	85.3	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 21-28 QC Batch ID: WG1775189-1 QC Sample: L2324518-01 Client ID: DUP Sample						
Solids, Total	91.0	91.0	%	0		20



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**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(*)
L2324723-01A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-01B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-01C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-01D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-02B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-03A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-03B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-03C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-03D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-04B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-05A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-05B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-05C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-05D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-06B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-07A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-07B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-07C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-07D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2324723-08B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-09A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-09B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-09C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-09D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-10B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-11A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-11B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-11C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-11D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-12B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-13A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-13B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-13C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-13D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-14B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-15A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-15B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-15C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-15D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-16B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-17A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-17B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-17C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2324723**Project Number:** 200.00135.023**Report Date:** 05/11/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2324723-17D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-18B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-19A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-19B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-19C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-19D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-20B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-21A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-21B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-21C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-21D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-22B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-23A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-23B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-23C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-23D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-24A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-24B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-25A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2324723-25B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-25C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-25D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-26A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-26B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2324723-27A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Serial_No:05112318:00
Lab Number: L2324723
Report Date: 05/11/23

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2324723-27B	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-27C	Vial water preserved	A	NA		3.6	Y	Absent	05-MAY-23 09:25	PA-8260HLW(14)
L2324723-27D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2324723-28A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2324723-28B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

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.

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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

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Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2324723
Report Date: 05/11/23

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.)

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Project Name: PHILADELPHIA REFINERY

Lab Number: L2324723

Project Number: 200.00135.023

Report Date: 05/11/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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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WESTBORO, 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 #: 200.00135.023
Project Manager: William Schmidt
ALPHA Quote #: 18559

Date Rec'd in Lab: 5/5/23

ALPHA Job #: L2324723

Report Information - Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #:

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

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)

Date Due: Time:

Regulatory Requirements/Report Limits

State /Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project specific analysis list of PADEP listed/unlisted gas/volat
No. 2,4,5,6 fuel oils, chrostat, then naphthalene using method 8270 ONLY!
Email results to ed@terraphase.com, william.schmidt@ransomenv.com, &
jjsray@nikoglobal.com

ANALYSIS											TOTAL # BOTTLES	
VOCs (8260)											SAMPLE HANDLING Filtration _____ <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below) Sample Specific Comments	4
SVDLs (8270)												2
Lead												4
												2
												4
												2
												4
												2
												4
												2
												4
												2
												4
												2

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials															
		Date	Time																	
<u>24723-11</u>	<u>LS-A-D06-C2-VOC</u>	<u>05/04/23</u>	<u>11:50</u>	<u>S</u>	<u>ND</u>	X														
<u>-12</u>	<u>LS-A-D06-C2-comp</u>		<u>11:50</u>				X	X												
<u>-13</u>	<u>LS-A-D06-C3-VOC</u>		<u>12:00</u>			X														
<u>-14</u>	<u>LS-A-D06-C3-comp</u>		<u>12:00</u>				X	X												
<u>-15</u>	<u>LS-A-D06-C4-VOC</u>		<u>12:15</u>			X														
<u>-16</u>	<u>LS-A-D06-C4-comp</u>		<u>12:15</u>				X	X												
<u>-17</u>	<u>LS-A-D06-C5-VOC</u>		<u>12:25</u>			X														
<u>-18</u>	<u>LS-A-D06-C5-comp</u>		<u>12:25</u>				X	X												
<u>-19</u>	<u>LS-A-D07-C1-VOC</u>		<u>14:05</u>			X														
<u>-20</u>	<u>LS-A-D07-C1-comp</u>		<u>14:05</u>				X	X												

Container Type G G G
Preservative F P 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 Terms and Conditions. See reverse side.

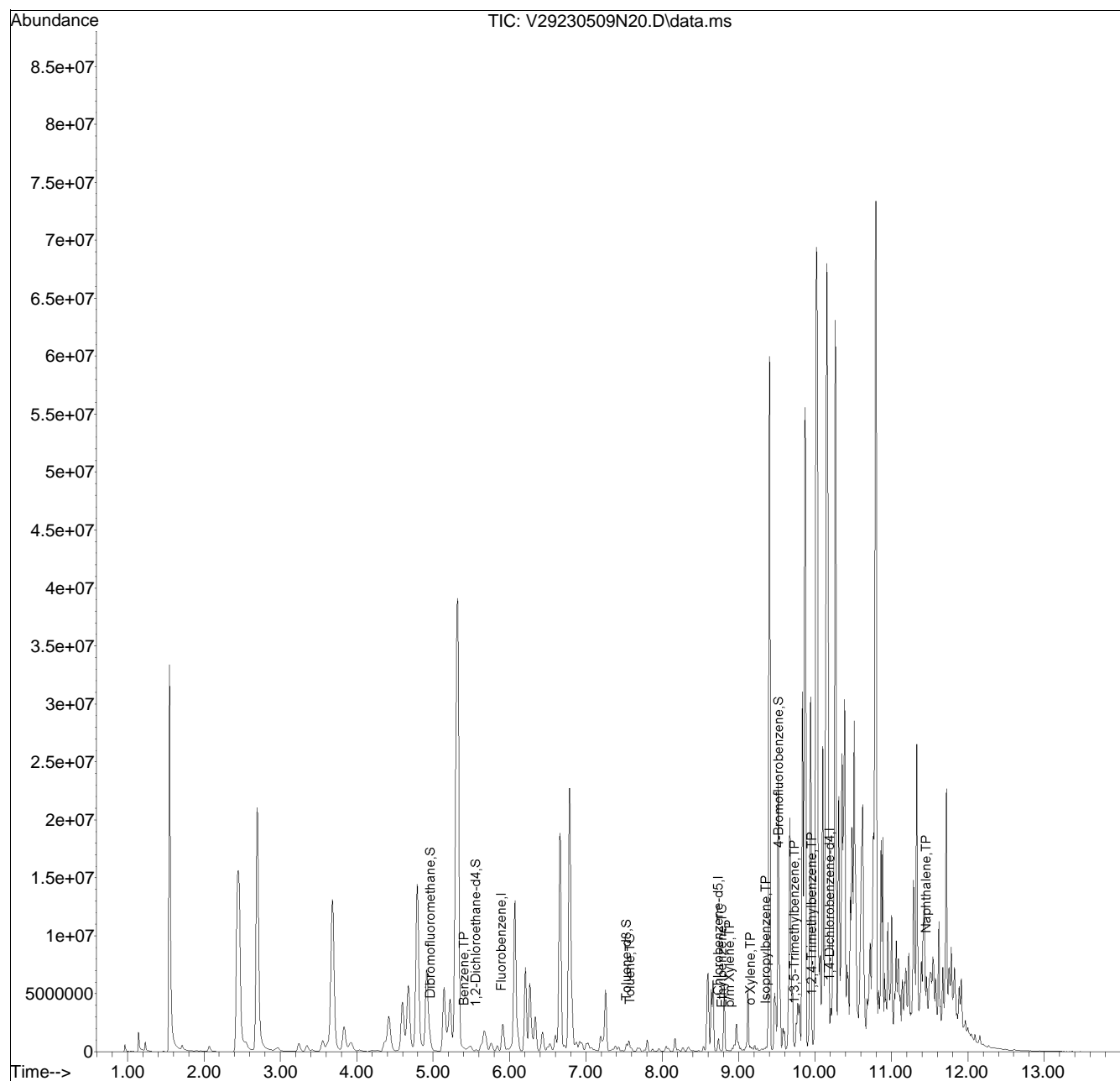
Relinquished By:	Date/Time	Received By:	Date/Time
<u>Nick D...</u>	<u>05/04/23 16:30</u>	<u>RWS</u>	<u>5/4 16:30</u>
<u>[Signature]</u>	<u>5-4 1800</u>	<u>ASL</u>	<u>5/4/23 18:00</u>
<u>[Signature]</u>	<u>5/4/23 21:00</u>	<u>[Signature]</u>	<u>5-4-23 21:00</u>
<u>[Signature]</u>	<u>5/5/23 11:00</u>	<u>[Signature]</u>	<u>5-5-23 01:00</u>

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230509N\
Data File : V29230509N20.D
Acq On : 09 May 2023 09:38 pm
Operator : VOA129:JIC
Sample : L2324723-03,31,6.38,5,,B
Misc : WG1777176,ICAL19799
ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 10 10:26:39 2023
Quant Method : I:\VOLATILES\VOA129\2023\230509N\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list09N\V29230509N01.D•

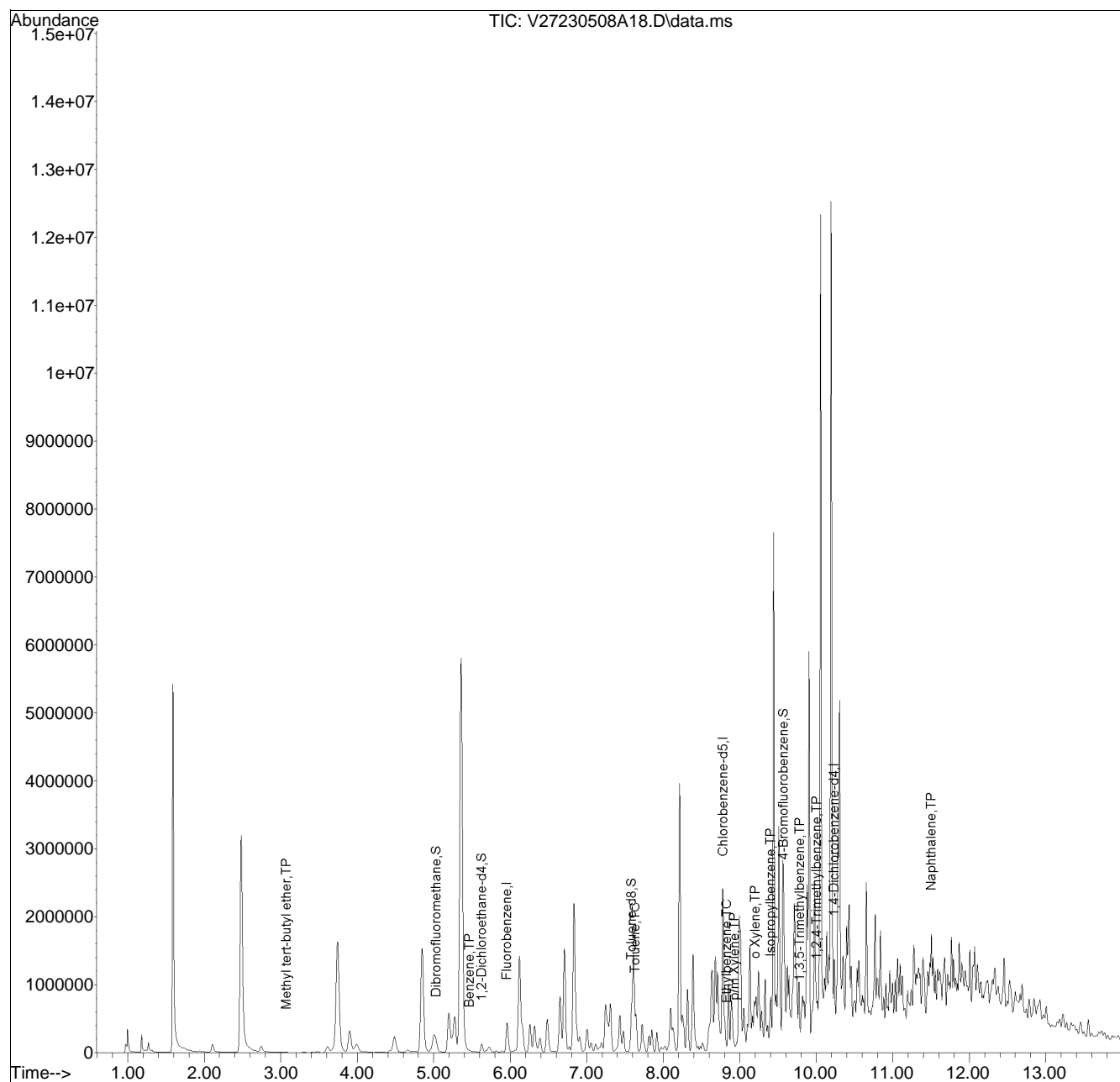


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230508A\
 Data File : V27230508A18.D
 Acq On : 08 May 2023 01:13 pm
 Operator : VOA127:JIC
 Sample : L2324723-05,31H,4.75,5,0.100,,A
 Misc : WG1776760,ICAL19866
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: May 09 11:55:33 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230508A\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 list08A\V27230508A03.D•

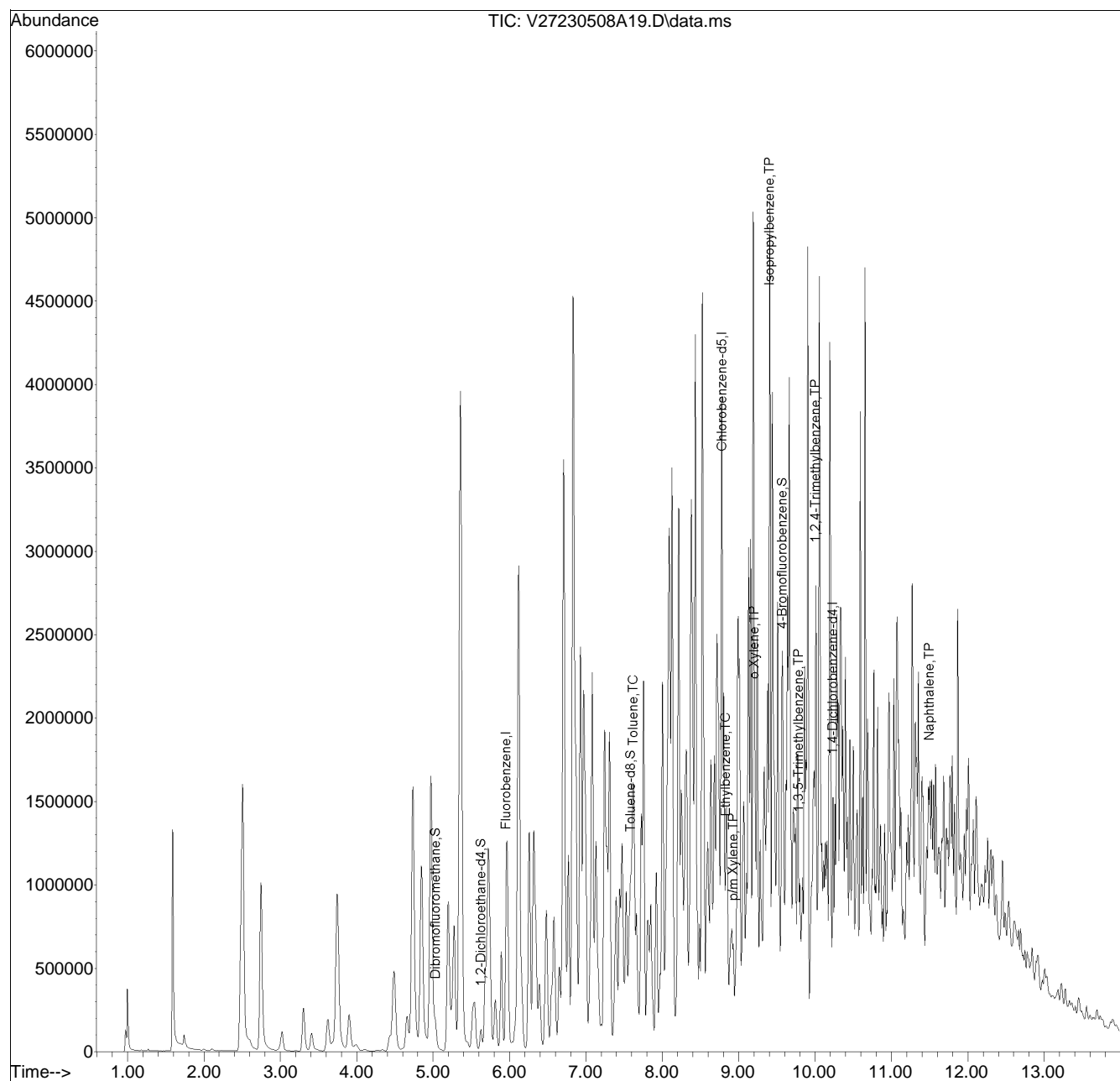


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230508A\
Data File : V27230508A19.D
Acq On : 08 May 2023 01:33 pm
Operator : VOA127:JIC
Sample : L2324723-07,31H,5.22,5,0.100,,A
Misc : WG1776760,ICAL19866
ALS Vial : 19 Sample Multiplier: 1

Quant Time: May 09 11:55:46 2023
Quant Method : I:\VOLATILES\VOA127\2023\230508A\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 list08A\V27230508A03.D•

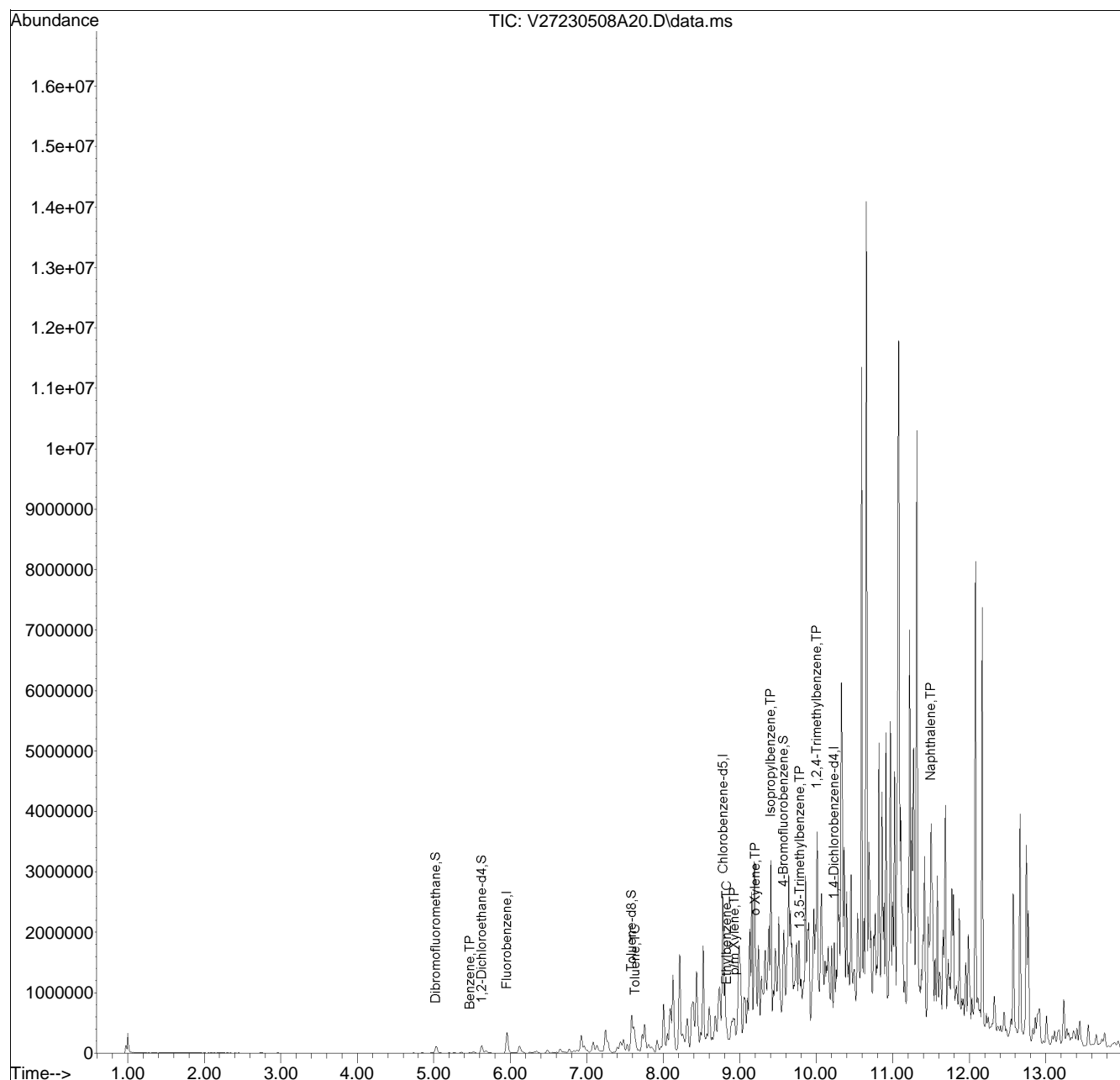


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230508A\
 Data File : V27230508A20.D
 Acq On : 08 May 2023 01:53 pm
 Operator : VOA127:JIC
 Sample : L2324723-13D,31H,5.48,5,0.01,,A
 Misc : WG1776760,ICAL19866
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 09 11:55:58 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230508A\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 list08A\V27230508A03.D•

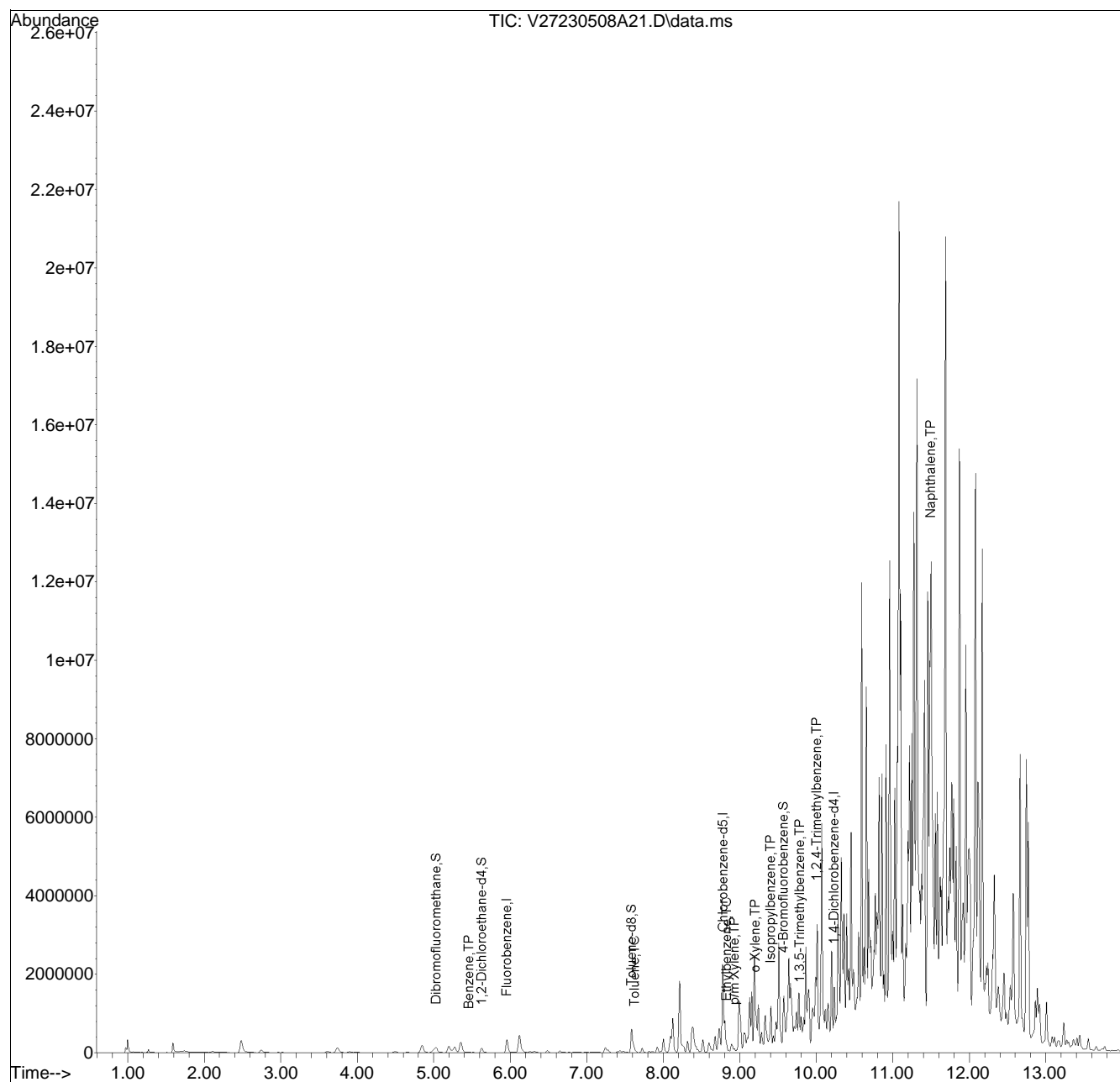


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230508A\
 Data File : V27230508A21.D
 Acq On : 08 May 2023 02:13 pm
 Operator : VOA127:JIC
 Sample : L2324723-15,31H,4.84,5,0.100,,A
 Misc : WG1776760,ICAL19866
 ALS Vial : 21 Sample Multiplier: 1

Quant Time: May 09 11:56:28 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230508A\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 list08A\V27230508A03.D•

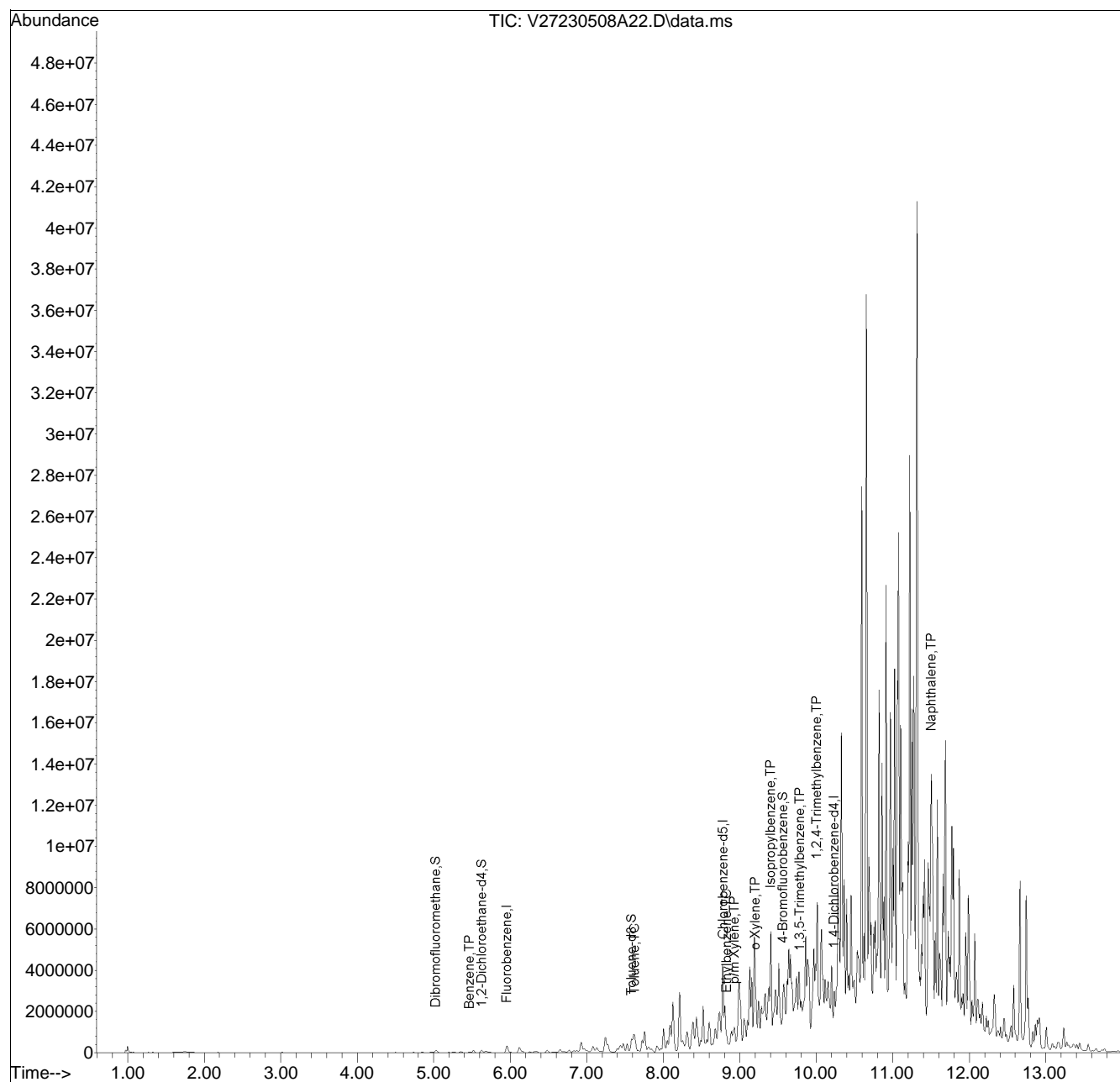


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230508A\
 Data File : V27230508A22.D
 Acq On : 08 May 2023 02:32 pm
 Operator : VOA127:JIC
 Sample : L2324723-17,31H,5.18,5,0.100,,A
 Misc : WG1776760,ICAL19866
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 09 11:56:39 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230508A\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 list08A\V27230508A03.D•

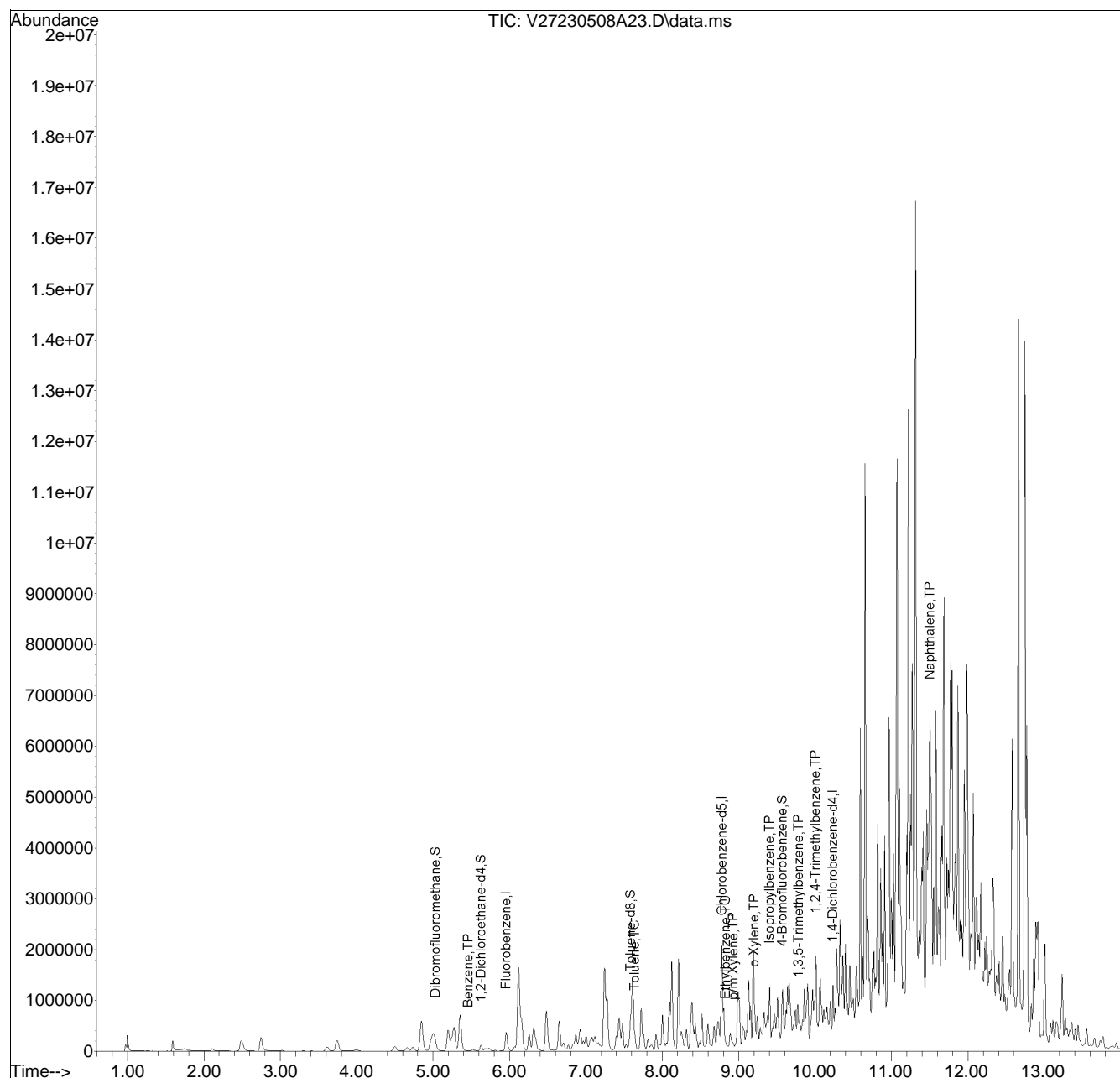


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230508A\
 Data File : V27230508A23.D
 Acq On : 08 May 2023 02:52 pm
 Operator : VOA127:JIC
 Sample : L2324723-21,31H,6.23,5,0.100,,A
 Misc : WG1776760,ICAL19866
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: May 09 11:57:06 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230508A\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 list08A\V27230508A03.D•

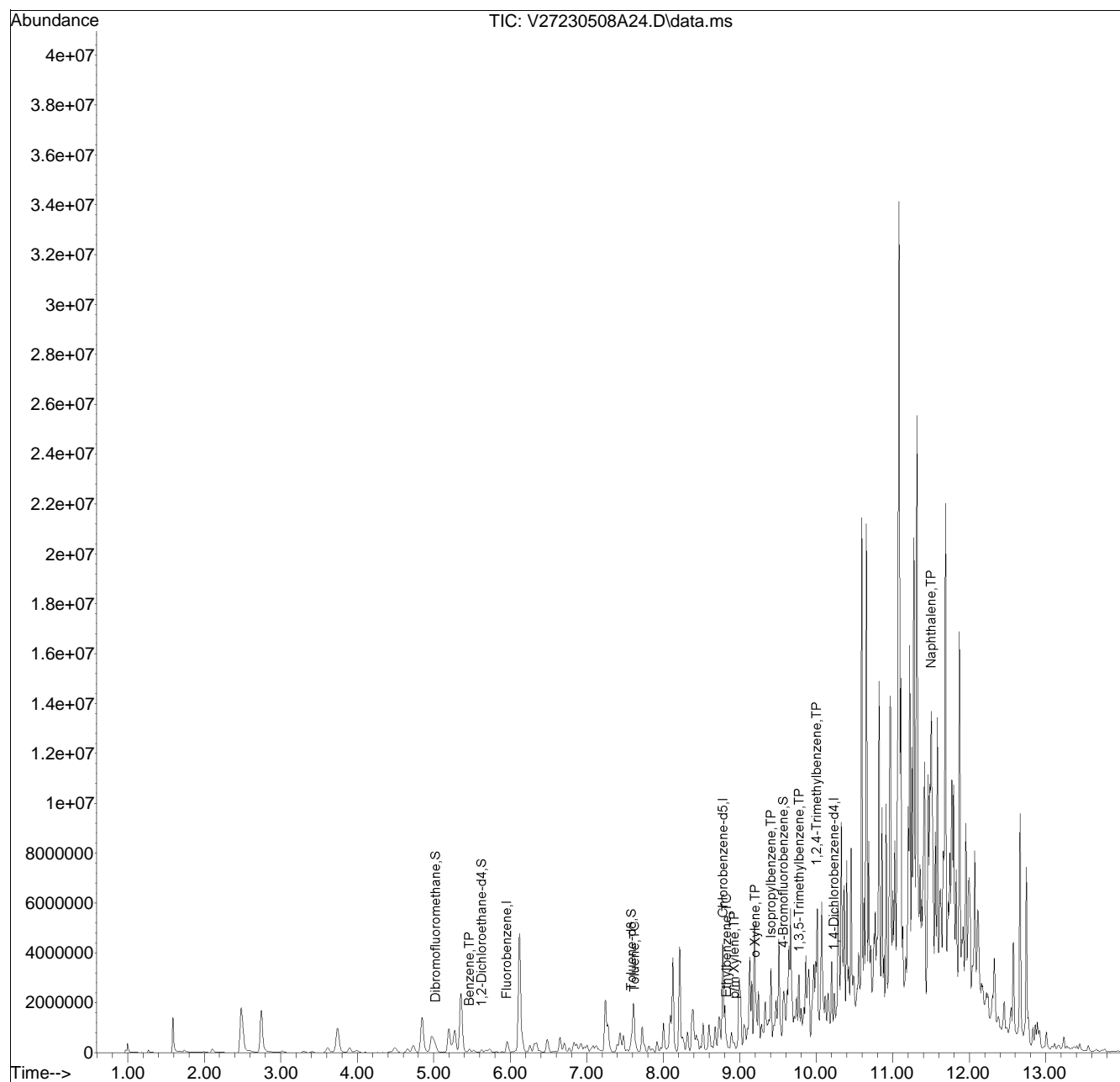


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230508A\
 Data File : V27230508A24.D
 Acq On : 08 May 2023 03:12 pm
 Operator : VOA127:JIC
 Sample : L2324723-23,31H,5.84,5,0.100,,A
 Misc : WG1776760,ICAL19866
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: May 09 11:57:29 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230508A\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 list08A\V27230508A03.D•

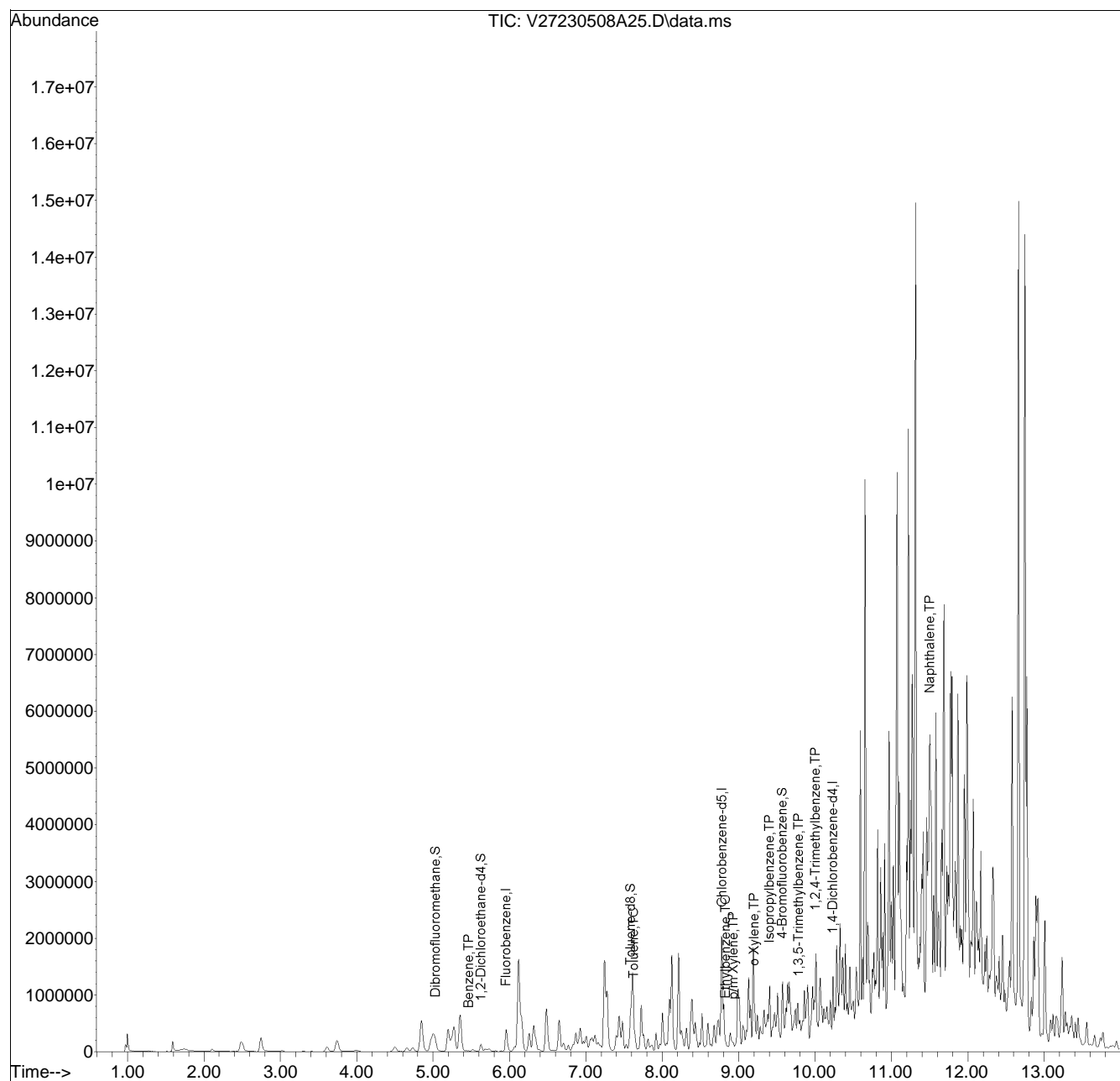


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230508A\
Data File : V27230508A25.D
Acq On : 08 May 2023 03:32 pm
Operator : VOA127:JIC
Sample : L2324723-25,31H,6.66,5,0.100,,A
Misc : WG1776760,ICAL19866
ALS Vial : 25 Sample Multiplier: 1

Quant Time: May 09 11:58:06 2023
Quant Method : I:\VOLATILES\VOA127\2023\230508A\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 list08A\V27230508A03.D•

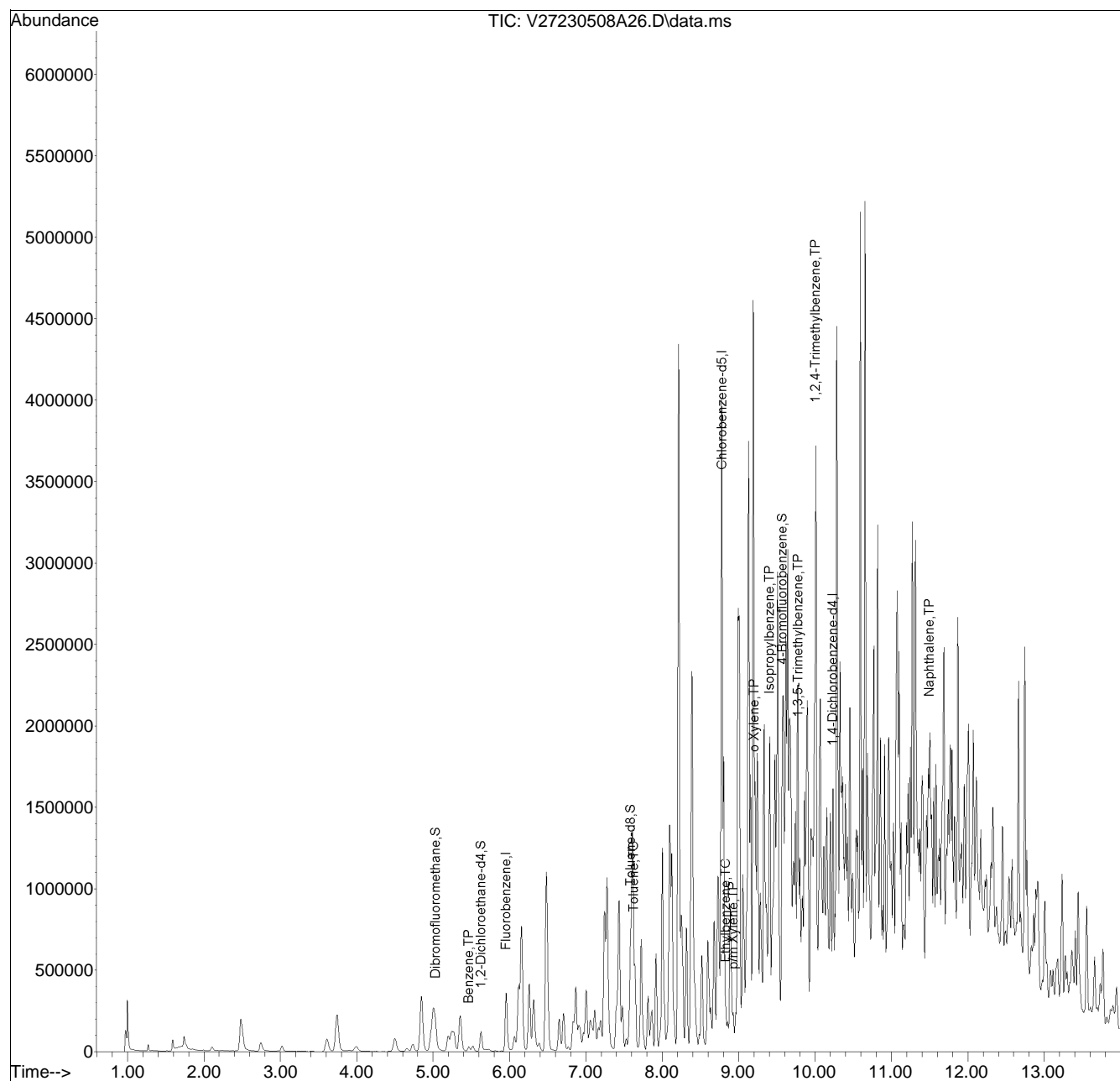


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230508A\
 Data File : V27230508A26.D
 Acq On : 08 May 2023 03:51 pm
 Operator : VOA127:JIC
 Sample : L2324723-27,31H,6.69,5,0.100,,A
 Misc : WG1776760,ICAL19866
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: May 09 11:58:19 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230508A\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 list08A\V27230508A03.D•





ANALYTICAL REPORT

Lab Number:	L2325026
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/12/23

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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: 200.00135.023

Lab Number: L2325026

Report Date: 05/12/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2325026-01	LS-A-E02-C1-VOC	SOIL	PHILADELPHIA, PA	05/05/23 08:15	05/05/23
L2325026-02	LS-A-E02-C1-COMP	SOIL	PHILADELPHIA, PA	05/05/23 08:15	05/05/23
L2325026-03	LS-A-E02-C2-VOC	SOIL	PHILADELPHIA, PA	05/05/23 08:30	05/05/23
L2325026-04	LS-A-E02-C2-COMP	SOIL	PHILADELPHIA, PA	05/05/23 08:30	05/05/23
L2325026-05	LS-A-E02-C3-VOC	SOIL	PHILADELPHIA, PA	05/05/23 08:45	05/05/23
L2325026-06	LS-A-E02-C3-COMP	SOIL	PHILADELPHIA, PA	05/05/23 08:45	05/05/23
L2325026-07	LS-A-E02-C4-VOC	SOIL	PHILADELPHIA, PA	05/05/23 09:00	05/05/23
L2325026-08	LS-A-E02-C4-COMP	SOIL	PHILADELPHIA, PA	05/05/23 09:00	05/05/23
L2325026-09	LS-A-E02-C5-VOC	SOIL	PHILADELPHIA, PA	05/05/23 09:10	05/05/23
L2325026-10	LS-A-E02-C5-COMP	SOIL	PHILADELPHIA, PA	05/05/23 09:10	05/05/23
L2325026-11	LS-A-E03-C1-VOC	SOIL	PHILADELPHIA, PA	05/05/23 09:30	05/05/23
L2325026-12	LS-A-E03-C1-COMP	SOIL	PHILADELPHIA, PA	05/05/23 09:30	05/05/23
L2325026-13	LS-A-E03-C2-VOC	SOIL	PHILADELPHIA, PA	05/05/23 09:50	05/05/23
L2325026-14	LS-A-E03-C2-COMP	SOIL	PHILADELPHIA, PA	05/05/23 09:50	05/05/23
L2325026-15	LS-A-E03-C3-VOC	SOIL	PHILADELPHIA, PA	05/05/23 10:10	05/05/23
L2325026-16	LS-A-E03-C3-COMP	SOIL	PHILADELPHIA, PA	05/05/23 10:10	05/05/23
L2325026-17	LS-A-E03-C4-VOC	SOIL	PHILADELPHIA, PA	05/05/23 10:30	05/05/23
L2325026-18	LS-A-E03-C4-COMP	SOIL	PHILADELPHIA, PA	05/05/23 10:30	05/05/23
L2325026-19	LS-A-E03-C5-VOC	SOIL	PHILADELPHIA, PA	05/05/23 10:45	05/05/23
L2325026-20	LS-A-E03-C5-COMP	SOIL	PHILADELPHIA, PA	05/05/23 10:45	05/05/23
L2325026-21	LS-A-E04-C1-VOC	SOIL	PHILADELPHIA, PA	05/05/23 11:00	05/05/23
L2325026-22	LS-A-E04-C1-COMP	SOIL	PHILADELPHIA, PA	05/05/23 11:00	05/05/23
L2325026-23	LS-A-E04-C2-VOC	SOIL	PHILADELPHIA, PA	05/05/23 11:10	05/05/23
L2325026-24	LS-A-E04-C2-COMP	SOIL	PHILADELPHIA, PA	05/05/23 11:10	05/05/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2325026-25	LS-A-E05-C1-VOC	SOIL	PHILADELPHIA, PA	05/05/23 12:20	05/05/23
L2325026-26	LS-A-E05-C1-COMP	SOIL	PHILADELPHIA, PA	05/05/23 12:20	05/05/23
L2325026-27	LS-A-E05-C2-VOC	SOIL	PHILADELPHIA, PA	05/05/23 12:35	05/05/23
L2325026-28	LS-A-E05-C2-COMP	SOIL	PHILADELPHIA, PA	05/05/23 12:35	05/05/23
L2325026-29	LS-A-E05-C3-VOC	SOIL	PHILADELPHIA, PA	05/05/23 12:50	05/05/23
L2325026-30	LS-A-E05-C3-COMP	SOIL	PHILADELPHIA, PA	05/05/23 12:50	05/05/23
L2325026-31	LS-B-E01-C1-VOC	SOIL	PHILADELPHIA, PA	05/05/23 14:00	05/05/23
L2325026-32	LS-B-E01-C1-COMP	SOIL	PHILADELPHIA, PA	05/05/23 14:00	05/05/23
L2325026-33	LS-B-E01-C2-VOC	SOIL	PHILADELPHIA, PA	05/05/23 14:20	05/05/23
L2325026-34	LS-B-E01-C2-COMP	SOIL	PHILADELPHIA, PA	05/05/23 14:20	05/05/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

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
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

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

L2325026-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (148%); 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.

L2325026-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (175%); 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.

L2325026-09, -15, -17, -19, and -31: 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.

L2325026-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (147%); 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.

L2325026-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (143%); 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.

L2325026-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (154%); 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.

L2325026-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (157%); 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.

L2325026-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (159%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

Case Narrative (continued)

chromatogram is included as an attachment to this report.

L2325026-23: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (142%); 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.

L2325026-31: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (181%); 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.

L2325026-33: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (185%); 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.

PAHs

L2325026-08D, -10D, -16D, -18D, -20D, -22D, -24D, -26D, -28D, and -30D: 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:



Kelly O'Neill

Title: Technical Director/Representative

Date: 05/12/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-01
 Client ID: LS-A-E02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 08:15
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/10/23 21:09
 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	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-03
 Client ID: LS-A-E02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 08:30
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/10/23 21:36
 Analyst: AJK
 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	0.0020	0.00020	1
Benzene	0.00032	J	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	112		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-05
 Client ID: LS-A-E02-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 08:45
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/10/23 22:04
 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	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00041	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00082	0.00021	1
Toluene	ND		mg/kg	0.00082	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00041	0.00024	1
Ethylbenzene	ND		mg/kg	0.00082	0.00012	1
p/m-Xylene	ND		mg/kg	0.0016	0.00046	1
o-Xylene	ND		mg/kg	0.00082	0.00024	1
Xylenes, Total	ND		mg/kg	0.00082	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00082	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-07
 Client ID: LS-A-E02-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 09:00
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/10/23 22:31
 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	0.0012		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	0.00053	J	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	0.00064	J	mg/kg	0.0019	0.00054	1
o-Xylene	0.00030	J	mg/kg	0.00097	0.00028	1
Xylenes, Total	0.00094	J	mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.00099		mg/kg	0.00097	0.00011	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	108		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	148	Q	70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-09
 Client ID: LS-A-E02-C5-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 09:10
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 21:57
 Analyst: JIC
 Percent Solids: 93%

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	0.028	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	0.089	J	mg/kg	0.11	0.031	1
o-Xylene	0.053	J	mg/kg	0.056	0.016	1
Xylenes, Total	0.14	J	mg/kg	0.056	0.016	1
Isopropylbenzene	1.1		mg/kg	0.056	0.0060	1
1,3,5-Trimethylbenzene	0.046	J	mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	0.084	J	mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	175	Q	70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-11
 Client ID: LS-A-E03-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 09:30
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/10/23 22:58
 Analyst: AJK
 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	0.00051	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	0.00035	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	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-13
 Client ID: LS-A-E03-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 09:50
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 20:16
 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	0.0024	0.00024	1
Benzene	0.0021		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	0.00082	J	mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	0.00099	J	mg/kg	0.0012	0.00017	1
p/m-Xylene	0.0011	J	mg/kg	0.0024	0.00068	1
o-Xylene	0.00072	J	mg/kg	0.0012	0.00035	1
Xylenes, Total	0.0018	J	mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.036		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.00070	J	mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	147	Q	70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-15
 Client ID: LS-A-E03-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 10:10
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 01:41
 Analyst: AJK
 Percent Solids: 87%

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	0.66		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.069	0.018	1
Toluene	0.28		mg/kg	0.069	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	0.33		mg/kg	0.069	0.0097	1
p/m-Xylene	0.53		mg/kg	0.14	0.039	1
o-Xylene	0.19		mg/kg	0.069	0.020	1
Xylenes, Total	0.72		mg/kg	0.069	0.020	1
Isopropylbenzene	2.6		mg/kg	0.069	0.0075	1
1,3,5-Trimethylbenzene	0.18		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	0.64		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	143	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-17
 Client ID: LS-A-E03-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 10:30
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 21:32
 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	0.11	0.011	1
Benzene	0.040		mg/kg	0.028	0.0094	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.015	1
Toluene	ND		mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.017	1
Ethylbenzene	0.016	J	mg/kg	0.057	0.0080	1
p/m-Xylene	0.063	J	mg/kg	0.11	0.032	1
o-Xylene	0.043	J	mg/kg	0.057	0.016	1
Xylenes, Total	0.11	J	mg/kg	0.057	0.016	1
Isopropylbenzene	1.8		mg/kg	0.057	0.0062	1
1,3,5-Trimethylbenzene	0.027	J	mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	0.077	J	mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	154	Q	70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-19
 Client ID: LS-A-E03-C5-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 10:45
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 02:36
 Analyst: AJK
 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	0.18	0.018	1
Benzene	0.40		mg/kg	0.044	0.015	1
1,2-Dichloroethane	ND		mg/kg	0.088	0.023	1
Toluene	0.46		mg/kg	0.088	0.048	1
1,2-Dibromoethane	ND		mg/kg	0.044	0.026	1
Ethylbenzene	0.26		mg/kg	0.088	0.012	1
p/m-Xylene	0.58		mg/kg	0.18	0.050	1
o-Xylene	0.15		mg/kg	0.088	0.026	1
Xylenes, Total	0.73		mg/kg	0.088	0.026	1
Isopropylbenzene	3.1		mg/kg	0.088	0.0096	1
1,3,5-Trimethylbenzene	0.082	J	mg/kg	0.18	0.017	1
1,2,4-Trimethylbenzene	0.32		mg/kg	0.18	0.030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	157	Q	70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-21
 Client ID: LS-A-E04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 11:00
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 20:42
 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	0.19		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.0029		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	0.0023		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.0010	J	mg/kg	0.0023	0.00064	1
o-Xylene	0.0032		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.0042	J	mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.033		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.00068	J	mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	159	Q	70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-23
 Client ID: LS-A-E04-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 11:10
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 03:30
 Analyst: AJK
 Percent Solids: 80%

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	0.015	1
Benzene	2.3		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.073	0.019	1
Toluene	0.31		mg/kg	0.073	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.18		mg/kg	0.073	0.010	1
p/m-Xylene	1.5		mg/kg	0.14	0.041	1
o-Xylene	0.25		mg/kg	0.073	0.021	1
Xylenes, Total	1.8		mg/kg	0.073	0.021	1
Isopropylbenzene	2.4		mg/kg	0.073	0.0079	1
1,3,5-Trimethylbenzene	2.2		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	3.5		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	142	Q	70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-25
 Client ID: LS-A-E05-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 12:20
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/10/23 23:25
 Analyst: AJK
 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	0.00035	J	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	0.0022	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	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-27
 Client ID: LS-A-E05-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 12:35
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 00:19
 Analyst: AJK
 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	0.00018	1
Benzene	0.00023	J	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	0.00023	J	mg/kg	0.00092	0.00013	1
p/m-Xylene	0.0010	J	mg/kg	0.0018	0.00052	1
o-Xylene	0.00080	J	mg/kg	0.00092	0.00027	1
Xylenes, Total	0.0018	J	mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.00023	J	mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	0.0014	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.0030		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-29
 Client ID: LS-A-E05-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 12:50
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/10/23 23:52
 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	0.0023	0.00024	1
Benzene	0.00069		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	0.0014		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	0.00034	J	mg/kg	0.0012	0.00016	1
p/m-Xylene	0.0019	J	mg/kg	0.0023	0.00066	1
o-Xylene	0.00050	J	mg/kg	0.0012	0.00034	1
Xylenes, Total	0.0024	J	mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.00060	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00040	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.00093	J	mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-31
 Client ID: LS-B-E01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 14:00
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 03:57
 Analyst: AJK
 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	0.18		mg/kg	0.027	0.0089	1
1,2-Dichloroethane	ND		mg/kg	0.054	0.014	1
Toluene	0.12		mg/kg	0.054	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	0.14		mg/kg	0.054	0.0076	1
p/m-Xylene	0.30		mg/kg	0.11	0.030	1
o-Xylene	0.059		mg/kg	0.054	0.016	1
Xylenes, Total	0.36		mg/kg	0.054	0.016	1
Isopropylbenzene	1.4		mg/kg	0.054	0.0058	1
1,3,5-Trimethylbenzene	0.042	J	mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	0.14		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	181	Q	70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-33
 Client ID: LS-B-E01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 14:20
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/11/23 21:07
 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	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	0.0022		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	185	Q	70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260D
 Analytical Date: 05/10/23 19:48
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,11,25,27,29 Batch: WG177755-5					
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	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260D
 Analytical Date: 05/10/23 19:48
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15,19,23,31 Batch: WG1777756-5					
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	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/11/23 13:28
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 13,21,33 Batch: WG1778186-5					
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	98		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/11/23 13:28
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09,17 Batch: WG1778187-5					
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	98		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	99		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,11,25,27,29 Batch: WG1777755-3 WG1777755-4								
Methyl tert butyl ether	118		127		66-130	7		30
Benzene	106		105		70-130	1		30
1,2-Dichloroethane	106		106		70-130	0		30
Toluene	99		104		70-130	5		30
1,2-Dibromoethane	102		109		70-130	7		30
Ethylbenzene	103		107		70-130	4		30
p/m-Xylene	106		109		70-130	3		30
o-Xylene	105		107		70-130	2		30
Isopropylbenzene	106		104		70-130	2		30
1,3,5-Trimethylbenzene	107		107		70-130	0		30
1,2,4-Trimethylbenzene	106		106		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	103		104		70-130
Toluene-d8	96		102		70-130
4-Bromofluorobenzene	94		93		70-130
Dibromofluoromethane	101		98		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15,19,23,31 Batch: WG1777756-3 WG1777756-4								
Methyl tert butyl ether	118		127		66-130	7		30
Benzene	106		105		70-130	1		30
1,2-Dichloroethane	106		106		70-130	0		30
Toluene	99		104		70-130	5		30
1,2-Dibromoethane	102		109		70-130	7		30
Ethylbenzene	103		107		70-130	4		30
p/m-Xylene	106		109		70-130	3		30
o-Xylene	105		107		70-130	2		30
Isopropylbenzene	106		104		70-130	2		30
1,3,5-Trimethylbenzene	107		107		70-130	0		30
1,2,4-Trimethylbenzene	106		106		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		104		70-130
Toluene-d8	96		102		70-130
4-Bromofluorobenzene	94		93		70-130
Dibromofluoromethane	101		98		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 13,21,33 Batch: WG1778186-3 WG1778186-4								
Methyl tert butyl ether	103		99		66-130	4		30
Benzene	107		104		70-130	3		30
1,2-Dichloroethane	97		95		70-130	2		30
Toluene	105		102		70-130	3		30
1,2-Dibromoethane	104		102		70-130	2		30
Ethylbenzene	106		102		70-130	4		30
p/m-Xylene	105		102		70-130	3		30
o-Xylene	102		100		70-130	2		30
Isopropylbenzene	106		102		70-130	4		30
1,3,5-Trimethylbenzene	103		101		70-130	2		30
1,2,4-Trimethylbenzene	102		100		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		97		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	97		96		70-130
Dibromofluoromethane	100		99		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09,17 Batch: WG1778187-3 WG1778187-4								
Methyl tert butyl ether	103		99		66-130	4		30
Benzene	107		104		70-130	3		30
1,2-Dichloroethane	97		95		70-130	2		30
Toluene	105		102		70-130	3		30
1,2-Dibromoethane	104		102		70-130	2		30
Ethylbenzene	106		102		70-130	4		30
p/m-Xylene	105		102		70-130	3		30
o-Xylene	102		100		70-130	2		30
Isopropylbenzene	106		102		70-130	4		30
1,3,5-Trimethylbenzene	103		101		70-130	2		30
1,2,4-Trimethylbenzene	102		100		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		97		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	97		96		70-130
Dibromofluoromethane	100		99		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-02
 Client ID: LS-A-E02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 08:15
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 19:44
 Analyst: LJJ
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.036	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.090	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.14		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.10	J	mg/kg	0.11	0.020	1
Chrysene	0.092	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.13		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.11	J	mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.063	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	47		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-04
 Client ID: LS-A-E02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 08:30
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 20:00
 Analyst: LJJ
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.036	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.058	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.11		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.067	J	mg/kg	0.11	0.020	1
Chrysene	0.065	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.083	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.074	J	mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.053	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	43		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-06
 Client ID: LS-A-E02-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 08:45
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 20:17
 Analyst: LJJ
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.036	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.11		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.17		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.12		mg/kg	0.11	0.020	1
Chrysene	0.11		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.14		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.12	J	mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.075	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	41		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-08 D
 Client ID: LS-A-E02-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 09:00
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/12/23 14:35
 Analyst: ALS
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.36	0.22	10
Fluorene	ND		mg/kg	1.8	0.18	10
Phenanthrene	0.26	J	mg/kg	1.1	0.22	10
Anthracene	ND		mg/kg	1.1	0.36	10
Pyrene	0.75	J	mg/kg	1.1	0.18	10
Benzo(a)anthracene	0.24	J	mg/kg	1.1	0.20	10
Chrysene	0.40	J	mg/kg	1.1	0.19	10
Benzo(b)fluoranthene	ND		mg/kg	1.1	0.31	10
Benzo(a)pyrene	ND		mg/kg	1.4	0.44	10
Benzo(ghi)perylene	0.21	J	mg/kg	1.4	0.21	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-10 D
 Client ID: LS-A-E02-C5-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 09:10
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/12/23 14:52
 Analyst: ALS
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.39	0.24	10
Fluorene	0.59	J	mg/kg	1.9	0.19	10
Phenanthrene	1.3		mg/kg	1.2	0.24	10
Anthracene	ND		mg/kg	1.2	0.38	10
Pyrene	1.8		mg/kg	1.2	0.19	10
Benzo(a)anthracene	0.39	J	mg/kg	1.2	0.22	10
Chrysene	0.69	J	mg/kg	1.2	0.20	10
Benzo(b)fluoranthene	ND		mg/kg	1.2	0.33	10
Benzo(a)pyrene	0.63	J	mg/kg	1.5	0.47	10
Benzo(ghi)perylene	0.49	J	mg/kg	1.5	0.23	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-12
 Client ID: LS-A-E03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 09:30
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 21:07
 Analyst: LJJ
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.039	0.024	1
Fluorene	0.030	J	mg/kg	0.19	0.019	1
Phenanthrene	0.069	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.16		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.054	J	mg/kg	0.12	0.022	1
Chrysene	0.075	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.056	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.078	J	mg/kg	0.16	0.047	1
Benzo(ghi)perylene	0.073	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	52		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-14
 Client ID: LS-A-E03-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 09:50
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 21:24
 Analyst: LJJ
 Percent Solids: 76%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.029	J	mg/kg	0.043	0.026	1
Fluorene	ND		mg/kg	0.22	0.021	1
Phenanthrene	0.044	J	mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	0.040	J	mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.029	J	mg/kg	0.13	0.024	1
Chrysene	0.027	J	mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	0.042	J	mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.053	1
Benzo(ghi)perylene	0.038	J	mg/kg	0.17	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-16 D
 Client ID: LS-A-E03-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 10:10
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/12/23 15:09
 Analyst: ALS
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.37	J	mg/kg	0.39	0.24	10
Fluorene	ND		mg/kg	1.9	0.19	10
Phenanthrene	0.25	J	mg/kg	1.2	0.24	10
Anthracene	ND		mg/kg	1.2	0.38	10
Pyrene	0.27	J	mg/kg	1.2	0.19	10
Benzo(a)anthracene	ND		mg/kg	1.2	0.22	10
Chrysene	0.24	J	mg/kg	1.2	0.20	10
Benzo(b)fluoranthene	ND		mg/kg	1.2	0.33	10
Benzo(a)pyrene	ND		mg/kg	1.6	0.47	10
Benzo(ghi)perylene	ND		mg/kg	1.6	0.23	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	49		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-18 D
 Client ID: LS-A-E03-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 10:30
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/12/23 15:26
 Analyst: ALS
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.39		mg/kg	0.39	0.24	10
Fluorene	0.29	J	mg/kg	2.0	0.19	10
Phenanthrene	1.2		mg/kg	1.2	0.24	10
Anthracene	ND		mg/kg	1.2	0.38	10
Pyrene	0.51	J	mg/kg	1.2	0.20	10
Benzo(a)anthracene	0.44	J	mg/kg	1.2	0.22	10
Chrysene	0.61	J	mg/kg	1.2	0.20	10
Benzo(b)fluoranthene	0.38	J	mg/kg	1.2	0.33	10
Benzo(a)pyrene	0.66	J	mg/kg	1.6	0.48	10
Benzo(ghi)perylene	0.72	J	mg/kg	1.6	0.23	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-20 D
 Client ID: LS-A-E03-C5-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 10:45
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/12/23 15:43
 Analyst: ALS
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.12	5
Fluorene	0.78	J	mg/kg	0.99	0.096	5
Phenanthrene	3.2		mg/kg	0.60	0.12	5
Anthracene	0.33	J	mg/kg	0.60	0.19	5
Pyrene	1.0		mg/kg	0.60	0.099	5
Benzo(a)anthracene	0.36	J	mg/kg	0.60	0.11	5
Chrysene	0.72		mg/kg	0.60	0.10	5
Benzo(b)fluoranthene	0.24	J	mg/kg	0.60	0.17	5
Benzo(a)pyrene	ND		mg/kg	0.79	0.24	5
Benzo(ghi)perylene	0.12	J	mg/kg	0.79	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-22 D
 Client ID: LS-A-E04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 11:00
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/12/23 15:59
 Analyst: ALS
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.27	J	mg/kg	0.38	0.23	10
Fluorene	1.4	J	mg/kg	1.9	0.18	10
Phenanthrene	4.8		mg/kg	1.1	0.23	10
Anthracene	0.63	J	mg/kg	1.1	0.37	10
Pyrene	1.1		mg/kg	1.1	0.19	10
Benzo(a)anthracene	0.41	J	mg/kg	1.1	0.21	10
Chrysene	0.88	J	mg/kg	1.1	0.20	10
Benzo(b)fluoranthene	ND		mg/kg	1.1	0.32	10
Benzo(a)pyrene	ND		mg/kg	1.5	0.46	10
Benzo(ghi)perylene	ND		mg/kg	1.5	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	46		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-24 D
 Client ID: LS-A-E04-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 11:10
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 22:47
 Analyst: SLR
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.32		mg/kg	0.19	0.11	5
Fluorene	0.46	J	mg/kg	0.94	0.092	5
Phenanthrene	2.0		mg/kg	0.56	0.11	5
Anthracene	0.42	J	mg/kg	0.56	0.18	5
Pyrene	1.6		mg/kg	0.56	0.094	5
Benzo(a)anthracene	1.0		mg/kg	0.56	0.11	5
Chrysene	2.2		mg/kg	0.56	0.098	5
Benzo(b)fluoranthene	0.75		mg/kg	0.56	0.16	5
Benzo(a)pyrene	1.0		mg/kg	0.75	0.23	5
Benzo(ghi)perylene	0.59	J	mg/kg	0.75	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	43		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	45		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-26 D
 Client ID: LS-A-E05-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 12:20
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/12/23 16:16
 Analyst: ALS
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.99		mg/kg	0.41	0.25	10
Fluorene	1.8	J	mg/kg	2.1	0.20	10
Phenanthrene	7.4		mg/kg	1.2	0.25	10
Anthracene	1.5		mg/kg	1.2	0.40	10
Pyrene	6.7		mg/kg	1.2	0.20	10
Benzo(a)anthracene	3.0		mg/kg	1.2	0.23	10
Chrysene	5.0		mg/kg	1.2	0.22	10
Benzo(b)fluoranthene	1.5		mg/kg	1.2	0.35	10
Benzo(a)pyrene	2.4		mg/kg	1.6	0.50	10
Benzo(ghi)perylene	1.3	J	mg/kg	1.6	0.24	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	50		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-28 D
 Client ID: LS-A-E05-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 12:35
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/12/23 16:05
 Analyst: JG
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.5		mg/kg	0.39	0.24	10
Fluorene	11.		mg/kg	1.9	0.19	10
Phenanthrene	39.		mg/kg	1.2	0.24	10
Anthracene	4.5		mg/kg	1.2	0.38	10
Pyrene	17.		mg/kg	1.2	0.19	10
Benzo(a)anthracene	7.7		mg/kg	1.2	0.22	10
Chrysene	13.		mg/kg	1.2	0.20	10
Benzo(b)fluoranthene	2.1		mg/kg	1.2	0.33	10
Benzo(a)pyrene	4.4		mg/kg	1.6	0.47	10
Benzo(ghi)perylene	2.8		mg/kg	1.6	0.23	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-30 D
 Client ID: LS-A-E05-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 12:50
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/12/23 15:58
 Analyst: ALS
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.62		mg/kg	0.20	0.12	5
Fluorene	2.9		mg/kg	1.0	0.098	5
Phenanthrene	6.3		mg/kg	0.61	0.12	5
Anthracene	1.2		mg/kg	0.61	0.20	5
Pyrene	2.7		mg/kg	0.61	0.10	5
Benzo(a)anthracene	1.3		mg/kg	0.61	0.11	5
Chrysene	2.2		mg/kg	0.61	0.10	5
Benzo(b)fluoranthene	0.28	J	mg/kg	0.61	0.17	5
Benzo(a)pyrene	0.65	J	mg/kg	0.81	0.25	5
Benzo(ghi)perylene	0.40	J	mg/kg	0.81	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-32
 Client ID: LS-B-E01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 14:00
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 19:10
 Analyst: LJJ
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.046		mg/kg	0.037	0.023	1
Fluorene	0.14	J	mg/kg	0.19	0.018	1
Phenanthrene	0.43		mg/kg	0.11	0.023	1
Anthracene	0.11		mg/kg	0.11	0.036	1
Pyrene	0.27		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.16		mg/kg	0.11	0.021	1
Chrysene	0.23		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.18		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.16		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.14	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	44		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-34
 Client ID: LS-B-E01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 14:20
 Date Received: 05/05/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/11/23 19:27
 Analyst: LJJ
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.030	J	mg/kg	0.041	0.025	1
Fluorene	0.098	J	mg/kg	0.20	0.020	1
Phenanthrene	0.19		mg/kg	0.12	0.025	1
Anthracene	0.082	J	mg/kg	0.12	0.040	1
Pyrene	0.25		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.22		mg/kg	0.12	0.023	1
Chrysene	0.35		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.16		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.16		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.16		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	42		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/11/23 18:20
Analyst: SLR

Extraction Method: EPA 3546
Extraction Date: 05/10/23 02:01

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34 Batch: WG1776969-1					
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	89		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	73		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34 Batch: WG1776969-2 WG1776969-3								
Naphthalene	64		67		40-140	5		50
Fluorene	65		68		40-140	5		50
Phenanthrene	66		69		40-140	4		50
Anthracene	69		72		40-140	4		50
Pyrene	67		74		35-142	10		50
Benzo(a)anthracene	73		76		40-140	4		50
Chrysene	68		73		40-140	7		50
Benzo(b)fluoranthene	67		71		40-140	6		50
Benzo(a)pyrene	72		79		40-140	9		50
Benzo(ghi)perylene	66		71		40-140	7		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	77		77		23-120
2-Fluorobiphenyl	64		64		30-120
4-Terphenyl-d14	61		64		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-02

Date Collected: 05/05/23 08:15

Client ID: LS-A-E02-C1-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	83.7		mg/kg	2.13	0.114	1	05/09/23 00:57	05/10/23 00:15	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-04
 Client ID: LS-A-E02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 08:30
 Date Received: 05/05/23
 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	22.3		mg/kg	2.10	0.113	1	05/09/23 00:57	05/10/23 00:52	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-06

Date Collected: 05/05/23 08:45

Client ID: LS-A-E02-C3-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	216		mg/kg	2.12	0.113	1	05/09/23 00:57	05/10/23 00:57	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-08

Date Collected: 05/05/23 09:00

Client ID: LS-A-E02-C4-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	53.7		mg/kg	2.17	0.116	1	05/09/23 00:57	05/10/23 01:02	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-10

Date Collected: 05/05/23 09:10

Client ID: LS-A-E02-C5-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	56.1		mg/kg	2.30	0.123	1	05/09/23 00:57	05/10/23 01:06	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-12

Date Collected: 05/05/23 09:30

Client ID: LS-A-E03-C1-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	62.9		mg/kg	2.27	0.122	1	05/09/23 00:57	05/10/23 01:11	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-14

Date Collected: 05/05/23 09:50

Client ID: LS-A-E03-C2-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	381		mg/kg	2.49	0.133	1	05/09/23 00:57	05/10/23 01:16	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-16

Date Collected: 05/05/23 10:10

Client ID: LS-A-E03-C3-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	58.7		mg/kg	2.28	0.122	1	05/09/23 00:57	05/10/23 01:21	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-18

Date Collected: 05/05/23 10:30

Client ID: LS-A-E03-C4-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	256		mg/kg	2.34	0.125	1	05/09/23 00:57	05/10/23 01:25	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-20

Date Collected: 05/05/23 10:45

Client ID: LS-A-E03-C5-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	54.4		mg/kg	2.34	0.125	1	05/09/23 00:57	05/10/23 01:30	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-22

Date Collected: 05/05/23 11:00

Client ID: LS-A-E04-C1-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	133		mg/kg	2.23	0.120	1	05/09/23 00:57	05/10/23 01:35	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-24

Date Collected: 05/05/23 11:10

Client ID: LS-A-E04-C2-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	82.5		mg/kg	2.23	0.119	1	05/09/23 00:57	05/10/23 01:48	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-26

Date Collected: 05/05/23 12:20

Client ID: LS-A-E05-C1-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	634		mg/kg	2.40	0.129	1	05/09/23 00:57	05/10/23 01:53	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-28

Date Collected: 05/05/23 12:35

Client ID: LS-A-E05-C2-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	222		mg/kg	2.29	0.123	1	05/09/23 00:57	05/10/23 01:58	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-30

Date Collected: 05/05/23 12:50

Client ID: LS-A-E05-C3-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	314		mg/kg	2.33	0.125	1	05/09/23 00:57	05/10/23 02:03	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-32
 Client ID: LS-B-E01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 14:00
 Date Received: 05/05/23
 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	91.6		mg/kg	2.13	0.114	1	05/09/23 00:57	05/10/23 02:07	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-34

Date Collected: 05/05/23 14:20

Client ID: LS-B-E01-C2-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	455		mg/kg	2.48	0.133	1	05/09/23 00:57	05/10/23 02:12	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

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): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34 Batch: WG1776101-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/09/23 00:57	05/09/23 23:57	1,6010D	AMW

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34 Batch: WG1776101-2 SRM Lot Number: D119-540								
Lead, Total	105		-		82-118			-



Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34 QC Batch ID: WG1776101-3 QC Sample: L2324938-01 Client ID: MS Sample												
Lead, Total	13.7	47.5	69.8	118	-	-	-	-	75-125	-	-	20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-01
Client ID: LS-A-E02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 08:15
Date Received: 05/05/23
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	92.9		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-02

Date Collected: 05/05/23 08:15

Client ID: LS-A-E02-C1-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	91.5		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-03

Date Collected: 05/05/23 08:30

Client ID: LS-A-E02-C2-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	93.8		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-04

Date Collected: 05/05/23 08:30

Client ID: LS-A-E02-C2-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	91.6		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-05

Date Collected: 05/05/23 08:45

Client ID: LS-A-E02-C3-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	90.3		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-06
 Client ID: LS-A-E02-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 08:45
 Date Received: 05/05/23
 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	91.7		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-07

Date Collected: 05/05/23 09:00

Client ID: LS-A-E02-C4-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	86.1		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-08

Date Collected: 05/05/23 09:00

Client ID: LS-A-E02-C4-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	89.0		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-09

Date Collected: 05/05/23 09:10

Client ID: LS-A-E02-C5-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	92.9		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-10

Date Collected: 05/05/23 09:10

Client ID: LS-A-E02-C5-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-11

Date Collected: 05/05/23 09:30

Client ID: LS-A-E03-C1-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	93.7		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-12

Date Collected: 05/05/23 09:30

Client ID: LS-A-E03-C1-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325026**Project Number:** 200.00135.023**Report Date:** 05/12/23**SAMPLE RESULTS**

Lab ID: L2325026-13

Date Collected: 05/05/23 09:50

Client ID: LS-A-E03-C2-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-14

Date Collected: 05/05/23 09:50

Client ID: LS-A-E03-C2-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	75.6		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-15

Date Collected: 05/05/23 10:10

Client ID: LS-A-E03-C3-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	86.8		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-16

Date Collected: 05/05/23 10:10

Client ID: LS-A-E03-C3-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325026**Project Number:** 200.00135.023**Report Date:** 05/12/23**SAMPLE RESULTS**

Lab ID: L2325026-17

Date Collected: 05/05/23 10:30

Client ID: LS-A-E03-C4-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	85.6		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-18

Date Collected: 05/05/23 10:30

Client ID: LS-A-E03-C4-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325026**Project Number:** 200.00135.023**Report Date:** 05/12/23**SAMPLE RESULTS**

Lab ID: L2325026-19

Date Collected: 05/05/23 10:45

Client ID: LS-A-E03-C5-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	83.7		%	0.100	NA	1	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-20

Date Collected: 05/05/23 10:45

Client ID: LS-A-E03-C5-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 15:48	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-21

Date Collected: 05/05/23 11:00

Client ID: LS-A-E04-C1-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	81.4		%	0.100	NA	1	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-22

Date Collected: 05/05/23 11:00

Client ID: LS-A-E04-C1-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-23

Date Collected: 05/05/23 11:10

Client ID: LS-A-E04-C2-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	80.1		%	0.100	NA	1	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-24

Date Collected: 05/05/23 11:10

Client ID: LS-A-E04-C2-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	86.9		%	0.100	NA	1	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-25

Date Collected: 05/05/23 12:20

Client ID: LS-A-E05-C1-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325026**Project Number:** 200.00135.023**Report Date:** 05/12/23**SAMPLE RESULTS**

Lab ID: L2325026-26

Date Collected: 05/05/23 12:20

Client ID: LS-A-E05-C1-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	79.7		%	0.100	NA	1	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-27

Date Collected: 05/05/23 12:35

Client ID: LS-A-E05-C2-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-28

Date Collected: 05/05/23 12:35

Client ID: LS-A-E05-C2-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-29

Date Collected: 05/05/23 12:50

Client ID: LS-A-E05-C3-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	87.4		%	0.100	NA	1	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-30

Date Collected: 05/05/23 12:50

Client ID: LS-A-E05-C3-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	81.1		%	0.100	NA	1	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-31

Date Collected: 05/05/23 14:00

Client ID: LS-B-E01-C1-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	88.7		%	0.100	NA	1	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-32
Client ID: LS-B-E01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/05/23 14:00
Date Received: 05/05/23
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	87.8		%	0.100	NA	1	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-33

Date Collected: 05/05/23 14:20

Client ID: LS-B-E01-C2-VOC

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	-	05/07/23 16:07	121,2540G	MNF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

SAMPLE RESULTS

Lab ID: L2325026-34

Date Collected: 05/05/23 14:20

Client ID: LS-B-E01-C2-COMP

Date Received: 05/05/23

Sample Location: PHILADELPHIA, PA

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	80.2		%	0.100	NA	1	-	05/07/23 16:07	121,2540G	MNF



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2325026

Report Date: 05/12/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1775899-1 QC Sample: L2325026-01 Client ID: LS-A-E02-C1-VOC						
Solids, Total	92.9	92.6	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 21-34 QC Batch ID: WG1775910-1 QC Sample: L2325026-21 Client ID: LS-A-E04-C1-VOC						
Solids, Total	81.4	77.6	%	5		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325026**Project Number:** 200.00135.023**Report Date:** 05/12/23**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2325026-01A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2325026-01B	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-01C	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-01D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2325026-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2325026-02B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2325026-03A	Vial MeOH preserved	C	NA		3.2	Y	Absent		PA-8260HLW(14)
L2325026-03B	Vial water preserved	C	NA		3.2	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-03C	Vial water preserved	C	NA		3.2	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-03D	Plastic 120ml unpreserved	C	NA		3.2	Y	Absent		TS(7)
L2325026-04A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.2	Y	Absent		PB-TI(180)
L2325026-04B	Glass 120ml/4oz unpreserved	C	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2325026-05A	Vial MeOH preserved	C	NA		3.2	Y	Absent		PA-8260HLW(14)
L2325026-05B	Vial water preserved	C	NA		3.2	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-05C	Vial water preserved	C	NA		3.2	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-05D	Plastic 120ml unpreserved	C	NA		3.2	Y	Absent		TS(7)
L2325026-06A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.2	Y	Absent		PB-TI(180)
L2325026-06B	Glass 120ml/4oz unpreserved	C	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2325026-07A	Vial MeOH preserved	C	NA		3.2	Y	Absent		PA-8260HLW(14)
L2325026-07B	Vial water preserved	C	NA		3.2	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-07C	Vial water preserved	C	NA		3.2	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325026**Project Number:** 200.00135.023**Report Date:** 05/12/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2325026-07D	Plastic 120ml unpreserved	C	NA		3.2	Y	Absent		TS(7)
L2325026-08A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.2	Y	Absent		PB-TI(180)
L2325026-08B	Glass 120ml/4oz unpreserved	C	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2325026-09A	Vial MeOH preserved	C	NA		3.2	Y	Absent		PA-8260HLW(14)
L2325026-09B	Vial water preserved	C	NA		3.2	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-09C	Vial water preserved	C	NA		3.2	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-09D	Plastic 120ml unpreserved	C	NA		3.2	Y	Absent		TS(7)
L2325026-10A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.2	Y	Absent		PB-TI(180)
L2325026-10B	Glass 120ml/4oz unpreserved	C	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2325026-11A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2325026-11B	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-11C	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-11D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2325026-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2325026-12B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2325026-13A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2325026-13B	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-13C	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-13D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2325026-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2325026-14B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2325026-15A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2325026-15B	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-15C	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-15D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2325026-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2325026-16B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2325026-17A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325026**Project Number:** 200.00135.023**Report Date:** 05/12/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2325026-17B	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-17C	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-17D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2325026-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2325026-18B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2325026-19A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2325026-19B	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-19C	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-19D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2325026-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2325026-20B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2325026-21A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2325026-21B	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-21C	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-21D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2325026-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2325026-22B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2325026-23A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2325026-23B	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-23C	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-23D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2325026-24A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2325026-24B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2325026-25A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2325026-25B	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-25C	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-25D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2325026-26A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325026**Project Number:** 200.00135.023**Report Date:** 05/12/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2325026-26B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2325026-27A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2325026-27B	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-27C	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-27D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2325026-28A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2325026-28B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2325026-29A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2325026-29B	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-29C	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-29D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2325026-30A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2325026-30B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2325026-31A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2325026-31B	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-31C	Vial water preserved	A	NA		2.1	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-31D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2325026-32A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2325026-32B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2325026-33A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2325026-33B	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-33C	Vial water preserved	B	NA		2.0	Y	Absent	06-MAY-23 08:20	PA-8260HLW(14)
L2325026-33D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2325026-34A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2325026-34B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

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
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

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
Project Number: 200.00135.023

Lab Number: L2325026
Report Date: 05/12/23

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.)

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325026

Project Number: 200.00135.023

Report Date: 05/12/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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 4

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 Ave
Hamilton MS
Phone: 609 584 0090
Fax:
Email: William.Schmidt@Ransom-Env.com
 These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:
Repeat any project specific analysis list of PAHs, PCBs, leaded gasoline +
N# 2, 4, 5, 10 fuel oils show list. Run Naphtene w/ method 8270 Only!
email results to alpha@rampash.com, william.schmidt@ransom-env.com +
Jerry@HicoGlobal.com

ALPHA Lab ID (Lab Use Only) | Sample ID | Collection Date | Collection Time | Sample Matrix | Sampler's Initials

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials
2502601	LS-A-E02-C1-VOL	5/5/23	5:15 7:30	S	CO
02	LS-A-E02-C1-Comp		5:45 7:30		
03	LS-A-E02-C2 VOC		8:30 7:30		
04	LS-A-E02-C2 Comp		8:30 7:30		
05	LS-A-E02-C3 VOC		8:45 7:30		
06	LS-A-E02-C3 Comp		8:45 7:30		
07	LS-A-E02-C4 VOC		9:00 7:30		
08	LS-A-E02-C4 Comp		9:10 7:30		
09	LS-A-E02-C5 VOC		9:10 7:30		
10	LS-A-E02-C5 Comp		9:10 7:30		

Date Rec'd in Lab: 5/6/23 ALPHA Job #: U2325026

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:

Turn-Around Time
 Standard RUSH (only confirmed if pre-approved)

Date Due: Time:

ANALYSIS	TOTAL # BOTTLES
VOCs (8260)	4
SVOCs (8270)	7
Lead	4
	2
	4
	2
	4
	2
	4
	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: [Signature] Date/Time: 5/5/23 1800
Received By: [Signature] Date/Time: 5/5/23 1515
[Signature] 5/5/23 2100 [Signature] 5/6/23 0045

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.



CHAIN OF CUSTODY

PAGE 4 OF 4

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: 5/6/23

ALPHA Job #: L2325026

Client Information
 Client: Kansam Consulting LLC
 Address: 2129 Hamilton Ave
Hamilton NJ
 Phone: 609 584 0090
 Fax:
 Email: William.Schmidt@kansam.com
 These samples have been previously analyzed by Alpha

Project Information
 Project Name: Philadelphia, Recovery
 Project Location: Philadelphia, PA
 Project #: 200.60155.023
 Project Manager: William Schmidt
 ALPHA Quote #:

Report Information - Data Deliverables
 FAX EMAIL
 ADEX Add'l Deliverables

Billing Information
 Same as Client info PO #:

Turn-Around Time
 Standard RUSH (only confirmed if pre-approved)
 Date Due: Time:

Regulatory Requirements/Report Limits
 State /Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:
See page 1 of 4 for project specific requirements !!!

ANALYSIS
Voc (8260)
SVOC (8270)
Lead

SAMPLE HANDLING
 Filtration _____
 Done
 Not needed
 Lab to do
 Preservation
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										TOTAL # BOTTLES			
		Date	Time			Voc (8260)	SVOC (8270)	Lead											
25026-31	LS-B-E01-C1-VOC	5/5/23	14:00	S	LO	✓													4
32	LS-B-E01-C1-comp		14:00			✓	✓												2
33	LS-B-E01-C2-VOC		14:20			✓													4
34	LS-B-E01-C2-comp		14:20			✓	✓												2

Container Type GGC
 Preservative FAA

Relinquished By:	Date/Time	Received By:	Date/Time
<u>[Signature]</u>	<u>5/5/23 1530</u>	<u>[Signature]</u>	<u>5/5/23 1515</u>
<u>[Signature]</u>	<u>5/5/23 1800</u>	<u>[Signature]</u>	<u>5/5/23 1800</u>
<u>[Signature]</u>	<u>5/5/23 2100</u>	<u>[Signature]</u>	<u>5-5-23 2100</u>
<u>[Signature]</u>	<u>5/6/23 0045</u>	<u>[Signature]</u>	<u>5-6-23 0045</u>

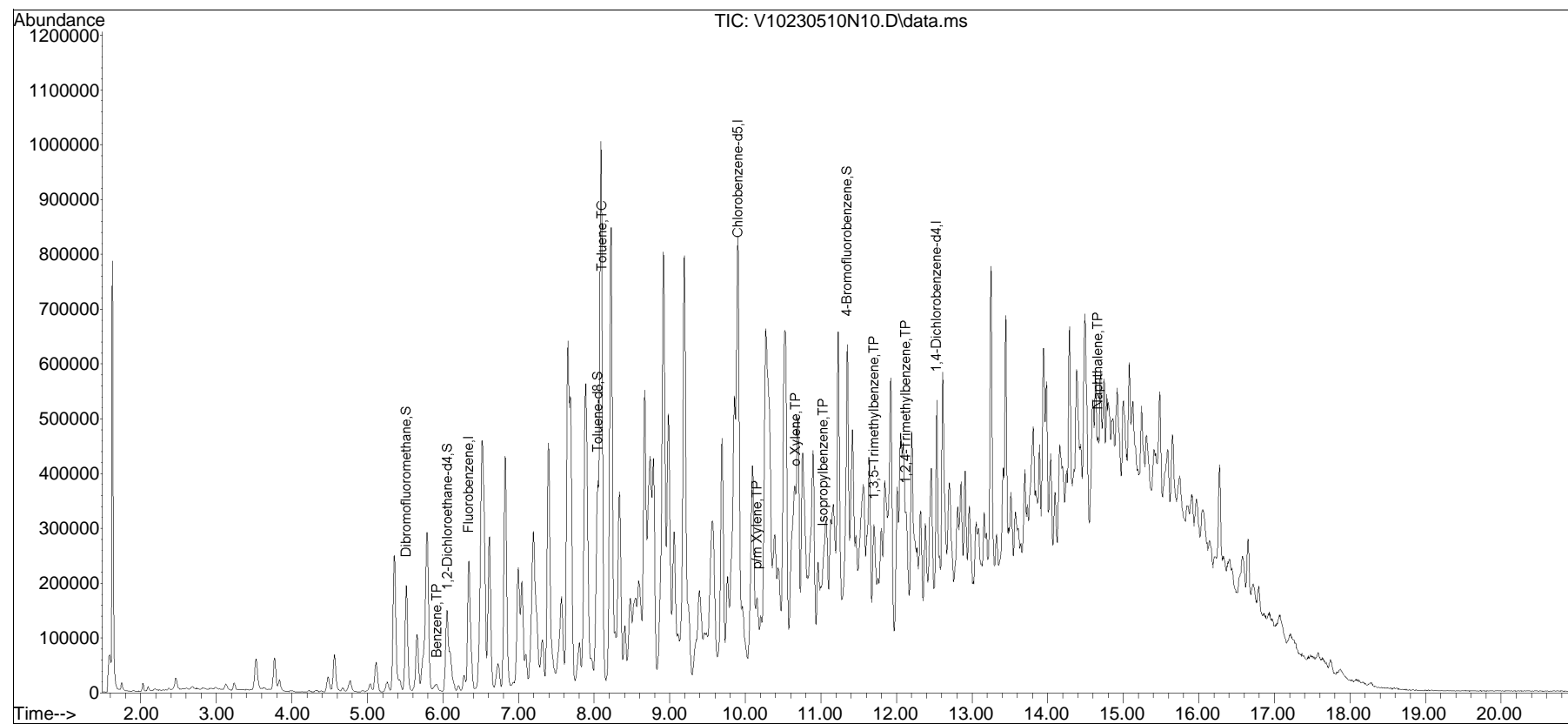
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230510N\
Data File : V10230510N10.D
Acq On : 10 May 2023 10:31 pm
Operator : VOA110:AJK
Sample : 12325026-07,31,5.97,5,,b
Misc : WG1777755,ICAL19973
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 11 09:44:35 2023
Quant Method : I:\VOLATILES\VOA110\2023\230510N\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list10N\V10230510N01.D•

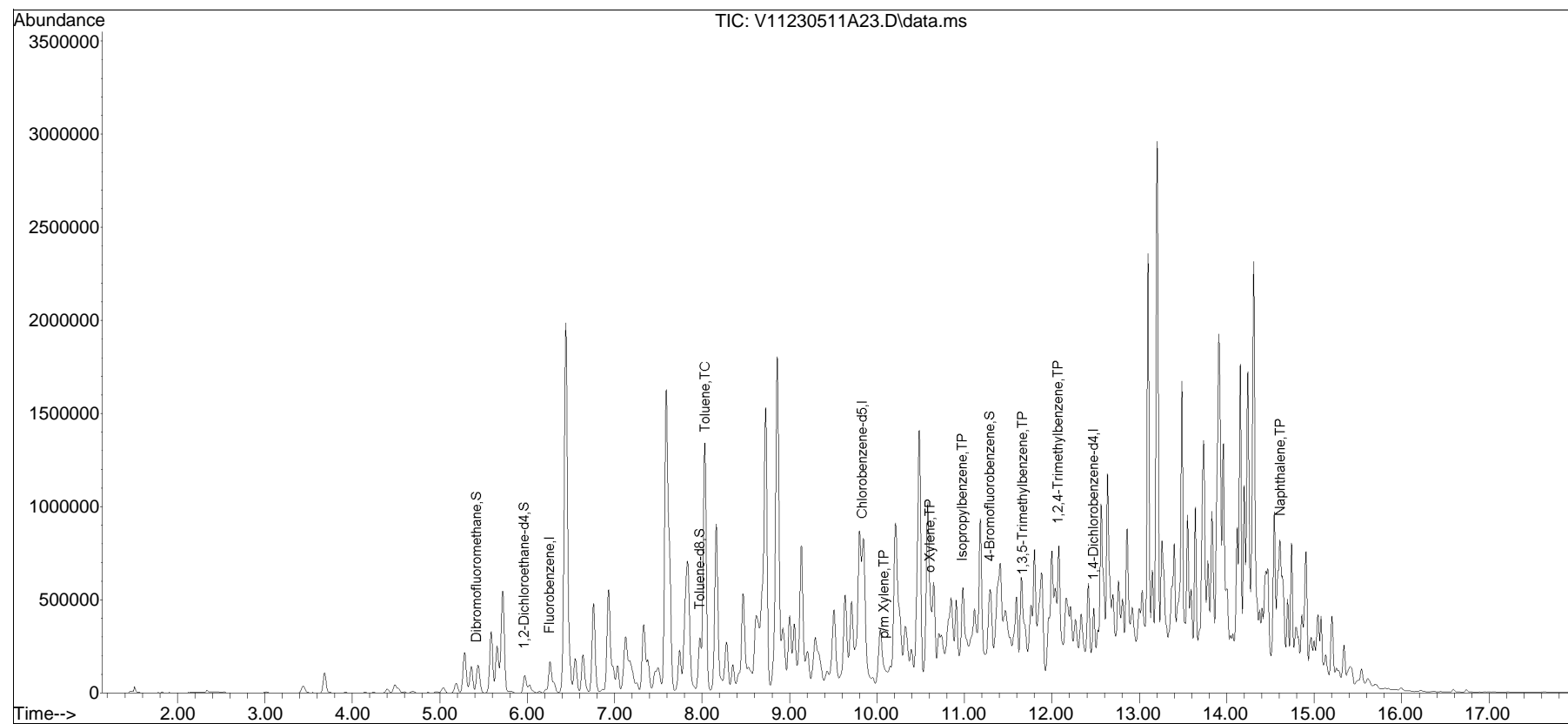


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2023\230511A\
Data File : V11230511A23.D
Acq On : 11 May 2023 09:57 pm
Operator : VOA111:JIC
Sample : L2325026-09,31H,5.20,5,0.100,,A
Misc : WG1778187,ICAL19909
ALS Vial : 23 Sample Multiplier: 1

Quant Time: May 12 08:15:19 2023
Quant Method : I:\VOLATILES\VOA111\2023\230511A\V111_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Apr 12 06:38:14 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list11A\V11230511A01.D•

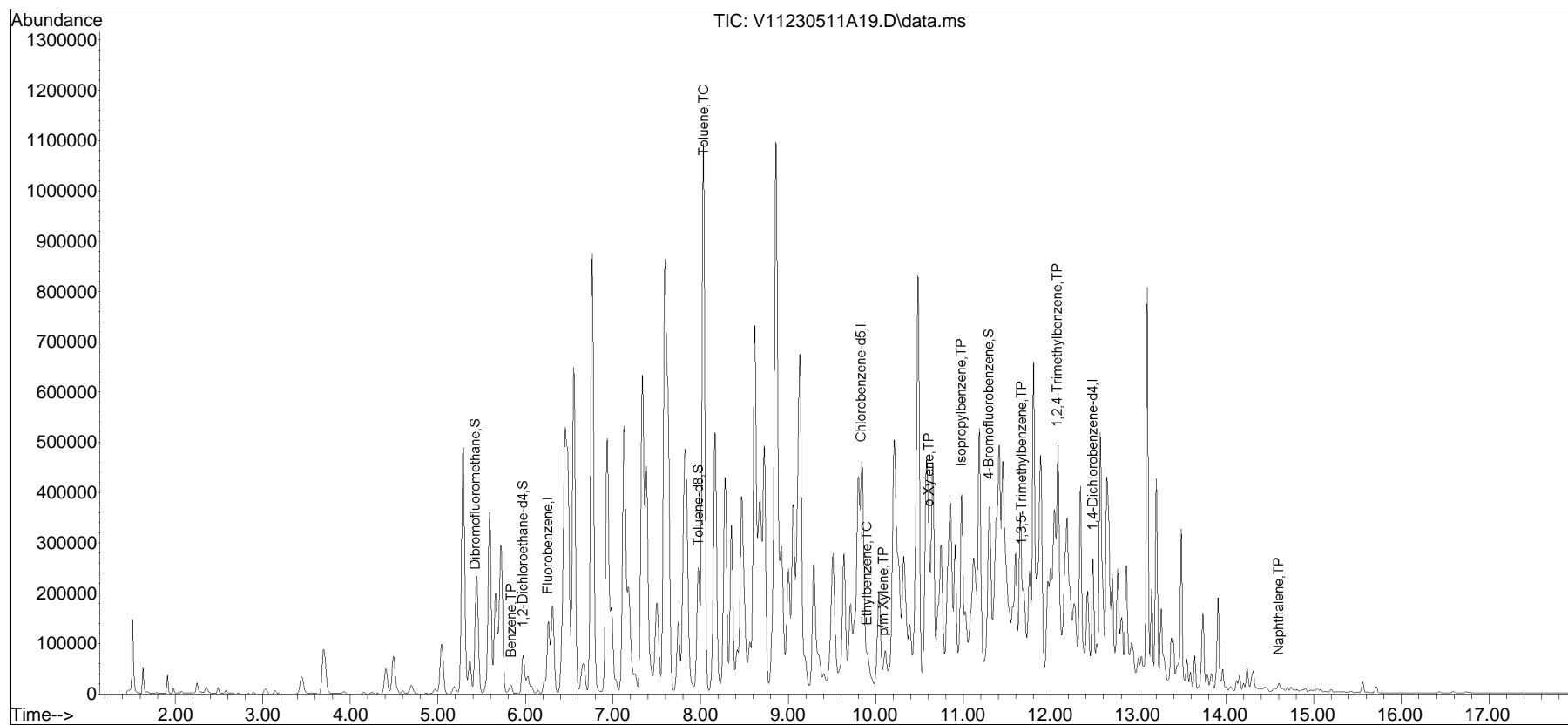


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2023\230511A\
Data File : V11230511A19.D
Acq On : 11 May 2023 08:16 pm
Operator : VOA111:JIC
Sample : L2325026-13,31,4.86,5,,B
Misc : WG1778186,ICAL19909
ALS Vial : 19 Sample Multiplier: 1

Quant Time: May 12 08:14:12 2023
Quant Method : I:\VOLATILES\VOA111\2023\230511A\V111_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Apr 12 06:38:14 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list11A\V11230511A01.D•

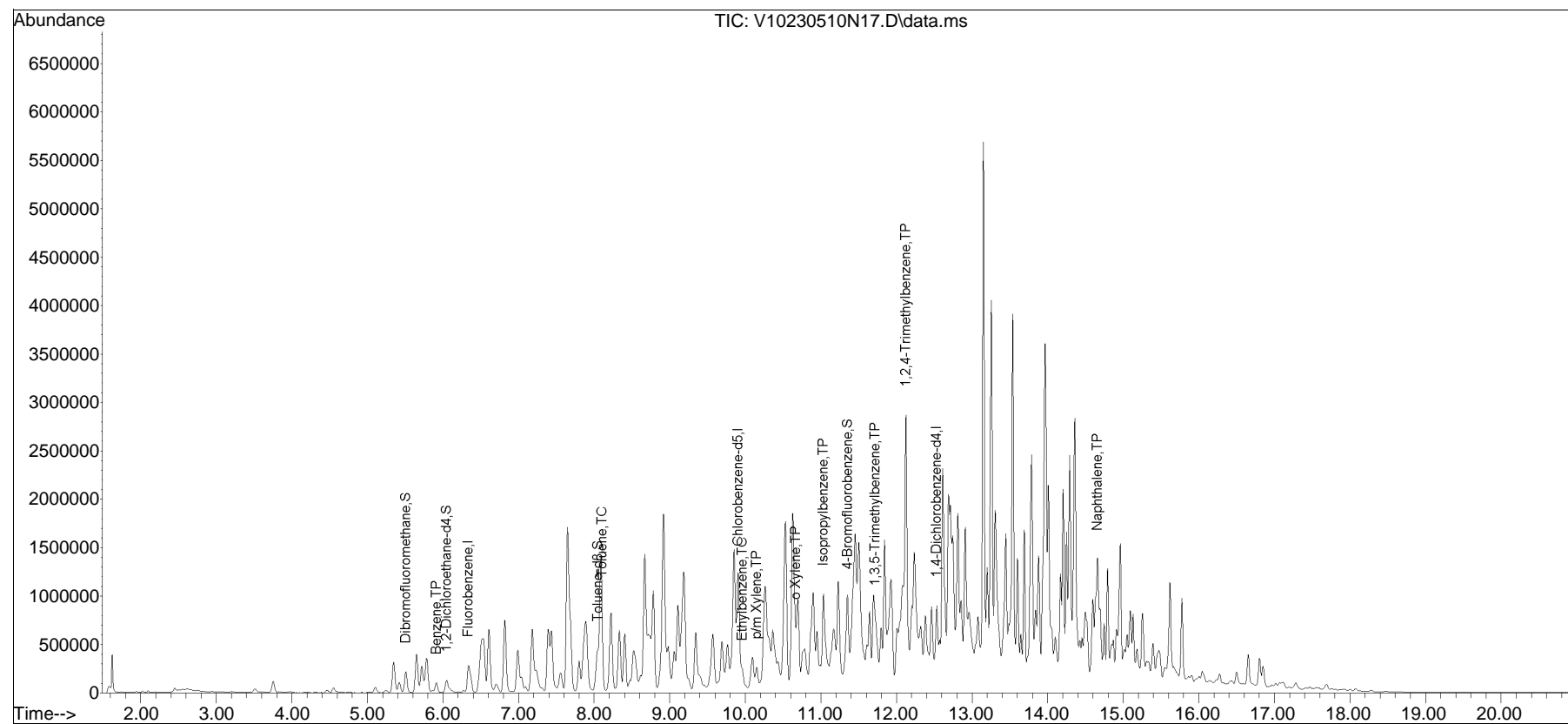


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230510N\
Data File : V10230510N17.D
Acq On : 11 May 2023 1:41 am
Operator : VOA110:AJK
Sample : 12325026-15,31h,4.68,5,0.100,,a
Misc : WG177756,ICAL19973
ALS Vial : 17 Sample Multiplier: 1

Quant Time: May 11 09:46:22 2023
Quant Method : I:\VOLATILES\VOA110\2023\230510N\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list10N\V10230510N01.D•

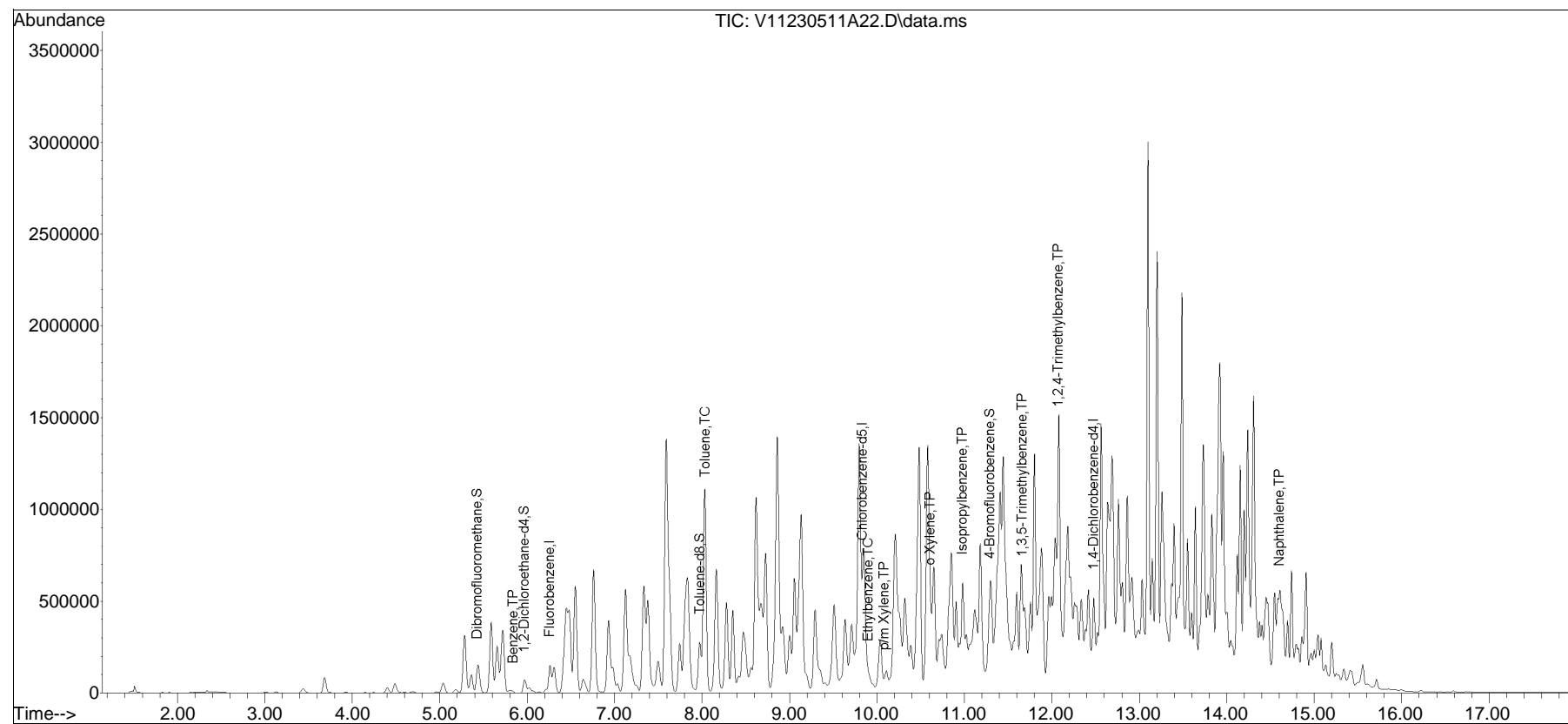


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2023\230511A\
Data File : V11230511A22.D
Acq On : 11 May 2023 09:32 pm
Operator : VOA111:JIC
Sample : L2325026-17,31H,6.03,5,0.100,,A
Misc : WG1778187,ICAL19909
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 12 08:15:01 2023
Quant Method : I:\VOLATILES\VOA111\2023\230511A\V111_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Apr 12 06:38:14 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list11A\V11230511A01.D•

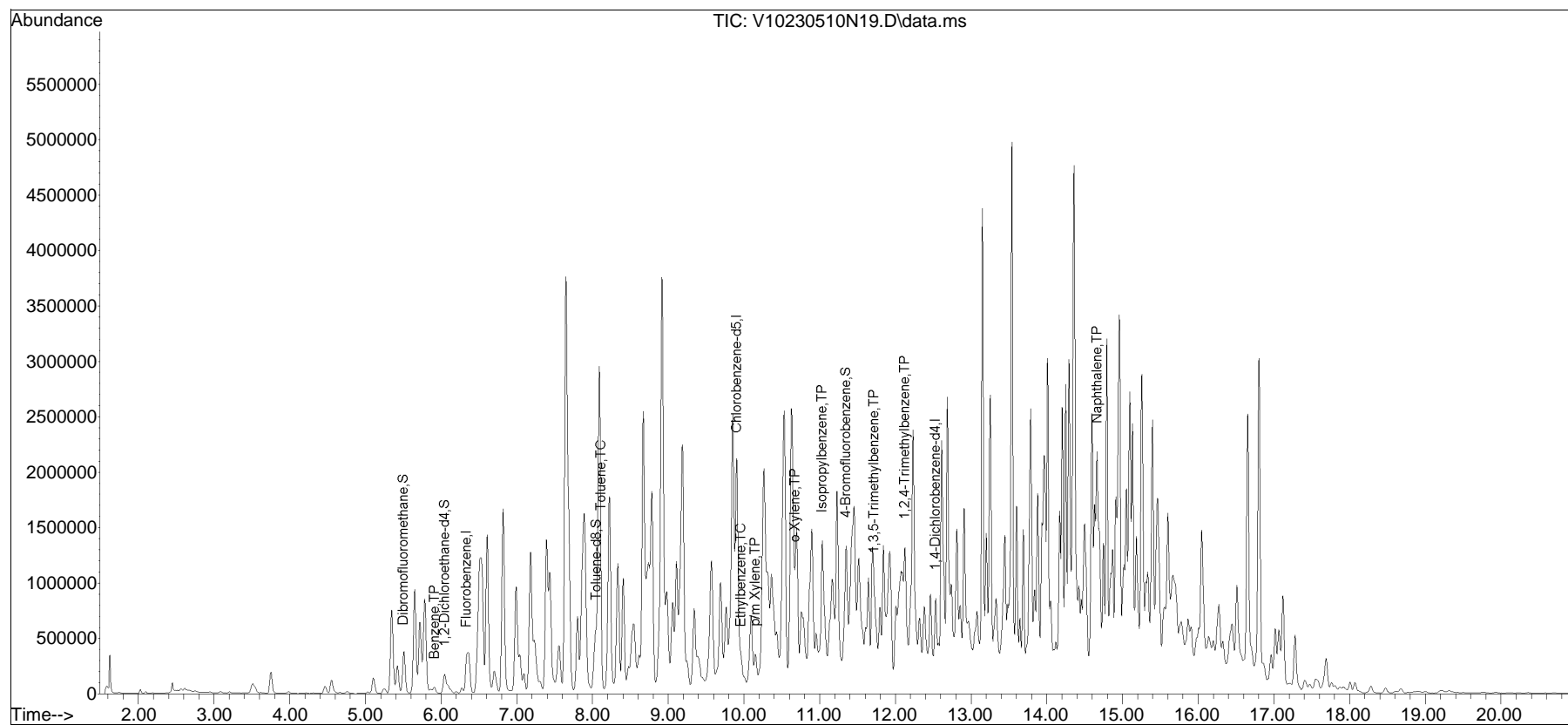


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230510N\
Data File : V10230510N19.D
Acq On : 11 May 2023 2:36 am
Operator : VOA110:AJK
Sample : 12325026-19,31h,3.79,5,0.100,,a
Misc : WG177756,ICAL19973
ALS Vial : 19 Sample Multiplier: 1

Quant Time: May 11 09:47:00 2023
Quant Method : I:\VOLATILES\VOA110\2023\230510N\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list10N\V10230510N01.D•

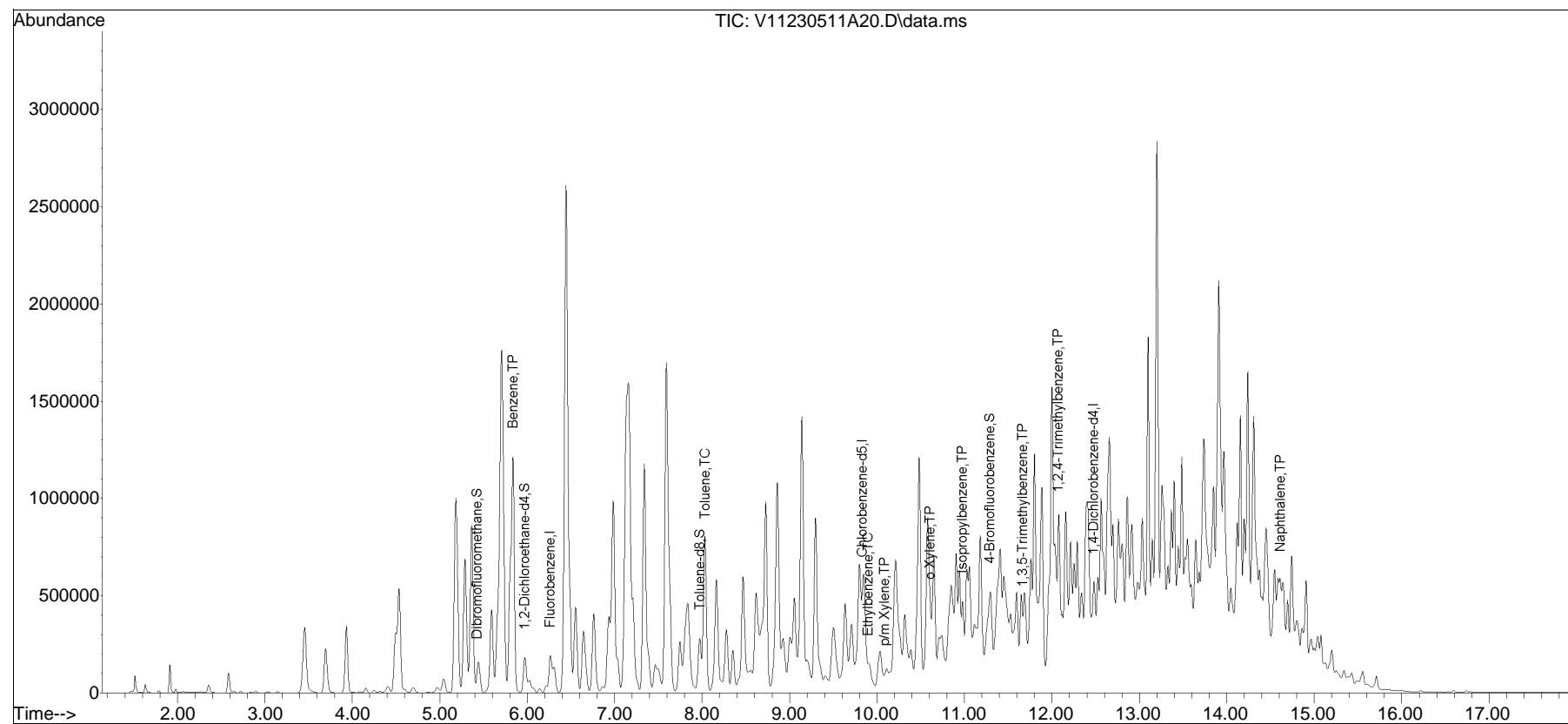


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2023\230511A\
Data File : V11230511A20.D
Acq On : 11 May 2023 08:42 pm
Operator : VOA111:JIC
Sample : L2325026-21,31,5.37,5,,B
Misc : WG1778186,ICAL19909
ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 12 08:14:28 2023
Quant Method : I:\VOLATILES\VOA111\2023\230511A\V111_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Apr 12 06:38:14 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list11A\V11230511A01.D•

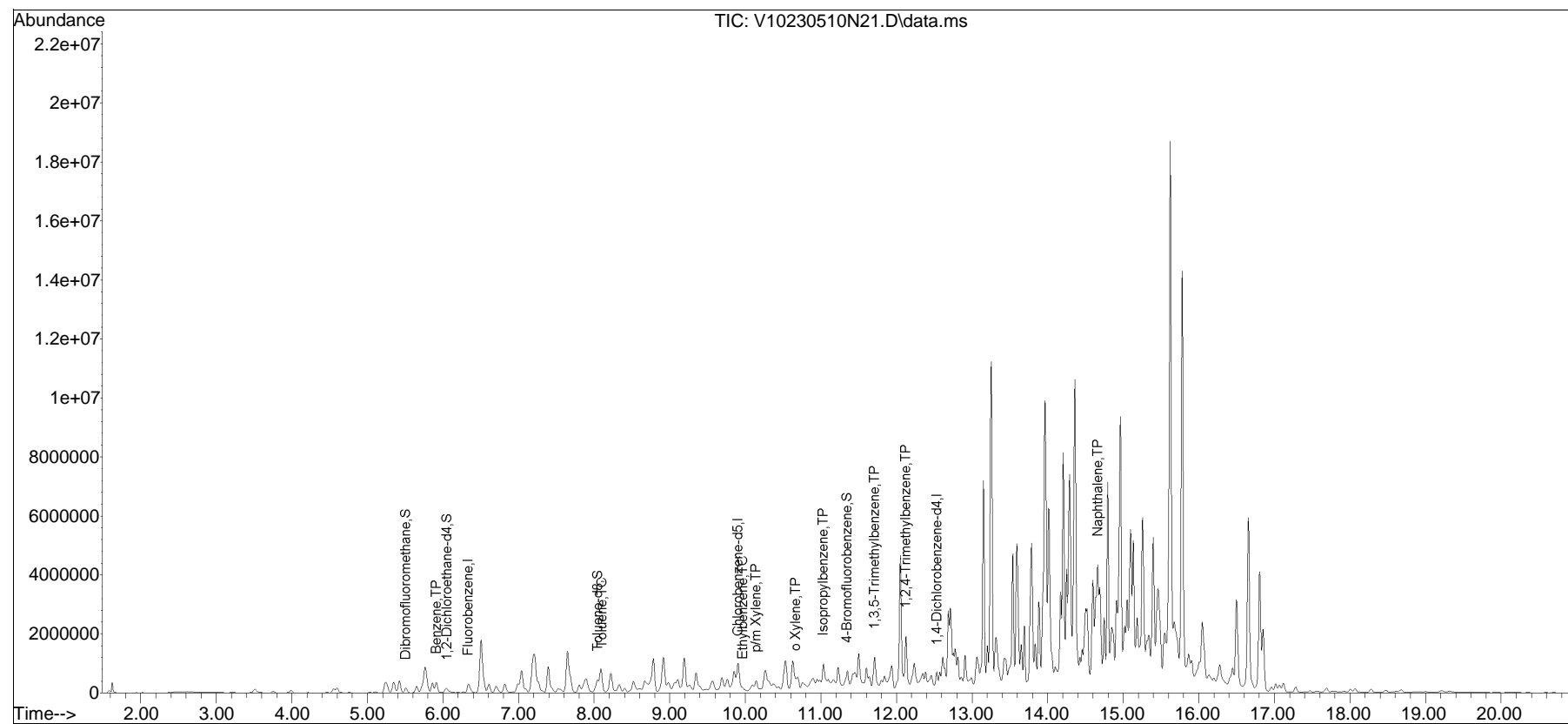


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230510N\
Data File : V10230510N21.D
Acq On : 11 May 2023 3:30 am
Operator : VOA110:AJK
Sample : 12325026-23,31h,5.18,5,0.100,,a
Misc : WG177756,ICAL19973
ALS Vial : 21 Sample Multiplier: 1

Quant Time: May 11 09:47:55 2023
Quant Method : I:\VOLATILES\VOA110\2023\230510N\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list10N\V10230510N01.D•

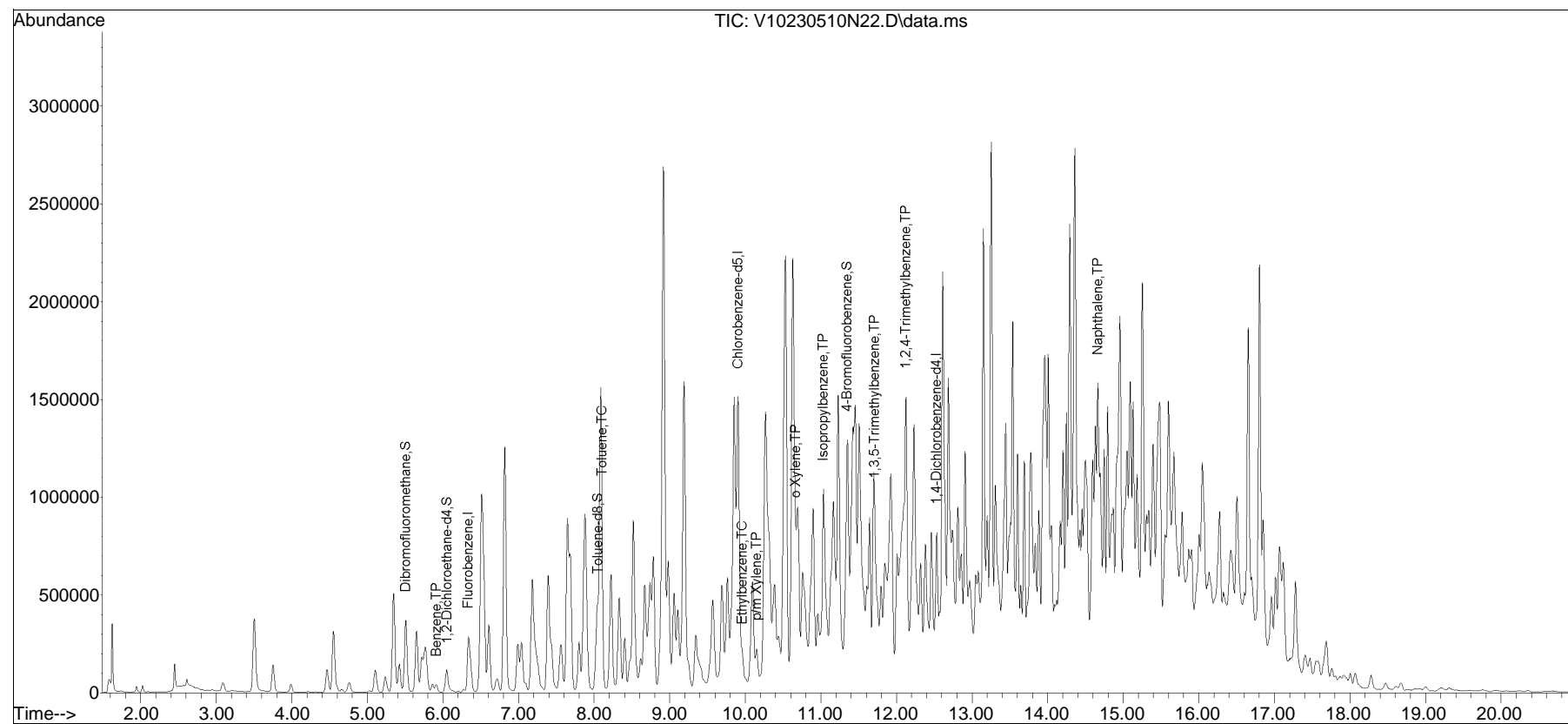


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230510N\
Data File : V10230510N22.D
Acq On : 11 May 2023 3:57 am
Operator : VOA110:AJK
Sample : 12325026-31,31h,5.95,5,0.100,,a
Misc : WG177756,ICAL19973
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 11 09:48:23 2023
Quant Method : I:\VOLATILES\VOA110\2023\230510N\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list10N\V10230510N01.D•

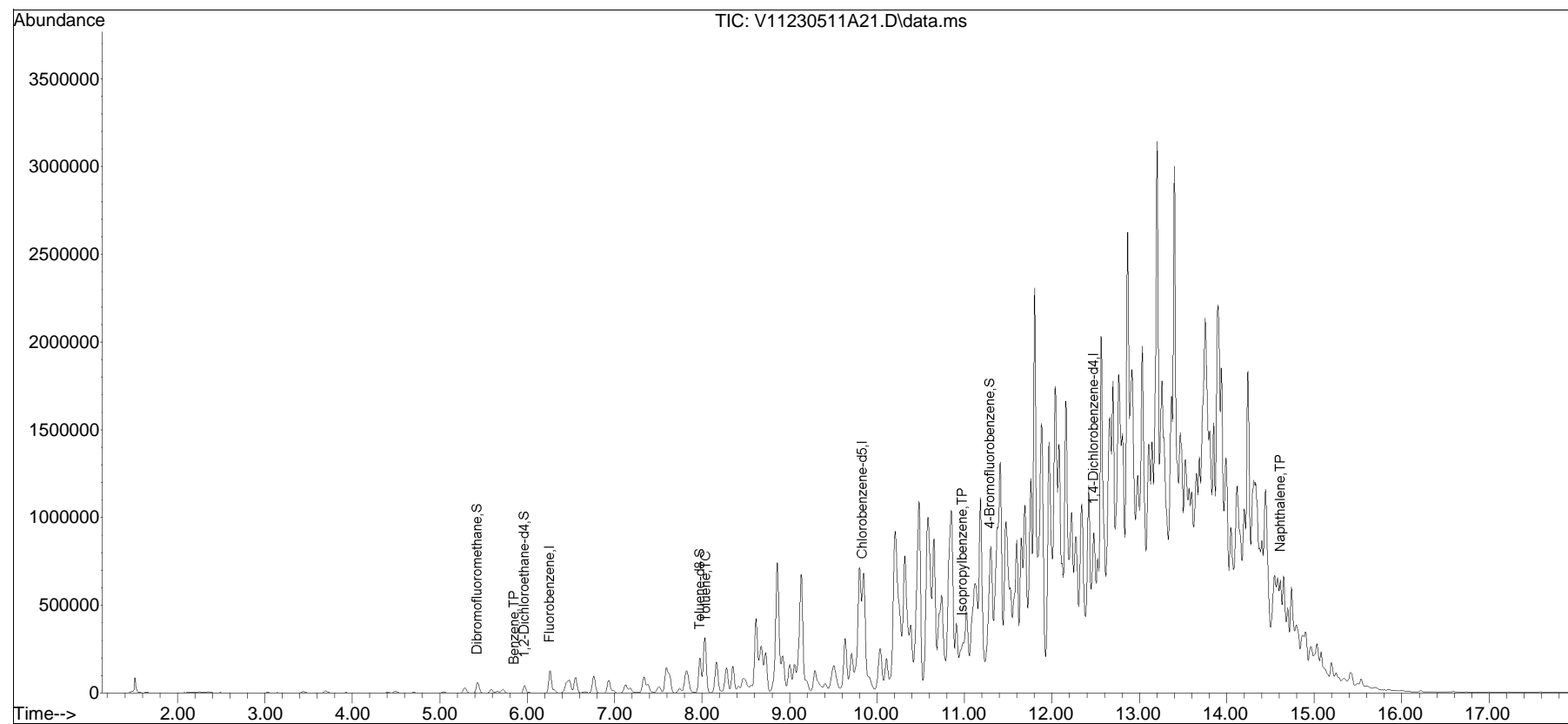


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2023\230511A\
Data File : V11230511A21.D
Acq On : 11 May 2023 09:07 pm
Operator : VOA111:JIC
Sample : L2325026-33,31,6.72,5,,B
Misc : WG1778186,ICAL19909
ALS Vial : 21 Sample Multiplier: 1

Quant Time: May 12 08:14:53 2023
Quant Method : I:\VOLATILES\VOA111\2023\230511A\V111_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Apr 12 06:38:14 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list11A\V11230511A01.D•





ANALYTICAL REPORT

Lab Number:	L2325350
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/16/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2325350

Report Date: 05/16/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2325350-01	LS-A-E06-C1-VOC	SOIL	PHILADELPHIA, PA	05/08/23 09:30	05/08/23
L2325350-02	LS-A-E06-C1-COMP	SOIL	PHILADELPHIA, PA	05/08/23 09:30	05/08/23
L2325350-03	LS-A-E06-C2-VOC	SOIL	PHILADELPHIA, PA	05/08/23 10:00	05/08/23
L2325350-04	LS-A-E06-C2-COMP	SOIL	PHILADELPHIA, PA	05/08/23 10:00	05/08/23
L2325350-05	LS-A-E07-C1-VOC	SOIL	PHILADELPHIA, PA	05/08/23 10:40	05/08/23
L2325350-06	LS-A-E07-C1-COMP	SOIL	PHILADELPHIA, PA	05/08/23 10:40	05/08/23
L2325350-07	LS-B-F01-C1-VOC	SOIL	PHILADELPHIA, PA	05/08/23 11:20	05/08/23
L2325350-08	LS-B-F01-C1-COMP	SOIL	PHILADELPHIA, PA	05/08/23 11:20	05/08/23
L2325350-09	LS-A-E08-C1-VOC	SOIL	PHILADELPHIA, PA	05/08/23 12:20	05/08/23
L2325350-10	LS-A-E08-C1-COMP	SOIL	PHILADELPHIA, PA	05/08/23 12:20	05/08/23
L2325350-11	LS-A-E08-C2-VOC	SOIL	PHILADELPHIA, PA	05/08/23 12:30	05/08/23
L2325350-12	LS-A-E08-C2-COMP	SOIL	PHILADELPHIA, PA	05/08/23 12:30	05/08/23
L2325350-13	LS-A-E08-C3-VOC	SOIL	PHILADELPHIA, PA	05/08/23 12:50	05/08/23
L2325350-14	LS-A-E08-C3-COMP	SOIL	PHILADELPHIA, PA	05/08/23 12:50	05/08/23
L2325350-15	LS-A-F03-C1-VOC	SOIL	PHILADELPHIA, PA	05/08/23 14:00	05/08/23
L2325350-16	LS-A-F03-C1-COMP	SOIL	PHILADELPHIA, PA	05/08/23 14:00	05/08/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

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
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

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

L2325350-01: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (145%) and 4-bromofluorobenzene (252%); 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.

L2325350-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (195%); 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.

L2325350-03 and -05: 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.

L2325350-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (159%); 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.

L2325350-11D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2325350-11D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (137%); 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.

L2325350-13: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2325350-13 (Low-Level): The surrogate recovery is outside the acceptance criteria for toluene-d8 (146%) and 4-bromofluorobenzene (394%); however, the sample was not re-analyzed due to coelution with an

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

Case Narrative (continued)

obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2325350-13 (Low-Level): The surrogate recovery is outside the method acceptance criteria for dibromofluoromethane (66%) due to interference with the Internal Standard.

PAHs

L2325350-08D: 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:

Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative

Date: 05/16/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-01
 Client ID: LS-A-E06-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 09:30
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/15/23 08:27
 Analyst: AJK
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00040	J	mg/kg	0.0019	0.00019	1
Benzene	0.00033	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00024	1
Toluene	0.00063	J	mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.00068	J	mg/kg	0.00096	0.00013	1
p/m-Xylene	0.0038		mg/kg	0.0019	0.00054	1
o-Xylene	0.0036		mg/kg	0.00096	0.00028	1
Xylenes, Total	0.0074		mg/kg	0.00096	0.00028	1
Isopropylbenzene	0.045		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	0.00042	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.0011	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	145	Q	70-130
4-Bromofluorobenzene	252	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-03
 Client ID: LS-A-E06-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 10:00
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/12/23 14:14
 Analyst: AJK
 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	0.10	0.010	1
Benzene	0.026		mg/kg	0.026	0.0087	1
1,2-Dichloroethane	ND		mg/kg	0.052	0.013	1
Toluene	0.038	J	mg/kg	0.052	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	0.034	J	mg/kg	0.052	0.0074	1
p/m-Xylene	0.081	J	mg/kg	0.10	0.029	1
o-Xylene	0.016	J	mg/kg	0.052	0.015	1
Xylenes, Total	0.097	J	mg/kg	0.052	0.015	1
Isopropylbenzene	0.26		mg/kg	0.052	0.0057	1
1,3,5-Trimethylbenzene	0.016	J	mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	0.051	J	mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	195	Q	70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-05
 Client ID: LS-A-E07-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 10:40
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/12/23 14:40
 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	0.12	0.012	1
Benzene	ND		mg/kg	0.030	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	0.030	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	0.026	J	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	91		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	159	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-07
 Client ID: LS-B-F01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 11:20
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/14/23 17:37
 Analyst: JIC
 Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.19	0.020	1
Benzene	2.6		mg/kg	0.049	0.016	1
1,2-Dichloroethane	ND		mg/kg	0.097	0.025	1
Toluene	1.3		mg/kg	0.097	0.053	1
1,2-Dibromoethane	ND		mg/kg	0.049	0.028	1
Ethylbenzene	0.51		mg/kg	0.097	0.014	1
p/m-Xylene	14.		mg/kg	0.19	0.054	1
o-Xylene	2.6		mg/kg	0.097	0.028	1
Xylenes, Total	17.		mg/kg	0.097	0.028	1
Isopropylbenzene	3.0		mg/kg	0.097	0.011	1
1,3,5-Trimethylbenzene	14.		mg/kg	0.19	0.019	1
1,2,4-Trimethylbenzene	37.	E	mg/kg	0.19	0.032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-07 D
 Client ID: LS-B-F01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 11:20
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/12/23 15:05
 Analyst: AJK
 Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
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1,2,4-Trimethylbenzene	45.		mg/kg	0.39	0.065	2
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-09
 Client ID: LS-A-E08-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:20
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/14/23 16:19
 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	0.0026	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	0.00070	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	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-11 D
 Client ID: LS-A-E08-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:30
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/12/23 15:56
 Analyst: AJK
 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	0.24	0.024	2
Benzene	ND		mg/kg	0.059	0.020	2
1,2-Dichloroethane	ND		mg/kg	0.12	0.030	2
Toluene	ND		mg/kg	0.12	0.064	2
1,2-Dibromoethane	ND		mg/kg	0.059	0.034	2
Ethylbenzene	ND		mg/kg	0.12	0.017	2
p/m-Xylene	ND		mg/kg	0.24	0.066	2
o-Xylene	ND		mg/kg	0.12	0.034	2
Xylenes, Total	ND		mg/kg	0.12	0.034	2
Isopropylbenzene	1.5		mg/kg	0.12	0.013	2
1,3,5-Trimethylbenzene	ND		mg/kg	0.24	0.023	2
1,2,4-Trimethylbenzene	ND		mg/kg	0.24	0.039	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	137	Q	70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-13
 Client ID: LS-A-E08-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:50
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/14/23 16:45
 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	0.10	0.010	1
Benzene	ND		mg/kg	0.026	0.0086	1
1,2-Dichloroethane	ND		mg/kg	0.052	0.013	1
Toluene	ND		mg/kg	0.052	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	0.0094	J	mg/kg	0.052	0.0073	1
p/m-Xylene	ND		mg/kg	0.10	0.029	1
o-Xylene	0.016	J	mg/kg	0.052	0.015	1
Xylenes, Total	0.016	J	mg/kg	0.052	0.015	1
Isopropylbenzene	0.67		mg/kg	0.052	0.0056	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	0.021	J	mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-13
 Client ID: LS-A-E08-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:50
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/15/23 08:47
 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	0.0018	0.00018	1
Benzene	0.00036	J	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	0.0038		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	0.0029		mg/kg	0.00090	0.00013	1
p/m-Xylene	0.0044		mg/kg	0.0018	0.00050	1
o-Xylene	0.0055		mg/kg	0.00090	0.00026	1
Xylenes, Total	0.0099		mg/kg	0.00090	0.00026	1
Isopropylbenzene	0.24		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	0.0018		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.0042		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	146	Q	70-130
4-Bromofluorobenzene	394	Q	70-130
Dibromofluoromethane	66	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-15
 Client ID: LS-A-F03-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 14:00
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/14/23 17:11
 Analyst: JIC
 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	0.14	0.014	1
Benzene	3.1		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.071	0.018	1
Toluene	0.69		mg/kg	0.071	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.84		mg/kg	0.071	0.010	1
p/m-Xylene	6.6		mg/kg	0.14	0.040	1
o-Xylene	1.2		mg/kg	0.071	0.021	1
Xylenes, Total	7.8		mg/kg	0.071	0.021	1
Isopropylbenzene	1.6		mg/kg	0.071	0.0078	1
1,3,5-Trimethylbenzene	6.2		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	20.		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/12/23 10:48
Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 03,05,07,11 Batch: WG1778828-5					
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	96		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260D
 Analytical Date: 05/14/23 14:10
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09 Batch: WG1778936-5					
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	94		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/14/23 14:10
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,13,15 Batch: WG1778942-5					
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	94		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/15/23 08:06
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,13 Batch: WG1778970-5					
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	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	101		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 03,05,07,11 Batch: WG1778828-3 WG1778828-4								
Methyl tert butyl ether	96		96		66-130	0		30
Benzene	99		99		70-130	0		30
1,2-Dichloroethane	91		90		70-130	1		30
Toluene	96		98		70-130	2		30
1,2-Dibromoethane	98		98		70-130	0		30
Ethylbenzene	98		98		70-130	0		30
p/m-Xylene	98		99		70-130	1		30
o-Xylene	96		96		70-130	0		30
Isopropylbenzene	98		99		70-130	1		30
1,3,5-Trimethylbenzene	97		98		70-130	1		30
1,2,4-Trimethylbenzene	96		97		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		95		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	100		97		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09 Batch: WG1778936-3 WG1778936-4								
Methyl tert butyl ether	86		87		66-130	1		30
Benzene	95		95		70-130	0		30
1,2-Dichloroethane	89		91		70-130	2		30
Toluene	95		92		70-130	3		30
1,2-Dibromoethane	91		92		70-130	1		30
Ethylbenzene	99		98		70-130	1		30
p/m-Xylene	98		98		70-130	0		30
o-Xylene	96		96		70-130	0		30
Isopropylbenzene	100		98		70-130	2		30
1,3,5-Trimethylbenzene	95		94		70-130	1		30
1,2,4-Trimethylbenzene	96		95		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	91		92		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	98		99		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,13,15 Batch: WG1778942-3 WG1778942-4								
Methyl tert butyl ether	86		87		66-130	1		30
Benzene	95		95		70-130	0		30
1,2-Dichloroethane	89		91		70-130	2		30
Toluene	95		92		70-130	3		30
1,2-Dibromoethane	91		92		70-130	1		30
Ethylbenzene	99		98		70-130	1		30
p/m-Xylene	98		98		70-130	0		30
o-Xylene	96		96		70-130	0		30
Isopropylbenzene	100		98		70-130	2		30
1,3,5-Trimethylbenzene	95		94		70-130	1		30
1,2,4-Trimethylbenzene	96		95		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	91		92		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	98		99		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,13 Batch: WG1778970-3 WG1778970-4								
Methyl tert butyl ether	117		114		66-130	3		30
Benzene	106		100		70-130	6		30
1,2-Dichloroethane	117		113		70-130	3		30
Toluene	94		90		70-130	4		30
1,2-Dibromoethane	100		99		70-130	1		30
Ethylbenzene	98		94		70-130	4		30
p/m-Xylene	97		94		70-130	3		30
o-Xylene	99		95		70-130	4		30
Isopropylbenzene	96		92		70-130	4		30
1,3,5-Trimethylbenzene	99		94		70-130	5		30
1,2,4-Trimethylbenzene	99		95		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	119		119		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	102		101		70-130
Dibromofluoromethane	106		107		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-02
 Client ID: LS-A-E06-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 09:30
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/13/23 07:40
 Analyst: SLR
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/12/23 05:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.069		mg/kg	0.037	0.023	1
Fluorene	0.31		mg/kg	0.19	0.018	1
Phenanthrene	0.46		mg/kg	0.11	0.023	1
Anthracene	0.21		mg/kg	0.11	0.036	1
Pyrene	0.51		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.31		mg/kg	0.11	0.021	1
Chrysene	0.39		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.32		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.31		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.21		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-04
 Client ID: LS-A-E06-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 10:00
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/13/23 07:23
 Analyst: SLR
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/12/23 05:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.072		mg/kg	0.036	0.022	1
Fluorene	0.18		mg/kg	0.18	0.017	1
Phenanthrene	0.31		mg/kg	0.11	0.022	1
Anthracene	0.15		mg/kg	0.11	0.035	1
Pyrene	0.54		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.32		mg/kg	0.11	0.020	1
Chrysene	0.43		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.34		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.35		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.29		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	53		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-06
 Client ID: LS-A-E07-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 10:40
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/13/23 07:06
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/12/23 05:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.051		mg/kg	0.038	0.023	1
Fluorene	0.067	J	mg/kg	0.19	0.019	1
Phenanthrene	0.16		mg/kg	0.12	0.023	1
Anthracene	0.16		mg/kg	0.12	0.037	1
Pyrene	1.1		mg/kg	0.12	0.019	1
Benzo(a)anthracene	1.3		mg/kg	0.12	0.022	1
Chrysene	2.0		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.79		mg/kg	0.12	0.032	1
Benzo(a)pyrene	1.3		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	1.6		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-08 D
 Client ID: LS-B-F01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 11:20
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 14:41
 Analyst: ALS
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 15:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.5		mg/kg	0.20	0.12	5
Fluorene	0.78	J	mg/kg	0.98	0.095	5
Phenanthrene	2.4		mg/kg	0.58	0.12	5
Anthracene	0.44	J	mg/kg	0.58	0.19	5
Pyrene	1.8		mg/kg	0.58	0.097	5
Benzo(a)anthracene	1.2		mg/kg	0.58	0.11	5
Chrysene	2.2		mg/kg	0.58	0.10	5
Benzo(b)fluoranthene	0.64		mg/kg	0.58	0.16	5
Benzo(a)pyrene	0.87		mg/kg	0.78	0.24	5
Benzo(ghi)perylene	0.53	J	mg/kg	0.78	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-10
 Client ID: LS-A-E08-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:20
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/15/23 13:24
 Analyst: MG
 Percent Solids: 76%

Extraction Method: EPA 3546
 Extraction Date: 05/12/23 09:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.099		mg/kg	0.044	0.026	1
Fluorene	0.23		mg/kg	0.22	0.021	1
Phenanthrene	0.50		mg/kg	0.13	0.026	1
Anthracene	0.14		mg/kg	0.13	0.042	1
Pyrene	0.35		mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.16		mg/kg	0.13	0.024	1
Chrysene	0.22		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.16		mg/kg	0.13	0.037	1
Benzo(a)pyrene	0.14	J	mg/kg	0.17	0.053	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.17	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	46		30-120
4-Terphenyl-d14	47		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-12
 Client ID: LS-A-E08-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:30
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/15/23 13:47
 Analyst: MG
 Percent Solids: 78%

Extraction Method: EPA 3546
 Extraction Date: 05/12/23 09:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.048		mg/kg	0.042	0.025	1
Fluorene	0.34		mg/kg	0.21	0.020	1
Phenanthrene	0.74		mg/kg	0.12	0.025	1
Anthracene	0.19		mg/kg	0.12	0.041	1
Pyrene	0.86		mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.56		mg/kg	0.12	0.024	1
Chrysene	1.1		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.23		mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.39		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	0.26		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	39		30-120
4-Terphenyl-d14	37		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-14
 Client ID: LS-A-E08-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:50
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/15/23 14:11
 Analyst: MG
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/12/23 09:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.044		mg/kg	0.039	0.024	1
Fluorene	0.25		mg/kg	0.20	0.019	1
Phenanthrene	0.26		mg/kg	0.12	0.024	1
Anthracene	0.093	J	mg/kg	0.12	0.038	1
Pyrene	0.13		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.057	J	mg/kg	0.12	0.022	1
Chrysene	0.091	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.034	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.029	J	mg/kg	0.16	0.023	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
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-16
 Client ID: LS-A-F03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 14:00
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/13/23 06:33
 Analyst: SLR
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 05/12/23 05:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.048		mg/kg	0.040	0.024	1
Fluorene	0.83		mg/kg	0.20	0.019	1
Phenanthrene	5.6		mg/kg	0.12	0.024	1
Anthracene	0.44		mg/kg	0.12	0.039	1
Pyrene	1.2		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.64		mg/kg	0.12	0.022	1
Chrysene	1.4		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.47		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.65		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.37		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/15/23 10:13
Analyst: MG

Extraction Method: EPA 3546
Extraction Date: 05/11/23 14:12

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,10,12,14,16 Batch: WG1777829-1					
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
2-Fluorophenol	53		25-120
Phenol-d6	51		10-120
Nitrobenzene-d5	48		23-120
2-Fluorobiphenyl	42		30-120
2,4,6-Tribromophenol	48		10-136
4-Terphenyl-d14	50		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/16/23 16:16
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08 Batch: WG1778902-1					
Naphthalene	ND		mg/kg	0.032	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	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	75		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	78		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,10,12,14,16 Batch: WG1777829-2 WG1777829-3								
Naphthalene	57		66		40-140	15		50
Fluorene	60		69		40-140	14		50
Phenanthrene	61		69		40-140	12		50
Anthracene	64		71		40-140	10		50
Pyrene	64		72		35-142	12		50
Benzo(a)anthracene	56		63		40-140	12		50
Chrysene	59		66		40-140	11		50
Benzo(b)fluoranthene	57		64		40-140	12		50
Benzo(a)pyrene	64		72		40-140	12		50
Benzo(ghi)perylene	60		66		40-140	10		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	68		80		25-120
Phenol-d6	62		74		10-120
Nitrobenzene-d5	54		63		23-120
2-Fluorobiphenyl	49		57		30-120
2,4,6-Tribromophenol	63		73		10-136
4-Terphenyl-d14	61		69		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08 Batch: WG1778902-2 WG1778902-3								
Naphthalene	72		94		40-140	27		50
Fluorene	75		97		40-140	26		50
Phenanthrene	75		95		40-140	24		50
Anthracene	79		101		40-140	24		50
Pyrene	79		100		35-142	23		50
Benzo(a)anthracene	76		96		40-140	23		50
Chrysene	77		96		40-140	22		50
Benzo(b)fluoranthene	75		99		40-140	28		50
Benzo(a)pyrene	82		104		40-140	24		50
Benzo(ghi)perylene	71		88		40-140	21		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	77		102		23-120
2-Fluorobiphenyl	74		96		30-120
4-Terphenyl-d14	71		89		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-02

Date Collected: 05/08/23 09:30

Client ID: LS-A-E06-C1-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	96.7		mg/kg	2.15	0.115	1	05/13/23 06:30	05/14/23 16:02	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-04

Date Collected: 05/08/23 10:00

Client ID: LS-A-E06-C2-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	148		mg/kg	2.07	0.111	1	05/13/23 06:30	05/14/23 16:06	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-06

Date Collected: 05/08/23 10:40

Client ID: LS-A-E07-C1-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	75.6		mg/kg	2.24	0.120	1	05/13/23 06:30	05/14/23 16:09	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-08

Date Collected: 05/08/23 11:20

Client ID: LS-B-F01-C1-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	84.1		mg/kg	2.34	0.125	1	05/13/23 06:30	05/14/23 16:25	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-10

Date Collected: 05/08/23 12:20

Client ID: LS-A-E08-C1-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	238		mg/kg	2.55	0.136	1	05/13/23 06:30	05/14/23 16:29	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-12
 Client ID: LS-A-E08-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:30
 Date Received: 05/08/23
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	171		mg/kg	2.45	0.131	1	05/13/23 06:30	05/14/23 16:32	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-14

Date Collected: 05/08/23 12:50

Client ID: LS-A-E08-C3-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	81.0		mg/kg	2.27	0.122	1	05/13/23 06:30	05/14/23 16:35	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-16

Date Collected: 05/08/23 14:00

Client ID: LS-A-F03-C1-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	409		mg/kg	2.40	0.129	1	05/13/23 06:30	05/14/23 16:38	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

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): 02,04,06,08,10,12,14,16 Batch: WG1777278-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/13/23 06:30	05/14/23 14:55	1,6010D	AMW

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

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: WG1777278-2 SRM Lot Number: D119-540								
Lead, Total	107		-		82-118	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

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): 02,04,06,08,10,12,14,16 QC Batch ID: WG1777278-3 QC Sample: L2325214-01 Client ID: MS Sample												
Lead, Total	6.99	43.6	62.0	126	Q	-	-		75-125	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2325350

Report Date: 05/16/23

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: WG1777278-4 QC Sample: L2325214-01 Client ID: DUP Sample						
Lead, Total	6.99	5.76	mg/kg	19		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-01

Date Collected: 05/08/23 09:30

Client ID: LS-A-E06-C1-VOC

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	88.6		%	0.100	NA	1	-	05/09/23 09:49	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-02

Date Collected: 05/08/23 09:30

Client ID: LS-A-E06-C1-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	89.0		%	0.100	NA	1	-	05/09/23 09:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325350**Project Number:** 200.00135.023**Report Date:** 05/16/23**SAMPLE RESULTS**

Lab ID: L2325350-03

Date Collected: 05/08/23 10:00

Client ID: LS-A-E06-C2-VOC

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	-	05/09/23 09:49	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325350**Project Number:** 200.00135.023**Report Date:** 05/16/23**SAMPLE RESULTS**

Lab ID: L2325350-04

Date Collected: 05/08/23 10:00

Client ID: LS-A-E06-C2-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	90.6		%	0.100	NA	1	-	05/09/23 09:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-05

Date Collected: 05/08/23 10:40

Client ID: LS-A-E07-C1-VOC

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	-	05/09/23 09:49	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-06

Date Collected: 05/08/23 10:40

Client ID: LS-A-E07-C1-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	-	05/09/23 09:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-07
Client ID: LS-B-F01-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 11:20
Date Received: 05/08/23
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	72.6		%	0.100	NA	1	-	05/09/23 09:49	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-08

Date Collected: 05/08/23 11:20

Client ID: LS-B-F01-C1-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	83.9		%	0.100	NA	1	-	05/09/23 09:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-09
Client ID: LS-A-E08-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:20
Date Received: 05/08/23
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	78.6		%	0.100	NA	1	-	05/09/23 09:49	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-10
Client ID: LS-A-E08-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:20
Date Received: 05/08/23
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	75.7		%	0.100	NA	1	-	05/09/23 09:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-11

Date Collected: 05/08/23 12:30

Client ID: LS-A-E08-C2-VOC

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	83.9		%	0.100	NA	1	-	05/09/23 09:49	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-12

Date Collected: 05/08/23 12:30

Client ID: LS-A-E08-C2-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	77.9		%	0.100	NA	1	-	05/09/23 09:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-13
Client ID: LS-A-E08-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 12:50
Date Received: 05/08/23
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	86.0		%	0.100	NA	1	-	05/09/23 09:49	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-14

Date Collected: 05/08/23 12:50

Client ID: LS-A-E08-C3-COMP

Date Received: 05/08/23

Sample Location: PHILADELPHIA, PA

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	82.7		%	0.100	NA	1	-	05/09/23 09:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-15
Client ID: LS-A-F03-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 14:00
Date Received: 05/08/23
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	-	05/09/23 09:49	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325350-16
Client ID: LS-A-F03-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/08/23 14:00
Date Received: 05/08/23
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	81.0		%	0.100	NA	1	-	05/09/23 09:01	121,2540G	ROI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2325350

Report Date: 05/16/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1776547-1 QC Sample: L2324806-01 Client ID: DUP Sample						
Solids, Total	88.5	87.4	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15 QC Batch ID: WG1776556-1 QC Sample: L2323399-14 Client ID: DUP Sample						
Solids, Total	87.1	87.2	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325350**Project Number:** 200.00135.023**Report Date:** 05/16/23**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(*)
L2325350-01A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2325350-01B	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-01C	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-01D	Plastic 120ml unpreserved	A	NA		5.0	Y	Absent		TS(7)
L2325350-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2325350-02B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2325350-03A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2325350-03B	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-03C	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-03D	Plastic 120ml unpreserved	A	NA		5.0	Y	Absent		TS(7)
L2325350-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2325350-04B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2325350-05A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2325350-05B	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-05C	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-05D	Plastic 120ml unpreserved	A	NA		5.0	Y	Absent		TS(7)
L2325350-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2325350-06B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2325350-07A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2325350-07B	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-07C	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-07D	Plastic 120ml unpreserved	A	NA		5.0	Y	Absent		TS(7)
L2325350-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325350**Project Number:** 200.00135.023**Report Date:** 05/16/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2325350-08B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2325350-09A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2325350-09B	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-09C	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-09D	Plastic 120ml unpreserved	A	NA		5.0	Y	Absent		TS(7)
L2325350-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2325350-10B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2325350-11A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2325350-11B	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-11C	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-11D	Plastic 120ml unpreserved	A	NA		5.0	Y	Absent		TS(7)
L2325350-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2325350-12B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2325350-13A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2325350-13B	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260H(14),PA-8260HLW(14)
L2325350-13C	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260H(14),PA-8260HLW(14)
L2325350-13D	Plastic 120ml unpreserved	A	NA		5.0	Y	Absent		TS(7)
L2325350-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2325350-14B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2325350-15A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2325350-15B	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-15C	Vial water preserved	A	NA		5.0	Y	Absent	09-MAY-23 03:44	PA-8260HLW(14)
L2325350-15D	Plastic 120ml unpreserved	A	NA		5.0	Y	Absent		TS(7)
L2325350-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2325350-16B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

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
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

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
Project Number: 200.00135.023

Lab Number: L2325350
Report Date: 05/16/23

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.)

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325350

Project Number: 200.00135.023

Report Date: 05/16/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

Date Rec'd in Lab: 5/9/23

ALPHA Job #: L2325350

WESTBORO, 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 #: 200-00135-023
Project Manager: William Schmidt
ALPHA Quote #:

Report Information - Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #:

Client Information

Client: Ransom Consulting LLC
Address: 2127 Hamilton Ave
Hamilton NJ 08619
Phone: 609 584 0090
Fax:
Email: William.Schmidt@ransomenv.com

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)

Date Due: Time:

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:
Report only project specific analyses list of PAHs unheated/leached gasoline and No. 2, 4, 5, + 6 fuel oils. Short list Run Naphtlene vs. by method 8270 ONLY!!! email results to add @ terraplex.com, william.schmidt @ ransomenv.com + JJerry @ Hiko global.com

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

ANALYSIS

Voc (8260)
SVOC (8270)
Lead

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		Sample Matrix	Sampler's Initials	ANALYSIS		TOTAL # BOTTLES
		Date	Time			Voc (8260)	SVOC (8270)	
Z5350-01	LS-A-E06-C1-VOL	5/8/23	9:30	S	C'O	✓		4
	02 LS-A-E06-C1-COMP		9:30			✓	✓	2
	03 LS-A-E06-C2-VOL		1000			✓		4
	04 LS-A-E06-C2-COMP		1000			✓	✓	2
	05 LS-A-E07-C1-VOL		1040			✓		4
	06 LS-A-E07-C1-COMP		1040			✓	✓	2
	07 LS-B-F01-C1-VOL		1120			✓		4
	08 LS-B-F01-C1-COMP		1120			✓	✓	2
	09 LS-A-E06-C1-VOL		1220			✓		4
	10 LS-A-E06-C1-COMP		1220			✓	✓	2

Rel. by
Taylor DeLuca
5/9/23 08:15

Container Type	G	G	G				
Preservative	F	A	A				
Relinquished By:	Date/Time	Received By:	Date/Time				
<i>[Signature]</i>	5/8/23 1530	D. Robinson	5/8/23 1530				
<i>[Signature]</i>	5/8/23 1800	<i>[Signature]</i>	5/8/23 1800				
<i>[Signature]</i>	5/8/23 2:00	<i>[Signature]</i>	5/8/23 2:00				

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 Terms and Conditions. See reverse side.



CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 5/9/23

ALPHA Job #: L2325350

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 Ave
Hamilton NJ 08619*
Phone: *609 584 0090*
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 #: *200.00135.023*
Project Manager: *William Schmidt*
ALPHA Quote #:

Report Information - Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
Date Due: Time:

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
See page 1 of 2 for project specific Requirements !!!

ANALYSIS	TOTAL # BOTTLES	
	<i>Vocs (8260)</i>	<i>SVocs (8270)</i>
<i>Lead</i>		

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		Sample Matrix	Sampler's Initials	ANALYSIS		TOTAL # BOTTLES
		Date	Time			Vocs (8260)	SVocs (8270)	
25350-11	LS-A-E08-C2-VOC	5/8/23	1230	S	CO	✓		4
12	LS-A-E08-C2-comp		1230			✓	✓	2
13	LS-A-E08-C3-VOC		1250			✓		4
14	LS-A-E08-C3-comp		1250			✓	✓	2
15	LS-A-F03-C1-VOC		1400			✓		4
16	LS-A-F03-C1-comp		1400			✓	✓	2

Rel. by
5/9/23 08:15
Janice Dellinger

Container Type	G	G	G
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	<i>5/8/23 1530</i>	<i>[Signature]</i>	<i>5/8/23 1530</i>
<i>[Signature]</i>	<i>5/8/23 1800</i>	<i>[Signature]</i>	<i>5/8/23 1800</i>
<i>[Signature]</i>	<i>5/8/23 2100</i>	<i>[Signature]</i>	<i>5/8/23 2100</i>

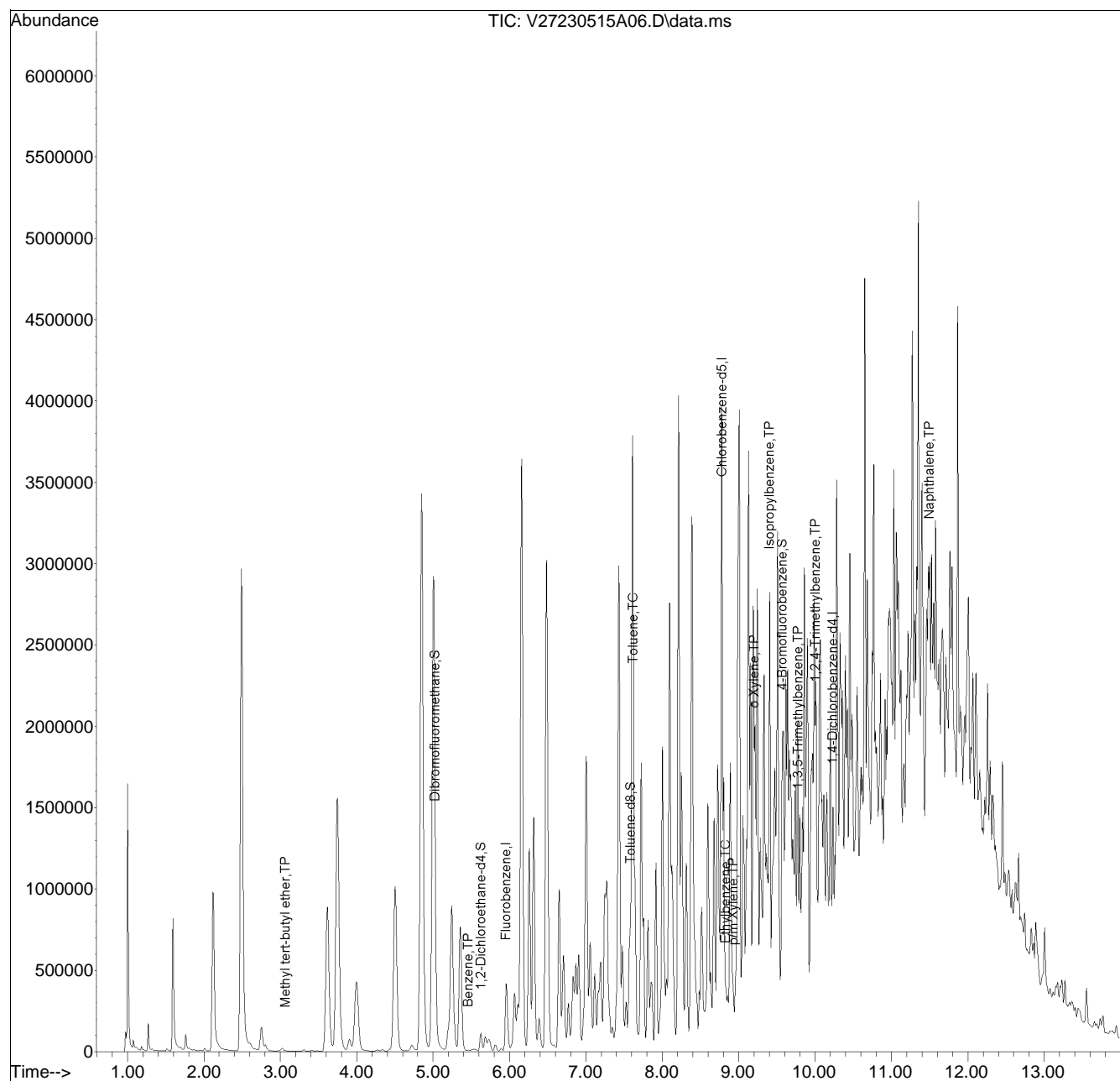
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230515A\
Data File : V27230515A06.D
Acq On : 15 May 2023 08:27 am
Operator : VOA127:AJK
Sample : L2325350-01,31,5.90,5,,B
Misc : WG1778970,ICAL19866
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 15 09:16:16 2023
Quant Method : I:\VOLATILES\VOA127\2023\230515A\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 list15A\V27230515A01.D•

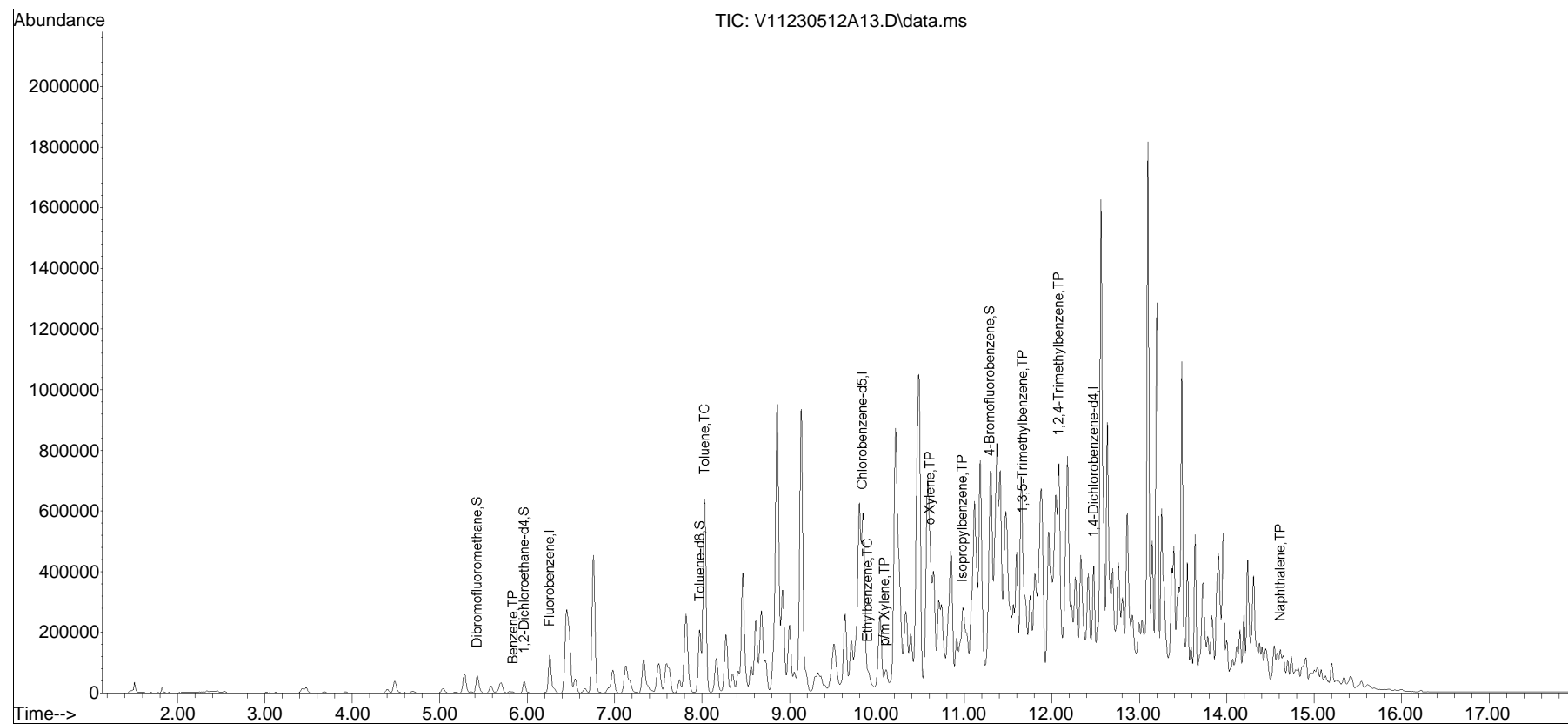


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2023\230512A\
Data File : V11230512A13.D
Acq On : 12 May 2023 02:14 pm
Operator : VOA111:AJK
Sample : L2325350-03,31H,6.07,5,0.100,,A
Misc : WG1778828,ICAL19909
ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 14 12:59:53 2023
Quant Method : I:\VOLATILES\VOA111\2023\230512A\V111_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Apr 12 06:38:14 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list12A\V11230512A01.D•

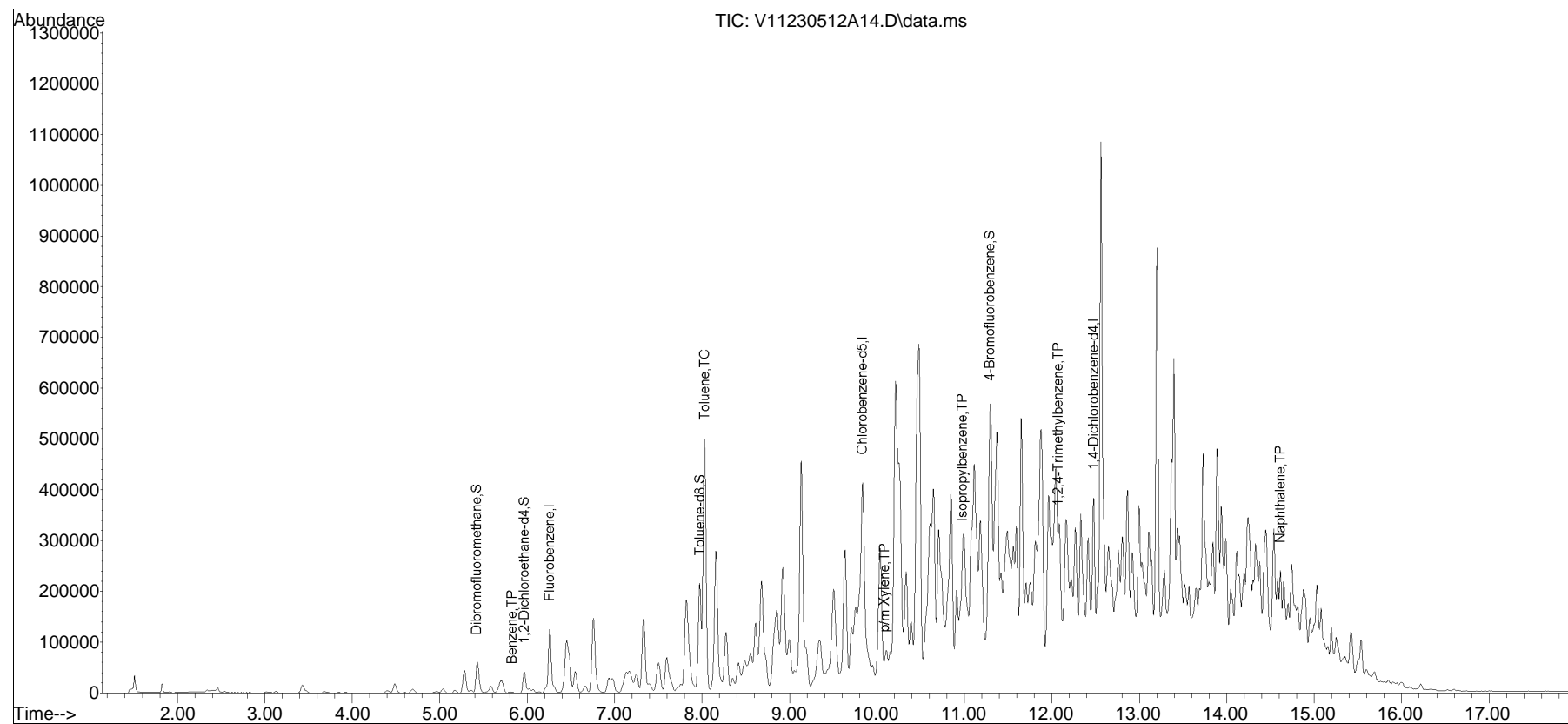


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2023\230512A\
Data File : V11230512A14.D
Acq On : 12 May 2023 02:40 pm
Operator : VOA111:AJK
Sample : L2325350-05,31H,6.11,5,0.100,,A
Misc : WG1778828,ICAL19909
ALS Vial : 14 Sample Multiplier: 1

Quant Time: May 14 13:02:59 2023
Quant Method : I:\VOLATILES\VOA111\2023\230512A\V111_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Apr 12 06:38:14 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list12A\V11230512A01.D•

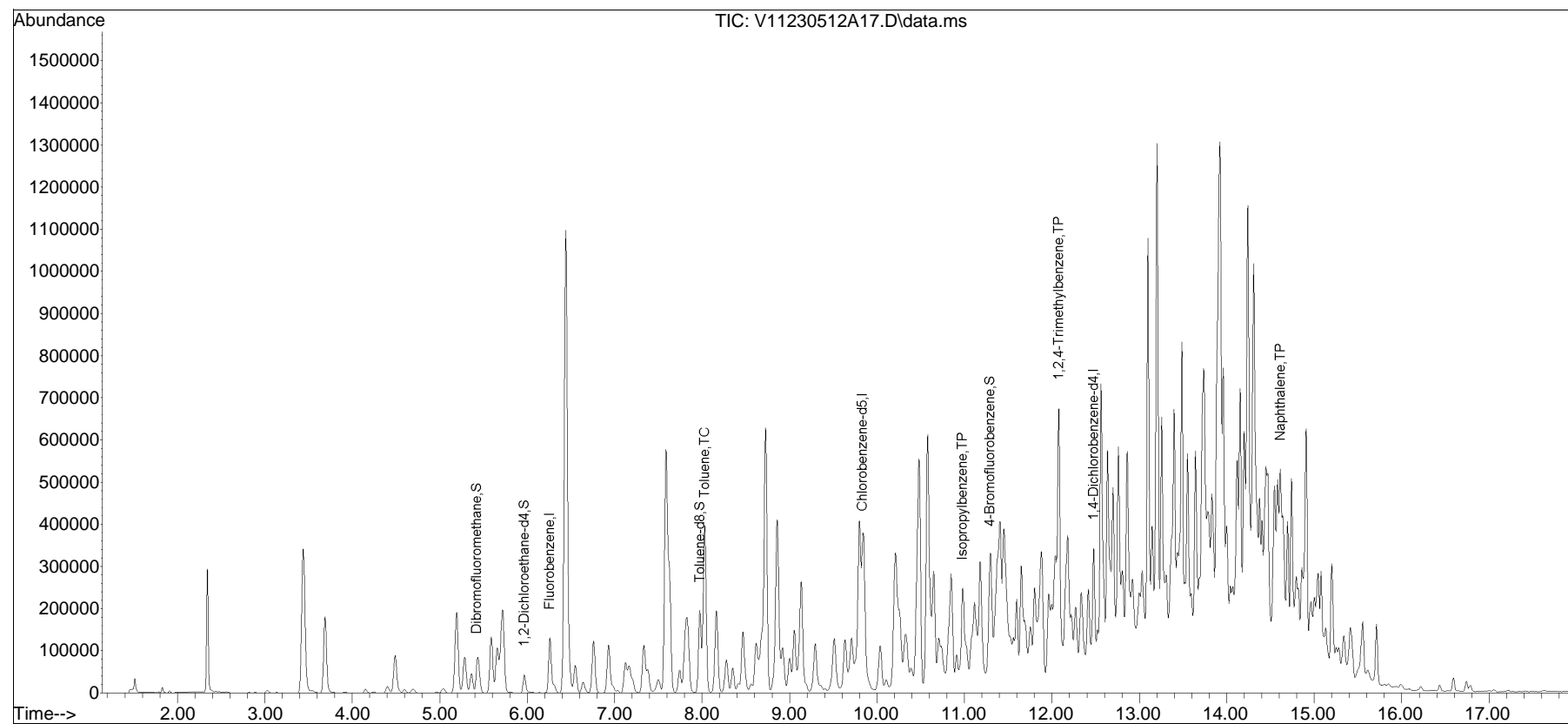


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2023\230512A\
Data File : V11230512A17.D
Acq On : 12 May 2023 03:56 pm
Operator : VOA111:AJK
Sample : L2325350-11D,31H,6.04,5,0.05,,A
Misc : WG1778828,ICAL19909
ALS Vial : 17 Sample Multiplier: 1

Quant Time: May 14 13:03:37 2023
Quant Method : I:\VOLATILES\VOA111\2023\230512A\V111_230407N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Apr 12 06:38:14 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list12A\V11230512A01.D•

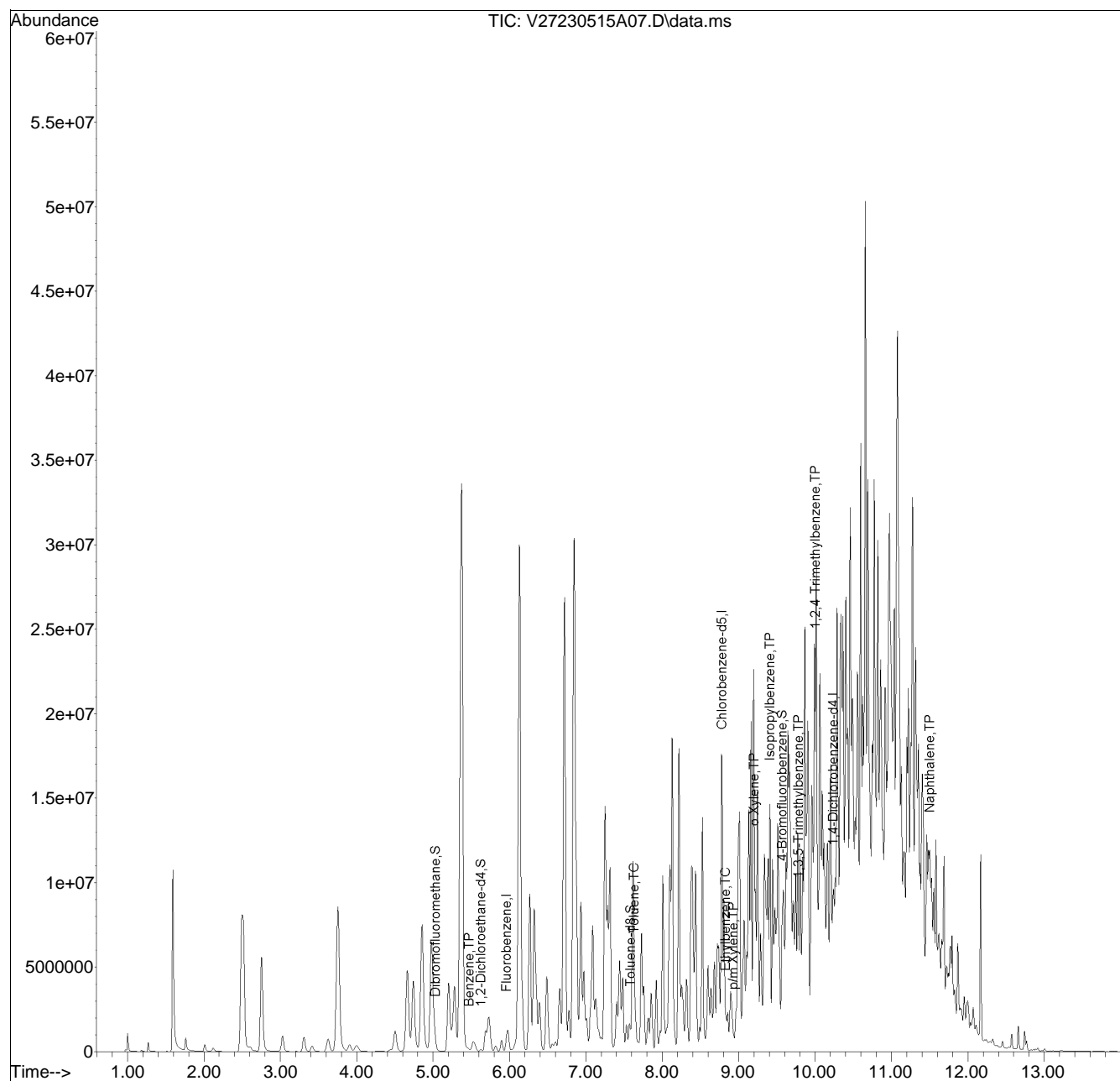


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230515A\
 Data File : V27230515A07.D
 Acq On : 15 May 2023 08:47 am
 Operator : VOA127:AJK
 Sample : L2325350-13,31,6.48,5,,B
 Misc : WG1778970,ICAL19866
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 15 09:17:13 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230515A\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 list15A\V27230515A01.D•





ANALYTICAL REPORT

Lab Number:	L2325590
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/16/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2325590-01	LS-B-B01-C1-VOC	SOIL	PHILADELPHIA, PA	05/09/23 08:20	05/09/23
L2325590-02	LS-B-B01-C1-COMP	SOIL	PHILADELPHIA, PA	05/09/23 08:20	05/09/23
L2325590-03	LS-B-B02-C1-VOC	SOIL	PHILADELPHIA, PA	05/09/23 08:50	05/09/23
L2325590-04	LS-B-B02-C1-COMP	SOIL	PHILADELPHIA, PA	05/09/23 08:50	05/09/23
L2325590-05	LS-B-B03-C1-VOC	SOIL	PHILADELPHIA, PA	05/09/23 09:30	05/09/23
L2325590-06	LS-B-B03-C1-COMP	SOIL	PHILADELPHIA, PA	05/09/23 09:30	05/09/23
L2325590-07	LS-B-C01-C1-VOC	SOIL	PHILADELPHIA, PA	05/09/23 10:50	05/09/23
L2325590-08	LS-B-C01-C1-COMP	SOIL	PHILADELPHIA, PA	05/09/23 10:50	05/09/23
L2325590-09	LS-B-D01-C1-VOC	SOIL	PHILADELPHIA, PA	05/09/23 11:30	05/09/23
L2325590-10	LS-B-D01-C1-COMP	SOIL	PHILADELPHIA, PA	05/09/23 11:30	05/09/23
L2325590-11	LS-B-D01-C2-VOC	SOIL	PHILADELPHIA, PA	05/09/23 11:50	05/09/23
L2325590-12	LS-B-D01-C2-COMP	SOIL	PHILADELPHIA, PA	05/09/23 11:50	05/09/23
L2325590-13	LS-A-F01-C1-VOC	SOIL	PHILADELPHIA, PA	05/09/23 13:00	05/09/23
L2325590-14	LS-A-F01-C1-COMP	SOIL	PHILADELPHIA, PA	05/09/23 13:00	05/09/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

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
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

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

L2325590-03D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2325590-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (147%); 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.

L2325590-09: The internal standard (IS) response for fluorobenzene (367%) and the surrogate recovery for 1,2-dichloroethane-d4 (22%) and dibromofluoromethane (26%) and 4-bromofluorobenzene (192%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. A high-level analysis was performed, and those results are also reported.

L2325590-11: The internal standard (IS) response for fluorobenzene (220%) and the surrogate recoveries for 1,2-dichloroethane-d4 (36%) and dibromofluoromethane (42%) and 4-bromofluorobenzene (142%) 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 re-analyzed on a larger dilution. The results of both analyses are reported.

PAHs

L2325590-02: The sample has elevated detection limits due to limited sample volume available for analysis.

L2325590-04D, -06D, -08D, and -14D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2325590-06D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%) and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis 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: 05/16/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-01
 Client ID: LS-B-B01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 08:20
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/13/23 02:53
 Analyst: JIC
 Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.24	0.024	1
Benzene	ND		mg/kg	0.060	0.020	1
1,2-Dichloroethane	ND		mg/kg	0.12	0.031	1
Toluene	0.17		mg/kg	0.12	0.066	1
1,2-Dibromoethane	ND		mg/kg	0.060	0.035	1
Ethylbenzene	0.18		mg/kg	0.12	0.017	1
p/m-Xylene	1.8		mg/kg	0.24	0.068	1
o-Xylene	2.5		mg/kg	0.12	0.035	1
Xylenes, Total	4.3		mg/kg	0.12	0.035	1
Isopropylbenzene	0.34		mg/kg	0.12	0.013	1
1,3,5-Trimethylbenzene	7.1		mg/kg	0.24	0.023	1
1,2,4-Trimethylbenzene	11.		mg/kg	0.24	0.040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-03 D
 Client ID: LS-B-B02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 08:50
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/13/23 02:26
 Analyst: JIC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.93	0.094	5
Benzene	1.3		mg/kg	0.23	0.077	5
1,2-Dichloroethane	ND		mg/kg	0.47	0.12	5
Toluene	2.0		mg/kg	0.47	0.25	5
1,2-Dibromoethane	ND		mg/kg	0.23	0.14	5
Ethylbenzene	1.1		mg/kg	0.47	0.066	5
p/m-Xylene	5.9		mg/kg	0.93	0.26	5
o-Xylene	3.7		mg/kg	0.47	0.14	5
Xylenes, Total	9.6		mg/kg	0.47	0.14	5
Isopropylbenzene	0.58		mg/kg	0.47	0.051	5
1,3,5-Trimethylbenzene	6.2		mg/kg	0.93	0.090	5
1,2,4-Trimethylbenzene	14.		mg/kg	0.93	0.16	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-05
Client ID: LS-B-B03-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 09:30
Date Received: 05/09/23
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 05/15/23 10:30
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	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00084	0.00022	1
Toluene	ND		mg/kg	0.00084	0.00045	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00024	1
Ethylbenzene	ND		mg/kg	0.00084	0.00012	1
p/m-Xylene	0.00061	J	mg/kg	0.0017	0.00047	1
o-Xylene	0.00028	J	mg/kg	0.00084	0.00024	1
Xylenes, Total	0.00089	J	mg/kg	0.00084	0.00024	1
Isopropylbenzene	0.00020	J	mg/kg	0.00084	0.00009	1
1,3,5-Trimethylbenzene	0.00052	J	mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	0.00060	J	mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-07
 Client ID: LS-B-C01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 10:50
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/15/23 11:12
 Analyst: AJK
 Percent Solids: 87%

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	1.0		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	0.67		mg/kg	0.065	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	5.4		mg/kg	0.065	0.0092	1
p/m-Xylene	11.		mg/kg	0.13	0.037	1
o-Xylene	6.0		mg/kg	0.065	0.019	1
Xylenes, Total	17.		mg/kg	0.065	0.019	1
Isopropylbenzene	0.86		mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	9.5		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	22.	E	mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	147	Q	70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-07 D
 Client ID: LS-B-C01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 10:50
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/13/23 03:47
 Analyst: JIC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
1,2,4-Trimethylbenzene	25.		mg/kg	1.3	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	85		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-09
 Client ID: LS-B-D01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 11:30
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/13/23 04:18
 Analyst: JIC
 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	0.13	0.013	1
Benzene	0.41		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.066	0.017	1
Toluene	0.17		mg/kg	0.066	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	0.28		mg/kg	0.066	0.0092	1
p/m-Xylene	0.44		mg/kg	0.13	0.037	1
o-Xylene	0.13		mg/kg	0.066	0.019	1
Xylenes, Total	0.57		mg/kg	0.066	0.019	1
Isopropylbenzene	0.29		mg/kg	0.066	0.0071	1
1,3,5-Trimethylbenzene	0.099	J	mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	0.12	J	mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	70		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-09
 Client ID: LS-B-D01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 11:30
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/15/23 11:54
 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	0.0020	0.00020	1
Benzene	0.055		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.045		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	0.062		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.068		mg/kg	0.0020	0.00057	1
o-Xylene	0.012		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.080		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.064		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0068		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.011		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	22	Q	70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	192	Q	70-130
Dibromofluoromethane	26	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-11
 Client ID: LS-B-D01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 11:50
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/15/23 12:36
 Analyst: AJK
 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	0.88		mg/kg	0.028	0.0094	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.015	1
Toluene	1.0		mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.017	1
Ethylbenzene	2.2		mg/kg	0.057	0.0080	1
p/m-Xylene	2.6		mg/kg	0.11	0.032	1
o-Xylene	1.0		mg/kg	0.057	0.016	1
Xylenes, Total	3.6		mg/kg	0.057	0.016	1
Isopropylbenzene	0.70		mg/kg	0.057	0.0062	1
1,3,5-Trimethylbenzene	0.88		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	1.2		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	36	Q	70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	142	Q	70-130
Dibromofluoromethane	42	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-11 D
 Client ID: LS-B-D01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 11:50
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/13/23 04:48
 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	0.57	0.057	5
Benzene	1.8		mg/kg	0.14	0.047	5
1,2-Dichloroethane	ND		mg/kg	0.28	0.073	5
Toluene	1.3		mg/kg	0.28	0.15	5
1,2-Dibromoethane	ND		mg/kg	0.14	0.083	5
Ethylbenzene	2.3		mg/kg	0.28	0.040	5
p/m-Xylene	3.0		mg/kg	0.57	0.16	5
o-Xylene	1.2		mg/kg	0.28	0.083	5
Xylenes, Total	4.2		mg/kg	0.28	0.083	5
Isopropylbenzene	0.78		mg/kg	0.28	0.031	5
1,3,5-Trimethylbenzene	0.90		mg/kg	0.57	0.055	5
1,2,4-Trimethylbenzene	1.3		mg/kg	0.57	0.095	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	72		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-13
 Client ID: LS-A-F01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 13:00
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/15/23 13:36
 Analyst: AJK
 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	0.0028	0.00028	1
Benzene	0.012		mg/kg	0.00069	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	0.0011	J	mg/kg	0.0014	0.00075	1
1,2-Dibromoethane	ND		mg/kg	0.00069	0.00040	1
Ethylbenzene	0.00025	J	mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0028	0.00077	1
o-Xylene	ND		mg/kg	0.0014	0.00040	1
Xylenes, Total	ND		mg/kg	0.0014	0.00040	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/12/23 19:23
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,07,09,11 Batch: WG1779022-5					
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	96		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/15/23 10:07
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,09 Batch: WG1779404-5					
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	96		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/15/23 10:07
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,11 Batch: WG1779406-5					
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	96		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/15/23 08:52
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 13 Batch: WG1779413-5					
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	94		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	104		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,07,09,11 Batch: WG1779022-3 WG1779022-4								
Methyl tert butyl ether	95		98		66-130	3		30
Benzene	98		99		70-130	1		30
1,2-Dichloroethane	86		89		70-130	3		30
Toluene	88		89		70-130	1		30
1,2-Dibromoethane	96		98		70-130	2		30
Ethylbenzene	88		88		70-130	0		30
p/m-Xylene	92		91		70-130	1		30
o-Xylene	91		91		70-130	0		30
Isopropylbenzene	87		87		70-130	0		30
1,3,5-Trimethylbenzene	84		84		70-130	0		30
1,2,4-Trimethylbenzene	85		85		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	90		91		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	87		86		70-130
Dibromofluoromethane	103		104		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,09 Batch: WG1779404-3 WG1779404-4								
Methyl tert butyl ether	92		90		66-130	2		30
Benzene	90		85		70-130	6		30
1,2-Dichloroethane	83		80		70-130	4		30
Toluene	80		76		70-130	5		30
1,2-Dibromoethane	86		85		70-130	1		30
Ethylbenzene	83		81		70-130	2		30
p/m-Xylene	86		82		70-130	5		30
o-Xylene	86		83		70-130	4		30
Isopropylbenzene	83		79		70-130	5		30
1,3,5-Trimethylbenzene	82		78		70-130	5		30
1,2,4-Trimethylbenzene	82		78		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		97		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	91		91		70-130
Dibromofluoromethane	108		107		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,11 Batch: WG1779406-3 WG1779406-4								
Methyl tert butyl ether	92		90		66-130	2		30
Benzene	90		85		70-130	6		30
1,2-Dichloroethane	83		80		70-130	4		30
Toluene	80		76		70-130	5		30
1,2-Dibromoethane	86		85		70-130	1		30
Ethylbenzene	83		81		70-130	2		30
p/m-Xylene	86		82		70-130	5		30
o-Xylene	86		83		70-130	4		30
Isopropylbenzene	83		79		70-130	5		30
1,3,5-Trimethylbenzene	82		78		70-130	5		30
1,2,4-Trimethylbenzene	82		78		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		97		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	91		91		70-130
Dibromofluoromethane	108		107		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 13 Batch: WG1779413-3 WG1779413-4								
Methyl tert butyl ether	88		83		66-130	6		30
Benzene	91		90		70-130	1		30
1,2-Dichloroethane	89		87		70-130	2		30
Toluene	89		89		70-130	0		30
1,2-Dibromoethane	92		88		70-130	4		30
Ethylbenzene	93		94		70-130	1		30
p/m-Xylene	92		93		70-130	1		30
o-Xylene	91		92		70-130	1		30
Isopropylbenzene	93		94		70-130	1		30
1,3,5-Trimethylbenzene	90		91		70-130	1		30
1,2,4-Trimethylbenzene	92		92		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		90		70-130
Toluene-d8	97		98		70-130
4-Bromofluorobenzene	103		101		70-130
Dibromofluoromethane	100		98		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-02
 Client ID: LS-B-B01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 08:20
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 02:43
 Analyst: IM
 Percent Solids: 76%

Extraction Method: EPA 3546
 Extraction Date: 05/13/23 20:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.21		mg/kg	0.13	0.078	1
Fluorene	0.062	J	mg/kg	0.64	0.062	1
Phenanthrene	0.69		mg/kg	0.38	0.078	1
Anthracene	0.17	J	mg/kg	0.38	0.12	1
Pyrene	1.0		mg/kg	0.38	0.064	1
Benzo(a)anthracene	0.67		mg/kg	0.38	0.072	1
Chrysene	1.1		mg/kg	0.38	0.067	1
Benzo(b)fluoranthene	0.70		mg/kg	0.38	0.11	1
Benzo(a)pyrene	0.82		mg/kg	0.51	0.16	1
Benzo(ghi)perylene	0.54		mg/kg	0.51	0.076	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	65		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-04 D
 Client ID: LS-B-B02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 08:50
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 03:07
 Analyst: IM
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 05/13/23 20:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	11.		mg/kg	0.53	0.32	5
Fluorene	1.6	J	mg/kg	2.6	0.26	5
Phenanthrene	4.1		mg/kg	1.6	0.32	5
Anthracene	1.3	J	mg/kg	1.6	0.52	5
Pyrene	1.9		mg/kg	1.6	0.26	5
Benzo(a)anthracene	1.1	J	mg/kg	1.6	0.30	5
Chrysene	1.2	J	mg/kg	1.6	0.27	5
Benzo(b)fluoranthene	0.84	J	mg/kg	1.6	0.44	5
Benzo(a)pyrene	0.80	J	mg/kg	2.1	0.64	5
Benzo(ghi)perylene	0.50	J	mg/kg	2.1	0.31	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-06 D
 Client ID: LS-B-B03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 09:30
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 16:12
 Analyst: ALS
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/13/23 20:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	52.		mg/kg	0.97	0.59	25
Fluorene	22.		mg/kg	4.8	0.47	25
Phenanthrene	83.		mg/kg	2.9	0.59	25
Anthracene	22.		mg/kg	2.9	0.95	25
Pyrene	48.		mg/kg	2.9	0.48	25
Benzo(a)anthracene	27.		mg/kg	2.9	0.55	25
Chrysene	24.		mg/kg	2.9	0.50	25
Benzo(b)fluoranthene	26.		mg/kg	2.9	0.82	25
Benzo(a)pyrene	21.		mg/kg	3.9	1.2	25
Benzo(ghi)perylene	9.8		mg/kg	3.9	0.57	25

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	0	Q	23-120
2-Fluorobiphenyl	0	Q	30-120
4-Terphenyl-d14	0	Q	18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-08 D
 Client ID: LS-B-C01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 10:50
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 17:00
 Analyst: JG
 Percent Solids: 77%

Extraction Method: EPA 3546
 Extraction Date: 05/13/23 20:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	2.1		mg/kg	0.21	0.13	5
Fluorene	1.8		mg/kg	1.0	0.10	5
Phenanthrene	4.5		mg/kg	0.63	0.13	5
Anthracene	0.66		mg/kg	0.63	0.20	5
Pyrene	1.4		mg/kg	0.63	0.10	5
Benzo(a)anthracene	0.53	J	mg/kg	0.63	0.12	5
Chrysene	1.1		mg/kg	0.63	0.11	5
Benzo(b)fluoranthene	0.40	J	mg/kg	0.63	0.18	5
Benzo(a)pyrene	0.52	J	mg/kg	0.84	0.26	5
Benzo(ghi)perylene	0.46	J	mg/kg	0.84	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-10
 Client ID: LS-B-D01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 11:30
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 04:42
 Analyst: IM
 Percent Solids: 70%

Extraction Method: EPA 3546
 Extraction Date: 05/14/23 05:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.029	J	mg/kg	0.047	0.028	1
Fluorene	0.034	J	mg/kg	0.23	0.023	1
Phenanthrene	0.52		mg/kg	0.14	0.028	1
Anthracene	0.12	J	mg/kg	0.14	0.046	1
Pyrene	0.71		mg/kg	0.14	0.023	1
Benzo(a)anthracene	0.50		mg/kg	0.14	0.026	1
Chrysene	0.55		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	0.57		mg/kg	0.14	0.039	1
Benzo(a)pyrene	0.52		mg/kg	0.19	0.057	1
Benzo(ghi)perylene	0.29		mg/kg	0.19	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	53		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-12
 Client ID: LS-B-D01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 11:50
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 04:18
 Analyst: IM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 05/14/23 05:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.2		mg/kg	0.040	0.025	1
Fluorene	0.060	J	mg/kg	0.20	0.020	1
Phenanthrene	0.16		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.033	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	0.028	J	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	67		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-14 D
 Client ID: LS-A-F01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 13:00
 Date Received: 05/09/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 16:36
 Analyst: ALS
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/13/23 20:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.25		mg/kg	0.18	0.11	5
Fluorene	1.2		mg/kg	0.92	0.090	5
Phenanthrene	1.8		mg/kg	0.55	0.11	5
Anthracene	0.72		mg/kg	0.55	0.18	5
Pyrene	3.3		mg/kg	0.55	0.092	5
Benzo(a)anthracene	4.0		mg/kg	0.55	0.10	5
Chrysene	4.8		mg/kg	0.55	0.096	5
Benzo(b)fluoranthene	5.4		mg/kg	0.55	0.16	5
Benzo(a)pyrene	10.		mg/kg	0.74	0.22	5
Benzo(ghi)perylene	10.		mg/kg	0.74	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/15/23 21:56
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 05/13/23 09:58

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,14 Batch: WG1778591-1					
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	0.027
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	73		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E
 Analytical Date: 05/16/23 09:46
 Analyst: IM

Extraction Method: EPA 3546
 Extraction Date: 05/14/23 02:30

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 10,12 Batch: WG1778702-1					
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	0.027
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
2-Fluorophenol	77		25-120
Phenol-d6	76		10-120
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	83		30-120
2,4,6-Tribromophenol	88		10-136
4-Terphenyl-d14	91		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,14 Batch: WG1778591-2 WG1778591-3								
Naphthalene	57		55		40-140	4		50
Fluorene	58		57		40-140	2		50
Phenanthrene	58		58		40-140	0		50
Anthracene	61		60		40-140	2		50
Pyrene	59		59		35-142	0		50
Benzo(a)anthracene	53		53		40-140	0		50
Chrysene	55		56		40-140	2		50
Benzo(b)fluoranthene	50		52		40-140	4		50
Benzo(a)pyrene	57		58		40-140	2		50
Benzo(ghi)perylene	53		53		40-140	0		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	53		50		23-120
2-Fluorobiphenyl	46		45		30-120
4-Terphenyl-d14	53		53		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 10,12 Batch: WG1778702-2 WG1778702-3								
Naphthalene	45		44		40-140	2		50
Fluorene	48		48		40-140	0		50
Phenanthrene	49		50		40-140	2		50
Anthracene	50		50		40-140	0		50
Pyrene	46		47		35-142	2		50
Benzo(a)anthracene	51		52		40-140	2		50
Chrysene	50		50		40-140	0		50
Benzo(b)fluoranthene	53		50		40-140	6		50
Benzo(a)pyrene	56		56		40-140	0		50
Benzo(ghi)perylene	55		56		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	48		47		25-120
Phenol-d6	46		45		10-120
Nitrobenzene-d5	44		45		23-120
2-Fluorobiphenyl	48		50		30-120
2,4,6-Tribromophenol	58		63		10-136
4-Terphenyl-d14	48		51		18-120

METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-02

Date Collected: 05/09/23 08:20

Client ID: LS-B-B01-C1-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	326		mg/kg	2.59	0.139	1	05/14/23 10:00	05/15/23 09:27	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-04

Date Collected: 05/09/23 08:50

Client ID: LS-B-B02-C1-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	181		mg/kg	2.04	0.109	1	05/14/23 10:00	05/15/23 09:32	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-06

Date Collected: 05/09/23 09:30

Client ID: LS-B-B03-C1-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	104		mg/kg	2.32	0.124	1	05/14/23 10:00	05/15/23 09:51	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-08

Date Collected: 05/09/23 10:50

Client ID: LS-B-C01-C1-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	79.5		mg/kg	2.50	0.134	1	05/14/23 10:00	05/15/23 09:55	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-10

Date Collected: 05/09/23 11:30

Client ID: LS-B-D01-C1-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	165		mg/kg	2.80	0.150	1	05/14/23 10:00	05/15/23 10:00	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-12

Date Collected: 05/09/23 11:50

Client ID: LS-B-D01-C2-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	13.0		mg/kg	2.38	0.128	1	05/14/23 10:00	05/15/23 10:05	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-14

Date Collected: 05/09/23 13:00

Client ID: LS-A-F01-C1-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	143		mg/kg	2.17	0.116	1	05/14/23 10:00	05/15/23 10:10	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

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): 02,04,06,08,10,12,14 Batch: WG1777696-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/14/23 10:00	05/14/23 14:07	1,6010D	AMW

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

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 Batch: WG1777696-2 SRM Lot Number: D119-540								
Lead, Total	107		-		82-118	-		



Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

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): 02,04,06,08,10,12,14 QC Batch ID: WG1777696-3 QC Sample: L2324680-04 Client ID: MS Sample												
Lead, Total	6.18	47.5	52.8	98		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2325590

Report Date: 05/16/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 QC Batch ID: WG1777696-4 QC Sample: L2324680-04 Client ID: DUP Sample						
Lead, Total	6.18	3.53J	mg/kg	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325590**Project Number:** 200.00135.023**Report Date:** 05/16/23**SAMPLE RESULTS**

Lab ID: L2325590-01

Date Collected: 05/09/23 08:20

Client ID: LS-B-B01-C1-VOC

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	70.1		%	0.100	NA	1	-	05/10/23 10:00	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-02
Client ID: LS-B-B01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 08:20
Date Received: 05/09/23
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	76.4		%	0.100	NA	1	-	05/10/23 09:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-03
Client ID: LS-B-B02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 08:50
Date Received: 05/09/23
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	86.5		%	0.100	NA	1	-	05/10/23 10:00	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325590**Project Number:** 200.00135.023**Report Date:** 05/16/23**SAMPLE RESULTS**

Lab ID: L2325590-04

Date Collected: 05/09/23 08:50

Client ID: LS-B-B02-C1-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	92.3		%	0.100	NA	1	-	05/10/23 09:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-05

Date Collected: 05/09/23 09:30

Client ID: LS-B-B03-C1-VOC

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	87.0		%	0.100	NA	1	-	05/10/23 10:00	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-06
Client ID: LS-B-B03-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 09:30
Date Received: 05/09/23
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	85.3		%	0.100	NA	1	-	05/10/23 09:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325590**Project Number:** 200.00135.023**Report Date:** 05/16/23**SAMPLE RESULTS**

Lab ID: L2325590-07

Date Collected: 05/09/23 10:50

Client ID: LS-B-C01-C1-VOC

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	87.4		%	0.100	NA	1	-	05/10/23 10:00	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-08
Client ID: LS-B-C01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 10:50
Date Received: 05/09/23
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	77.4		%	0.100	NA	1	-	05/10/23 09:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-09

Date Collected: 05/09/23 11:30

Client ID: LS-B-D01-C1-VOC

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	-	05/10/23 10:00	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325590**Project Number:** 200.00135.023**Report Date:** 05/16/23**SAMPLE RESULTS**

Lab ID: L2325590-10

Date Collected: 05/09/23 11:30

Client ID: LS-B-D01-C1-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	70.0		%	0.100	NA	1	-	05/10/23 09:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-11
Client ID: LS-B-D01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/09/23 11:50
Date Received: 05/09/23
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	86.0		%	0.100	NA	1	-	05/10/23 10:00	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325590**Project Number:** 200.00135.023**Report Date:** 05/16/23**SAMPLE RESULTS**

Lab ID: L2325590-12

Date Collected: 05/09/23 11:50

Client ID: LS-B-D01-C2-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	81.2		%	0.100	NA	1	-	05/10/23 09:33	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325590**Project Number:** 200.00135.023**Report Date:** 05/16/23**SAMPLE RESULTS**

Lab ID: L2325590-13

Date Collected: 05/09/23 13:00

Client ID: LS-A-F01-C1-VOC

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	-	05/10/23 10:00	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

SAMPLE RESULTS

Lab ID: L2325590-14

Date Collected: 05/09/23 13:00

Client ID: LS-A-F01-C1-COMP

Date Received: 05/09/23

Sample Location: PHILADELPHIA, PA

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	87.7		%	0.100	NA	1	-	05/10/23 09:33	121,2540G	ROI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2325590

Report Date: 05/16/23

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: WG1777058-1 QC Sample: L2325544-01 Client ID: DUP Sample						
Solids, Total	13.1	13.5	%	3		20
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13 QC Batch ID: WG1777069-1 QC Sample: L2325590-01 Client ID: LS-B-B01-C1-VOC						
Solids, Total	70.1	68.8	%	2		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325590**Project Number:** 200.00135.023**Report Date:** 05/16/23**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(*)
L2325590-01A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2325590-01B	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-01C	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-01D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2325590-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2325590-02B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2325590-03A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2325590-03B	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-03C	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-03D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2325590-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2325590-04B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2325590-05A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2325590-05B	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-05C	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-05D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2325590-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2325590-06B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2325590-07A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2325590-07B	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-07C	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-07D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2325590-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325590**Project Number:** 200.00135.023**Report Date:** 05/16/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2325590-08B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2325590-09A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2325590-09B	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260H(14),PA-8260HLW(14)
L2325590-09C	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260H(14),PA-8260HLW(14)
L2325590-09D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2325590-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2325590-10B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2325590-11A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2325590-11B	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-11C	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-11D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2325590-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2325590-12B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)
L2325590-13A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2325590-13B	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-13C	Vial water preserved	A	NA		2.2	Y	Absent	10-MAY-23 05:35	PA-8260HLW(14)
L2325590-13D	Plastic 120ml unpreserved	A	NA		2.2	Y	Absent		TS(7)
L2325590-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		PB-TI(180)
L2325590-14B	Glass 120ml/4oz unpreserved	A	NA		2.2	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

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
Project Number: 200.00135.023

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Report Date: 05/16/23

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
Project Number: 200.00135.023

Lab Number: L2325590
Report Date: 05/16/23

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.)

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325590

Project Number: 200.00135.023

Report Date: 05/16/23

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, SM4500CI-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, **LCHAT 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 2 OF 2

Date Rec'd in Lab: 5/10/23

ALPHA Job #: L2325590

WESTBORO, MA
TEL: 508-896-9220
FAX: 508-896-9193

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

Project Information

Project Name: Philadelphia, Refinery
Project Location: Philadelphia, PA
Project #: 200-00135-023
Project Manager: William Schmidt
ALPHA Quote #: 18559

Report Information - Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #:

Client Information

Client: Ranson Consulting LLC
Address: 2127 Hamilton Ave
Hamilton NJ 08619
Phone: 609 581 0090
Fax:
Email: William.Schmidt@ransonenv.com
 These samples have been previously analyzed by Alpha

Turn-Around Time

Standard RUSH (only confirmed if pre-approved!)
Date Due: Time:

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:
* See page 1 of 2 for project specific Requirements !!!

ANALYSIS
Voc (8260)
SVOC (8270)
Lead

SAMPLE HANDLING
Filtration _____
 Done
 Not needed
 Lab to do
Preservation
 Lab to do
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS				Sample Specific Comments	TOTAL # BOTTLES
		Date	Time			Voc (8260)	SVOC (8270)	Lead	Other		
25590-11	LS-B-Dol-C2-Voc	5/9/23	1150	S	TD	✓					4
	12 LS-B-Dol-C2-Comp	↓	1150	↓	↓	✓	✓				2
	13 LS-A-Fol-cl-Voc	↓	1300	↓	↓	✓					4
	14 LS-A-Fol-cl-Comp	↓	1300	↓	↓	✓	✓				2

5/10/23 0220
05110123-0240

Container Type G L 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 Terms and Conditions. See reverse side.

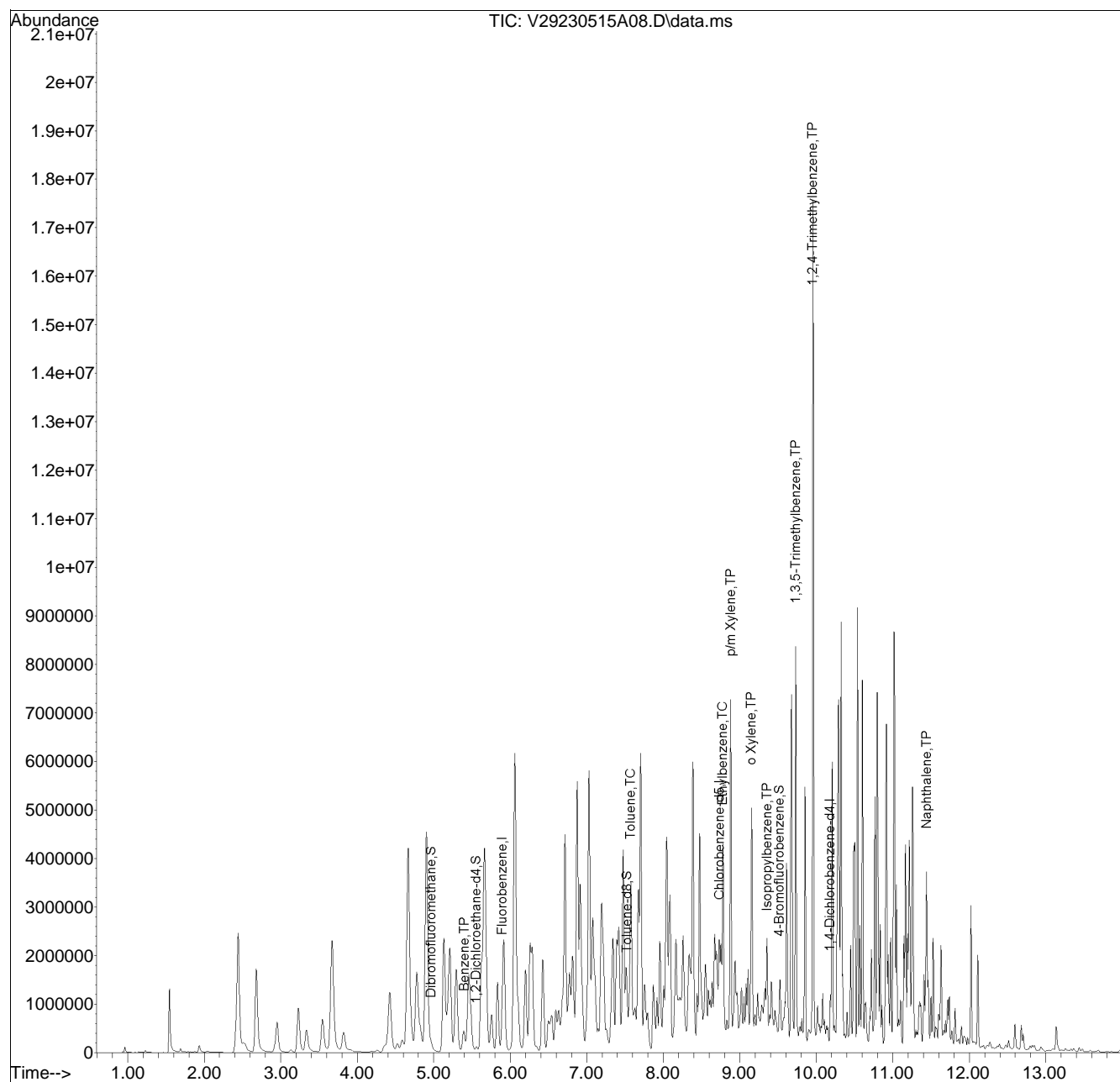
Relinquished By:	Date/Time	Received By:	Date/Time
CU	5/9/23 1500	STONES AAL	5-9-23 1800
STONES AAL	5-9-23 1400	ML	5/9/23 1800
ML	5/9/23 2100 (10)		5-9-23 2100

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230515A\
 Data File : V29230515A08.D
 Acq On : 15 May 2023 11:12 am
 Operator : VOA129:AJK
 Sample : L2325590-07,31H,4.91,5,0.100,,A
 Misc : WG1779406,ICAL19799
 ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 15 12:31:06 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230515A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V29230515A01.D•

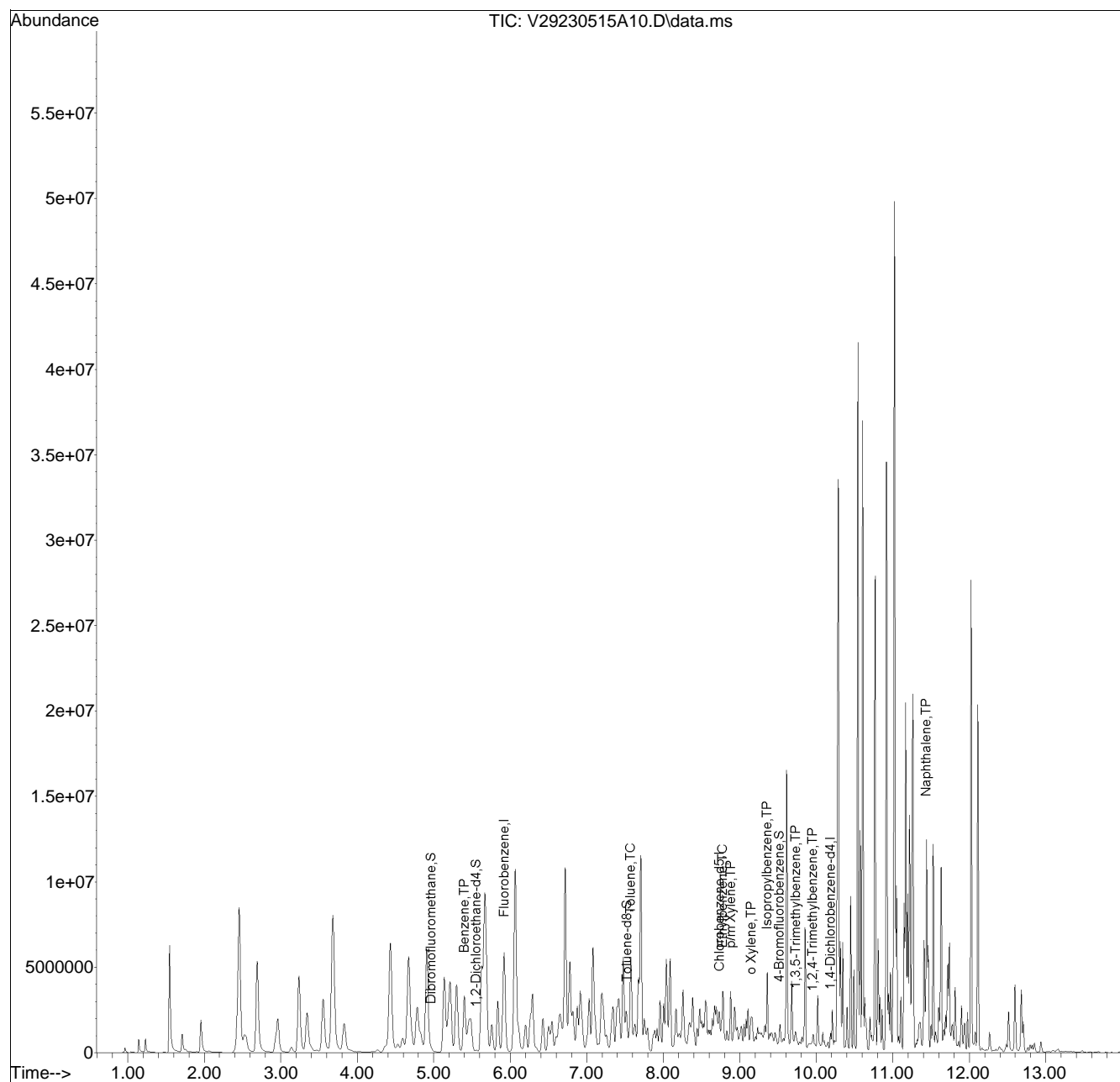


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230515A\
 Data File : V29230515A10.D
 Acq On : 15 May 2023 11:54 am
 Operator : VOA129:AJK
 Sample : L2325590-09,31,5.98,5,,B
 Misc : WG1779404,ICAL19799
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 15 12:32:03 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230515A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V29230515A01.D•

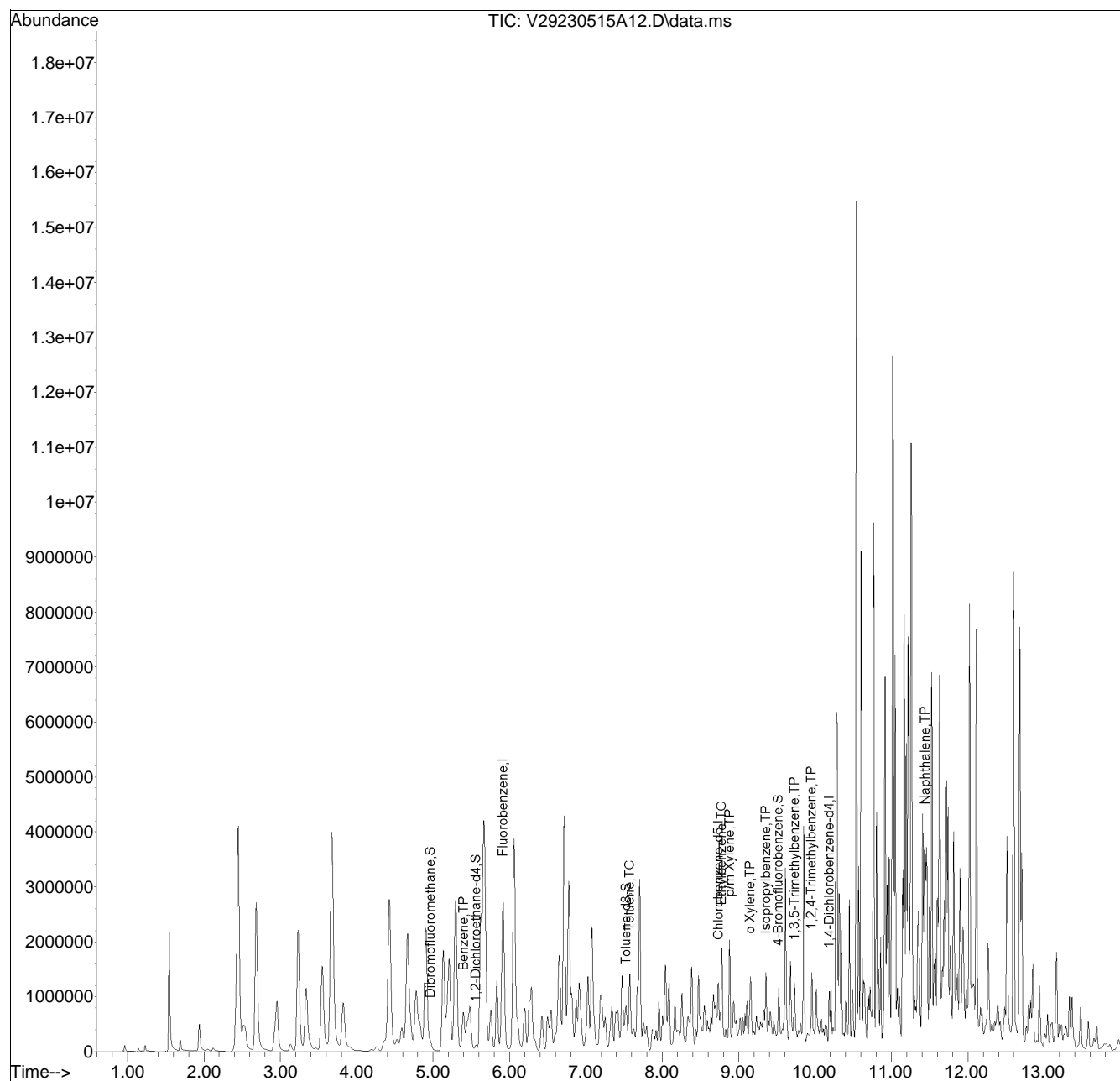


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230515A\
 Data File : V29230515A12.D
 Acq On : 15 May 2023 12:36 pm
 Operator : VOA129:AJK
 Sample : L2325590-11,31H,5.96,5,0.100,,A
 Misc : WG1779406,ICAL19799
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 15 13:26:56 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230515A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V29230515A01.D•





ANALYTICAL REPORT

Lab Number:	L2325992
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/17/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2325992

Report Date: 05/17/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2325992-01	LS-A-G03-C1-VOC	SOIL	PHILADELPHIA, PA	05/10/23 10:20	05/10/23
L2325992-02	LS-A-G03-C1-COMP	SOIL	PHILADELPHIA, PA	05/10/23 10:20	05/10/23
L2325992-03	LS-A-G03-C2-VOC	SOIL	PHILADELPHIA, PA	05/10/23 10:30	05/10/23
L2325992-04	LS-A-G03-C2-COMP	SOIL	PHILADELPHIA, PA	05/10/23 10:30	05/10/23
L2325992-05	LS-B-G01-C1-VOC	SOIL	PHILADELPHIA, PA	05/10/23 13:15	05/10/23
L2325992-06	LS-B-G01-C1-COMP	SOIL	PHILADELPHIA, PA	05/10/23 13:15	05/10/23
L2325992-07	LS-B-G01-C2-VOC	SOIL	PHILADELPHIA, PA	05/10/23 13:35	05/10/23
L2325992-08	LS-B-G01-C2-COMP	SOIL	PHILADELPHIA, PA	05/10/23 13:35	05/10/23
L2325992-09	LS-A-G05-C1-VOC	SOIL	PHILADELPHIA, PA	05/10/23 14:55	05/10/23
L2325992-10	LS-A-G05-C1-COMP	SOIL	PHILADELPHIA, PA	05/10/23 14:55	05/10/23
L2325992-11	LS-A-G05-C2-VOC	SOIL	PHILADELPHIA, PA	05/10/23 15:05	05/10/23
L2325992-12	LS-A-G05-C2-COMP	SOIL	PHILADELPHIA, PA	05/10/23 15:05	05/10/23
L2325992-13	LS-A-G05-C3-VOC	SOIL	PHILADELPHIA, PA	05/10/23 15:15	05/10/23
L2325992-14	LS-A-G05-C3-COMP	SOIL	PHILADELPHIA, PA	05/10/23 15:15	05/10/23
L2325992-15	LS-A-G05-C4-VOC	SOIL	PHILADELPHIA, PA	05/10/23 15:25	05/10/23
L2325992-16	LS-A-G05-C4-COMP	SOIL	PHILADELPHIA, PA	05/10/23 15:25	05/10/23
L2325992-17	LS-A-G05-C5-VOC	SOIL	PHILADELPHIA, PA	05/10/23 15:35	05/10/23
L2325992-18	LS-A-G05-C5-COMP	SOIL	PHILADELPHIA, PA	05/10/23 15:35	05/10/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

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
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

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

L2325992-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); 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.

L2325992-03D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2325992-03D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (163%); 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.

L2325992-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (206%); 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.

L2325992-07D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (137%); 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.

L2325992-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (134%); 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.

L2325992-11: 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.

L2325992-13: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
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Case Narrative (continued)

discrepancies.

L2325992-13 (Low-Level): The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (261%); 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.

L2325992-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (477%); 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.

L2325992-17: The surrogate recoveries are outside the method acceptance criteria for 1,2-dichloroethane-d4 (50%) and dibromofluoromethane (56%) due to interference with the Internal Standard.

L2325992-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (239%); 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.

PAHs

L2325992-06D, -08D, -10D, and -12D: The sample has elevated detection limits due to the dilution required by the sample matrix.

Total Metals

The WG1777903-3 MS recovery, performed on L2325992-02, is outside the acceptance criteria for lead (42%). A post digestion spike was performed and was within acceptance criteria.

The WG1777903-4 Laboratory Duplicate RPD for lead (21%), performed on L2325992-02, 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: 05/17/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-01
 Client ID: LS-A-G03-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 10:20
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/16/23 12:44
 Analyst: AJK
 Percent Solids: 93%

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	ND		mg/kg	0.053	0.0075	1
p/m-Xylene	0.17		mg/kg	0.11	0.030	1
o-Xylene	0.040	J	mg/kg	0.053	0.016	1
Xylenes, Total	0.21	J	mg/kg	0.053	0.016	1
Isopropylbenzene	3.2		mg/kg	0.053	0.0058	1
1,3,5-Trimethylbenzene	0.037	J	mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	0.094	J	mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-03 D
 Client ID: LS-A-G03-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 10:30
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/16/23 13:11
 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	1.0	0.10	10
Benzene	ND		mg/kg	0.25	0.084	10
1,2-Dichloroethane	ND		mg/kg	0.51	0.13	10
Toluene	ND		mg/kg	0.51	0.28	10
1,2-Dibromoethane	ND		mg/kg	0.25	0.15	10
Ethylbenzene	ND		mg/kg	0.51	0.072	10
p/m-Xylene	ND		mg/kg	1.0	0.28	10
o-Xylene	ND		mg/kg	0.51	0.15	10
Xylenes, Total	ND		mg/kg	0.51	0.15	10
Isopropylbenzene	14.		mg/kg	0.51	0.056	10
1,3,5-Trimethylbenzene	ND		mg/kg	1.0	0.098	10
1,2,4-Trimethylbenzene	ND		mg/kg	1.0	0.17	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	122		70-130
4-Bromofluorobenzene	163	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-05
 Client ID: LS-B-G01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 13:15
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/16/23 13:38
 Analyst: AJK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.16	0.016	1
Benzene	0.21		mg/kg	0.039	0.013	1
1,2-Dichloroethane	ND		mg/kg	0.078	0.020	1
Toluene	4.6		mg/kg	0.078	0.042	1
1,2-Dibromoethane	ND		mg/kg	0.039	0.023	1
Ethylbenzene	0.77		mg/kg	0.078	0.011	1
p/m-Xylene	36.		mg/kg	0.16	0.043	1
o-Xylene	55.	E	mg/kg	0.078	0.022	1
Xylenes, Total	84.		mg/kg	0.16	0.043	1
Isopropylbenzene	5.0		mg/kg	0.078	0.0085	1
1,3,5-Trimethylbenzene	50.	E	mg/kg	0.16	0.015	1
1,2,4-Trimethylbenzene	110	E	mg/kg	0.16	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	118		70-130
4-Bromofluorobenzene	206	Q	70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-05 D
 Client ID: LS-B-G01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 13:15
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 09:51
 Analyst: AJK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
o-Xylene	48.		mg/kg	0.78	0.22	10
1,3,5-Trimethylbenzene	48.		mg/kg	1.6	0.15	10
1,2,4-Trimethylbenzene	120		mg/kg	1.6	0.26	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-07 D
 Client ID: LS-B-G01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 13:35
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/16/23 14:05
 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	1.2	0.12	10
Benzene	28.		mg/kg	0.30	0.099	10
1,2-Dichloroethane	ND		mg/kg	0.59	0.15	10
Toluene	300	E	mg/kg	0.59	0.32	10
1,2-Dibromoethane	ND		mg/kg	0.30	0.17	10
Ethylbenzene	160		mg/kg	0.59	0.084	10
p/m-Xylene	450	E	mg/kg	1.2	0.33	10
o-Xylene	170		mg/kg	0.59	0.17	10
Isopropylbenzene	33.		mg/kg	0.59	0.065	10
1,3,5-Trimethylbenzene	79.		mg/kg	1.2	0.11	10
1,2,4-Trimethylbenzene	240	E	mg/kg	1.2	0.20	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	137	Q	70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-07 D
 Client ID: LS-B-G01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 13:35
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 10:12
 Analyst: AJK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Toluene	250		mg/kg	1.2	0.64	20
p/m-Xylene	400		mg/kg	2.4	0.67	20
Xylenes, Total	570		mg/kg	0.59	0.17	20
1,2,4-Trimethylbenzene	200		mg/kg	2.4	0.40	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-09
 Client ID: LS-A-G05-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 14:55
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 10:33
 Analyst: AJK
 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	0.0014	0.00015	1
Benzene	0.00033	J	mg/kg	0.00036	0.00012	1
1,2-Dichloroethane	ND		mg/kg	0.00073	0.00019	1
Toluene	ND		mg/kg	0.00073	0.00039	1
1,2-Dibromoethane	ND		mg/kg	0.00036	0.00021	1
Ethylbenzene	0.00012	J	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	0.00016	J	mg/kg	0.00073	0.00007	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0014	0.00014	1
1,2,4-Trimethylbenzene	0.00029	J	mg/kg	0.0014	0.00024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-11
 Client ID: LS-A-G05-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:05
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/16/23 15:00
 Analyst: JIC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.091	0.0091	1
Benzene	ND		mg/kg	0.023	0.0075	1
1,2-Dichloroethane	ND		mg/kg	0.045	0.012	1
Toluene	ND		mg/kg	0.045	0.025	1
1,2-Dibromoethane	ND		mg/kg	0.023	0.013	1
Ethylbenzene	ND		mg/kg	0.045	0.0064	1
p/m-Xylene	ND		mg/kg	0.091	0.025	1
o-Xylene	0.023	J	mg/kg	0.045	0.013	1
Xylenes, Total	0.023	J	mg/kg	0.045	0.013	1
Isopropylbenzene	1.3		mg/kg	0.045	0.0049	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.091	0.0087	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.091	0.015	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	134	Q	70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-13
 Client ID: LS-A-G05-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:15
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/16/23 15:27
 Analyst: JIC
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.091	0.0091	1
Benzene	ND		mg/kg	0.023	0.0075	1
1,2-Dichloroethane	ND		mg/kg	0.045	0.012	1
Toluene	ND		mg/kg	0.045	0.025	1
1,2-Dibromoethane	ND		mg/kg	0.023	0.013	1
Ethylbenzene	ND		mg/kg	0.045	0.0064	1
p/m-Xylene	0.029	J	mg/kg	0.091	0.025	1
o-Xylene	0.062		mg/kg	0.045	0.013	1
Xylenes, Total	0.091	J	mg/kg	0.045	0.013	1
Isopropylbenzene	1.1		mg/kg	0.045	0.0049	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.091	0.0088	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.091	0.015	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	130		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-13
 Client ID: LS-A-G05-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:15
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 11:14
 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	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	0.0013		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	0.0014		mg/kg	0.00090	0.00013	1
p/m-Xylene	0.0074		mg/kg	0.0018	0.00050	1
o-Xylene	0.018		mg/kg	0.00090	0.00026	1
Xylenes, Total	0.025		mg/kg	0.00090	0.00026	1
Isopropylbenzene	0.18		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	0.00098	J	mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.00080	J	mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	261	Q	70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-15
 Client ID: LS-A-G05-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:25
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 10:53
 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	0.0021	0.00021	1
Benzene	0.00022	J	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	0.0030		mg/kg	0.0011	0.00015	1
p/m-Xylene	0.015		mg/kg	0.0021	0.00060	1
o-Xylene	0.0092		mg/kg	0.0011	0.00031	1
Xylenes, Total	0.024		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.15		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0033		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.024		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	118		70-130
4-Bromofluorobenzene	477	Q	70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-17
 Client ID: LS-A-G05-C5-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:35
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 11:35
 Analyst: JIC
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.093	0.0094	1
Benzene	ND		mg/kg	0.023	0.0077	1
1,2-Dichloroethane	ND		mg/kg	0.046	0.012	1
Toluene	0.030	J	mg/kg	0.046	0.025	1
1,2-Dibromoethane	ND		mg/kg	0.023	0.014	1
Ethylbenzene	0.032	J	mg/kg	0.046	0.0066	1
p/m-Xylene	0.24		mg/kg	0.093	0.026	1
o-Xylene	0.092		mg/kg	0.046	0.014	1
Xylenes, Total	0.33		mg/kg	0.046	0.014	1
Isopropylbenzene	9.6		mg/kg	0.046	0.0051	1
1,3,5-Trimethylbenzene	0.092	J	mg/kg	0.093	0.0090	1
1,2,4-Trimethylbenzene	0.092	J	mg/kg	0.093	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	50	Q	70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	239	Q	70-130
Dibromofluoromethane	56	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/16/23 10:00
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,05,07,11,13 Batch: WG1779942-5					
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	97		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/17/23 08:36
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05,07,17 Batch: WG1780073-5					
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	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/17/23 08:36
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09,13,15 Batch: WG1780074-5					
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	97		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	112		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,05,07,11,13 Batch: WG1779942-3 WG1779942-4								
Methyl tert butyl ether	107		103		66-130	4		30
Benzene	108		105		70-130	3		30
1,2-Dichloroethane	110		108		70-130	2		30
Toluene	102		100		70-130	2		30
1,2-Dibromoethane	108		109		70-130	1		30
Ethylbenzene	102		101		70-130	1		30
p/m-Xylene	105		102		70-130	3		30
o-Xylene	105		104		70-130	1		30
Isopropylbenzene	101		102		70-130	1		30
1,3,5-Trimethylbenzene	105		105		70-130	0		30
1,2,4-Trimethylbenzene	106		104		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		103		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	97		100		70-130
Dibromofluoromethane	96		97		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05,07,17 Batch: WG1780073-3 WG1780073-4								
Methyl tert butyl ether	109		107		66-130	2		30
Benzene	113		111		70-130	2		30
1,2-Dichloroethane	96		93		70-130	3		30
Toluene	94		92		70-130	2		30
1,2-Dibromoethane	96		94		70-130	2		30
Ethylbenzene	96		95		70-130	1		30
p/m-Xylene	99		97		70-130	2		30
o-Xylene	98		96		70-130	2		30
Isopropylbenzene	98		96		70-130	2		30
1,3,5-Trimethylbenzene	96		94		70-130	2		30
1,2,4-Trimethylbenzene	95		93		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		100		70-130
Toluene-d8	95		96		70-130
4-Bromofluorobenzene	91		91		70-130
Dibromofluoromethane	112		113		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09,13,15 Batch: WG1780074-3 WG1780074-4								
Methyl tert butyl ether	109		107		66-130	2		30
Benzene	113		111		70-130	2		30
1,2-Dichloroethane	96		93		70-130	3		30
Toluene	94		92		70-130	2		30
1,2-Dibromoethane	96		94		70-130	2		30
Ethylbenzene	96		95		70-130	1		30
p/m-Xylene	99		97		70-130	2		30
o-Xylene	98		96		70-130	2		30
Isopropylbenzene	98		96		70-130	2		30
1,3,5-Trimethylbenzene	96		94		70-130	2		30
1,2,4-Trimethylbenzene	95		93		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		100		70-130
Toluene-d8	95		96		70-130
4-Bromofluorobenzene	91		91		70-130
Dibromofluoromethane	112		113		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-02
 Client ID: LS-A-G03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 10:20
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 18:36
 Analyst: ALS
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.5		mg/kg	0.036	0.022	1
Fluorene	0.36		mg/kg	0.18	0.017	1
Phenanthrene	1.0		mg/kg	0.11	0.022	1
Anthracene	0.25		mg/kg	0.11	0.035	1
Pyrene	0.52		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.24		mg/kg	0.11	0.020	1
Chrysene	0.32		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.17		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.25		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.22		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-04
 Client ID: LS-A-G03-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 10:30
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 18:52
 Analyst: ALS
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.56		mg/kg	0.036	0.022	1
Fluorene	0.58		mg/kg	0.18	0.017	1
Phenanthrene	2.1		mg/kg	0.11	0.022	1
Anthracene	0.41		mg/kg	0.11	0.035	1
Pyrene	0.95		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.42		mg/kg	0.11	0.020	1
Chrysene	0.51		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.35		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.37		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.24		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-06 D
 Client ID: LS-B-G01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 13:15
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/17/23 12:46
 Analyst: ALS
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.50		mg/kg	0.36	0.22	10
Fluorene	1.0	J	mg/kg	1.8	0.17	10
Phenanthrene	3.0		mg/kg	1.1	0.22	10
Anthracene	0.68	J	mg/kg	1.1	0.35	10
Pyrene	1.8		mg/kg	1.1	0.18	10
Benzo(a)anthracene	0.61	J	mg/kg	1.1	0.20	10
Chrysene	0.89	J	mg/kg	1.1	0.18	10
Benzo(b)fluoranthene	0.35	J	mg/kg	1.1	0.30	10
Benzo(a)pyrene	ND		mg/kg	1.4	0.43	10
Benzo(ghi)perylene	0.38	J	mg/kg	1.4	0.21	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-08 D
 Client ID: LS-B-G01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 13:35
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/17/23 13:10
 Analyst: ALS
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	2.3		mg/kg	0.18	0.11	5
Fluorene	1.0		mg/kg	0.92	0.090	5
Phenanthrene	3.9		mg/kg	0.55	0.11	5
Anthracene	0.54	J	mg/kg	0.55	0.18	5
Pyrene	1.0		mg/kg	0.55	0.092	5
Benzo(a)anthracene	0.52	J	mg/kg	0.55	0.10	5
Chrysene	0.81		mg/kg	0.55	0.096	5
Benzo(b)fluoranthene	ND		mg/kg	0.55	0.16	5
Benzo(a)pyrene	ND		mg/kg	0.74	0.22	5
Benzo(ghi)perylene	ND		mg/kg	0.74	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	50		30-120
4-Terphenyl-d14	49		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-10 D
 Client ID: LS-A-G05-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 14:55
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/17/23 13:33
 Analyst: ALS
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.10	J	mg/kg	0.17	0.10	5
Fluorene	ND		mg/kg	0.86	0.084	5
Phenanthrene	0.20	J	mg/kg	0.52	0.10	5
Anthracene	ND		mg/kg	0.52	0.17	5
Pyrene	0.70		mg/kg	0.52	0.086	5
Benzo(a)anthracene	0.94		mg/kg	0.52	0.097	5
Chrysene	1.2		mg/kg	0.52	0.090	5
Benzo(b)fluoranthene	0.87		mg/kg	0.52	0.14	5
Benzo(a)pyrene	1.6		mg/kg	0.69	0.21	5
Benzo(ghi)perylene	1.9		mg/kg	0.69	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	87		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-12 D
 Client ID: LS-A-G05-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:05
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/17/23 13:57
 Analyst: ALS
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.2		mg/kg	0.19	0.11	5
Fluorene	1.1		mg/kg	0.93	0.091	5
Phenanthrene	1.2		mg/kg	0.56	0.11	5
Anthracene	1.6		mg/kg	0.56	0.18	5
Pyrene	4.4		mg/kg	0.56	0.093	5
Benzo(a)anthracene	3.8		mg/kg	0.56	0.10	5
Chrysene	4.1		mg/kg	0.56	0.097	5
Benzo(b)fluoranthene	2.4		mg/kg	0.56	0.16	5
Benzo(a)pyrene	3.5		mg/kg	0.75	0.23	5
Benzo(ghi)perylene	2.3		mg/kg	0.75	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	79		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-14
 Client ID: LS-A-G05-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:15
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/17/23 14:20
 Analyst: ALS
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.48		mg/kg	0.035	0.021	1
Fluorene	0.73		mg/kg	0.17	0.017	1
Phenanthrene	1.5		mg/kg	0.10	0.021	1
Anthracene	0.60		mg/kg	0.10	0.034	1
Pyrene	1.5		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.90		mg/kg	0.10	0.020	1
Chrysene	0.97		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.44		mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.66		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.38		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-16
 Client ID: LS-A-G05-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:25
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/17/23 14:43
 Analyst: ALS
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.18		mg/kg	0.034	0.021	1
Fluorene	0.37		mg/kg	0.17	0.017	1
Phenanthrene	0.70		mg/kg	0.10	0.021	1
Anthracene	0.57		mg/kg	0.10	0.034	1
Pyrene	2.2		mg/kg	0.10	0.017	1
Benzo(a)anthracene	1.6		mg/kg	0.10	0.019	1
Chrysene	1.6		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.45		mg/kg	0.10	0.029	1
Benzo(a)pyrene	1.0		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.56		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	76		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-18
 Client ID: LS-A-G05-C5-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:35
 Date Received: 05/10/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/17/23 15:07
 Analyst: ALS
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.65		mg/kg	0.034	0.021	1
Fluorene	1.5		mg/kg	0.17	0.017	1
Phenanthrene	3.5		mg/kg	0.10	0.021	1
Anthracene	0.64		mg/kg	0.10	0.034	1
Pyrene	1.0		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.48		mg/kg	0.10	0.019	1
Chrysene	0.76		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.16		mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.24		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.32		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/16/23 16:16
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1778902-1					
Naphthalene	ND		mg/kg	0.032	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	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	75		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	78		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2325992

Report Date: 05/17/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1778902-2 WG1778902-3								
Naphthalene	72		94		40-140	27		50
Fluorene	75		97		40-140	26		50
Phenanthrene	75		95		40-140	24		50
Anthracene	79		101		40-140	24		50
Pyrene	79		100		35-142	23		50
Benzo(a)anthracene	76		96		40-140	23		50
Chrysene	77		96		40-140	22		50
Benzo(b)fluoranthene	75		99		40-140	28		50
Benzo(a)pyrene	82		104		40-140	24		50
Benzo(ghi)perylene	71		88		40-140	21		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	77		102		23-120
2-Fluorobiphenyl	74		96		30-120
4-Terphenyl-d14	71		89		18-120

METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-02

Date Collected: 05/10/23 10:20

Client ID: LS-A-G03-C1-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	95.1		mg/kg	2.03	0.109	1	05/16/23 10:10	05/16/23 16:29	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**SAMPLE RESULTS**

Lab ID: L2325992-04

Date Collected: 05/10/23 10:30

Client ID: LS-A-G03-C2-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	23.3		mg/kg	2.11	0.113	1	05/16/23 10:10	05/16/23 17:30	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-06

Date Collected: 05/10/23 13:15

Client ID: LS-B-G01-C1-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	149		mg/kg	2.12	0.114	1	05/16/23 10:10	05/16/23 17:33	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-08

Date Collected: 05/10/23 13:35

Client ID: LS-B-G01-C2-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	40.5		mg/kg	2.15	0.115	1	05/16/23 10:10	05/16/23 17:36	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-10

Date Collected: 05/10/23 14:55

Client ID: LS-A-G05-C1-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	96.5		mg/kg	2.04	0.109	1	05/16/23 10:10	05/16/23 17:38	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-12
 Client ID: LS-A-G05-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:05
 Date Received: 05/10/23
 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	179		mg/kg	2.15	0.115	1	05/16/23 10:10	05/16/23 17:51	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-14

Date Collected: 05/10/23 15:15

Client ID: LS-A-G05-C3-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	5.60		mg/kg	2.06	0.110	1	05/16/23 10:10	05/16/23 17:54	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-16

Date Collected: 05/10/23 15:25

Client ID: LS-A-G05-C4-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	6.91		mg/kg	2.00	0.107	1	05/16/23 10:10	05/16/23 17:57	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-18

Date Collected: 05/10/23 15:35

Client ID: LS-A-G05-C5-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	3.52		mg/kg	2.02	0.108	1	05/16/23 10:10	05/16/23 18:00	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

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): 02,04,06,08,10,12,14,16,18 Batch: WG1777903-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/16/23 10:10	05/16/23 16:15	1,6010D	MRC

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1777903-2 SRM Lot Number: D119-540								
Lead, Total	95		-		82-118			-



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

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): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1777903-3 QC Sample: L2325992-02 Client ID: LS-A-G03-C1-COMP												
Lead, Total	95.1	43.1	113	42	Q	-	-		75-125	-		20



Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2325992

Report Date: 05/17/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1777903-4 QC Sample: L2325992-02 Client ID: LS-A-G03-C1-COMP						
Lead, Total	95.1	117	mg/kg	21	Q	20



**Lab Serial Dilution
Analysis
Batch Quality Control**

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1777903-6 QC Sample: L2325992-02 Client ID: LS-A-G03-C1-COMP						
Lead, Total	95.1	94.4	mg/kg	1		20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**SAMPLE RESULTS**

Lab ID: L2325992-01

Date Collected: 05/10/23 10:20

Client ID: LS-A-G03-C1-VOC

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	93.0		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-02
 Client ID: LS-A-G03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 10:20
 Date Received: 05/10/23
 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	92.4		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-03
Client ID: LS-A-G03-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 10:30
Date Received: 05/10/23
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	91.0		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-04
Client ID: LS-A-G03-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 10:30
Date Received: 05/10/23
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	90.9		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-05

Date Collected: 05/10/23 13:15

Client ID: LS-B-G01-C1-VOC

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	91.7		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-06
 Client ID: LS-B-G01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 13:15
 Date Received: 05/10/23
 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	91.7		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2325992

Project Number: 200.00135.023

Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-07

Date Collected: 05/10/23 13:35

Client ID: LS-B-G01-C2-VOC

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-08
Client ID: LS-B-G01-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 13:35
Date Received: 05/10/23
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	87.8		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**SAMPLE RESULTS**

Lab ID: L2325992-09

Date Collected: 05/10/23 14:55

Client ID: LS-A-G05-C1-VOC

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	93.8		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-10
Client ID: LS-A-G05-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 14:55
Date Received: 05/10/23
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	93.8		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**SAMPLE RESULTS**

Lab ID: L2325992-11

Date Collected: 05/10/23 15:05

Client ID: LS-A-G05-C2-VOC

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	94.3		%	0.100	NA	1	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**SAMPLE RESULTS**

Lab ID: L2325992-12

Date Collected: 05/10/23 15:05

Client ID: LS-A-G05-C2-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	-	05/11/23 11:50	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-13
Client ID: LS-A-G05-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:15
Date Received: 05/10/23
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	95.3		%	0.100	NA	1	-	05/11/23 12:05	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2325992
Report Date: 05/17/23

SAMPLE RESULTS

Lab ID: L2325992-14
Client ID: LS-A-G05-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/10/23 15:15
Date Received: 05/10/23
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	93.4		%	0.100	NA	1	-	05/11/23 12:05	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**SAMPLE RESULTS**

Lab ID: L2325992-15

Date Collected: 05/10/23 15:25

Client ID: LS-A-G05-C4-VOC

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	94.9		%	0.100	NA	1	-	05/11/23 12:05	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**SAMPLE RESULTS**

Lab ID: L2325992-16

Date Collected: 05/10/23 15:25

Client ID: LS-A-G05-C4-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	94.7		%	0.100	NA	1	-	05/11/23 12:05	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**SAMPLE RESULTS**

Lab ID: L2325992-17

Date Collected: 05/10/23 15:35

Client ID: LS-A-G05-C5-VOC

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	94.5		%	0.100	NA	1	-	05/11/23 12:05	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**SAMPLE RESULTS**

Lab ID: L2325992-18

Date Collected: 05/10/23 15:35

Client ID: LS-A-G05-C5-COMP

Date Received: 05/10/23

Sample Location: PHILADELPHIA, PA

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	95.2		%	0.100	NA	1	-	05/11/23 12:05	121,2540G	ROI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2325992

Report Date: 05/17/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-12 QC Batch ID: WG1777572-1 QC Sample: L2325992-01 Client ID: LS-A-G03-C1-VOC						
Solids, Total	93.0	93.1	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 13-18 QC Batch ID: WG1777574-1 QC Sample: L2325962-01 Client ID: DUP Sample						
Solids, Total	93.0	93.3	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**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(*)
L2325992-01A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2325992-01B	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-01C	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-01D	Plastic 2oz unpreserved for TS	A	NA		3.5	Y	Absent		TS(7)
L2325992-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2325992-02B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2325992-03A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2325992-03B	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-03C	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-03D	Plastic 2oz unpreserved for TS	A	NA		3.5	Y	Absent		TS(7)
L2325992-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2325992-04B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2325992-05A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2325992-05B	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-05C	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-05D	Plastic 2oz unpreserved for TS	A	NA		3.5	Y	Absent		TS(7)
L2325992-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2325992-06B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2325992-07A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2325992-07B	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-07C	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-07D	Plastic 2oz unpreserved for TS	A	NA		3.5	Y	Absent		TS(7)
L2325992-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2325992**Project Number:** 200.00135.023**Report Date:** 05/17/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2325992-08B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2325992-09A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2325992-09B	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-09C	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-09D	Plastic 2oz unpreserved for TS	A	NA		3.5	Y	Absent		TS(7)
L2325992-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2325992-10B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2325992-11A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2325992-11B	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-11C	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-11D	Plastic 2oz unpreserved for TS	A	NA		3.5	Y	Absent		TS(7)
L2325992-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2325992-12B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2325992-13A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2325992-13B	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260H(14),PA-8260HLW(14)
L2325992-13C	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260H(14),PA-8260HLW(14)
L2325992-13D	Plastic 2oz unpreserved for TS	A	NA		3.5	Y	Absent		TS(7)
L2325992-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2325992-14B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2325992-15A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2325992-15B	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-15C	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-15D	Plastic 2oz unpreserved for TS	A	NA		3.5	Y	Absent		TS(7)
L2325992-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2325992-16B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2325992-17A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2325992-17B	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)
L2325992-17C	Vial water preserved	A	NA		3.5	Y	Absent	11-MAY-23 06:53	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2325992-17D	Plastic 2oz unpreserved for TS	A	NA		3.5	Y	Absent		TS(7)
L2325992-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2325992-18B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)

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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.

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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

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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.)

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Project Number: 200.00135.023

Report Date: 05/17/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

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: 5/11/23

ALPHA Job #: L2325992

Project Information

Project Name: Philadelphia Refinery
Project Location: Philadelphia, PA
Project #: 200.00135.023
Project Manager: William Schmidt
ALPHA Quote #: 18559

Report Information - Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #:

Client Information

Client: Ransom Consulting LLC
Address: 2127 Hamilton Avenue
Hamilton, NJ 08612
Phone: 215-901-4974
Fax:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved!)

Date Due: Time:

Regulatory Requirements/Report Limits

State /Fed Program Criteria

Email: william.schmidt@ransomenv.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only project specific analyte list at PADEP loaded/unloaded gasoline and No. 3 4, 5 & 6 fuel oils shortlist. Per methylene using method 8290 = NLY!
Email results to add@terraphase.com, william.schmidt@ransomenv.com, & jscary@hico-global.com.

ANALYSIS	VOCs (8260)	SVOCs (8290)	Lead	SAMPLE HANDLING				TOTAL # BOTTLES
				Filtration _____	<input type="checkbox"/> Done	<input checked="" type="checkbox"/> Not needed	<input type="checkbox"/> Lab to do	
				(Please specify below)				
				Sample Specific Comments				

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										Sample Specific Comments	TOTAL # BOTTLES	
		Date	Time			VOCs (8260)	SVOCs (8290)	Lead										
25992-01	LS-A-G03-C1-VOC	05/10/23	10:20	S	MD	X												4
02	LS-A-G03-C1-comp		10:20				X	X										2
03	LS-A-G03-C2-VOC		10:30			X												4
04	LS-A-G03-C2-comp		10:30				X	X										2
05	LS-B-G01-C1-VOC		13:15			X												4
06	LS-B-G01-C1-comp		13:15				X	X										2
07	LS-B-G01-C2-VOC		13:35			X												4
08	LS-B-G01-C2-comp		13:35				X	X										2
09	LS-A-G05-C1-VOC		14:55			X												4
10	LS-A-G05-C1-comp	✓	14:55	✓	✓		X	X										2

Container Type: G G G
Preservative: F A A

Relinquished By:	Date/Time	Received By:	Date/Time
<u>Nicholas Daigh</u>	<u>05/10/23 16:05</u>	<u>[Signature]</u>	<u>5/10/23 16:05</u>
<u>[Signature]</u>	<u>5/10/23 18:00</u>	<u>[Signature]</u>	<u>5/10/23 18:00</u>
<u>[Signature]</u>	<u>5/10/23 21:00</u>	<u>[Signature]</u>	<u>5-10-23 21:00</u>

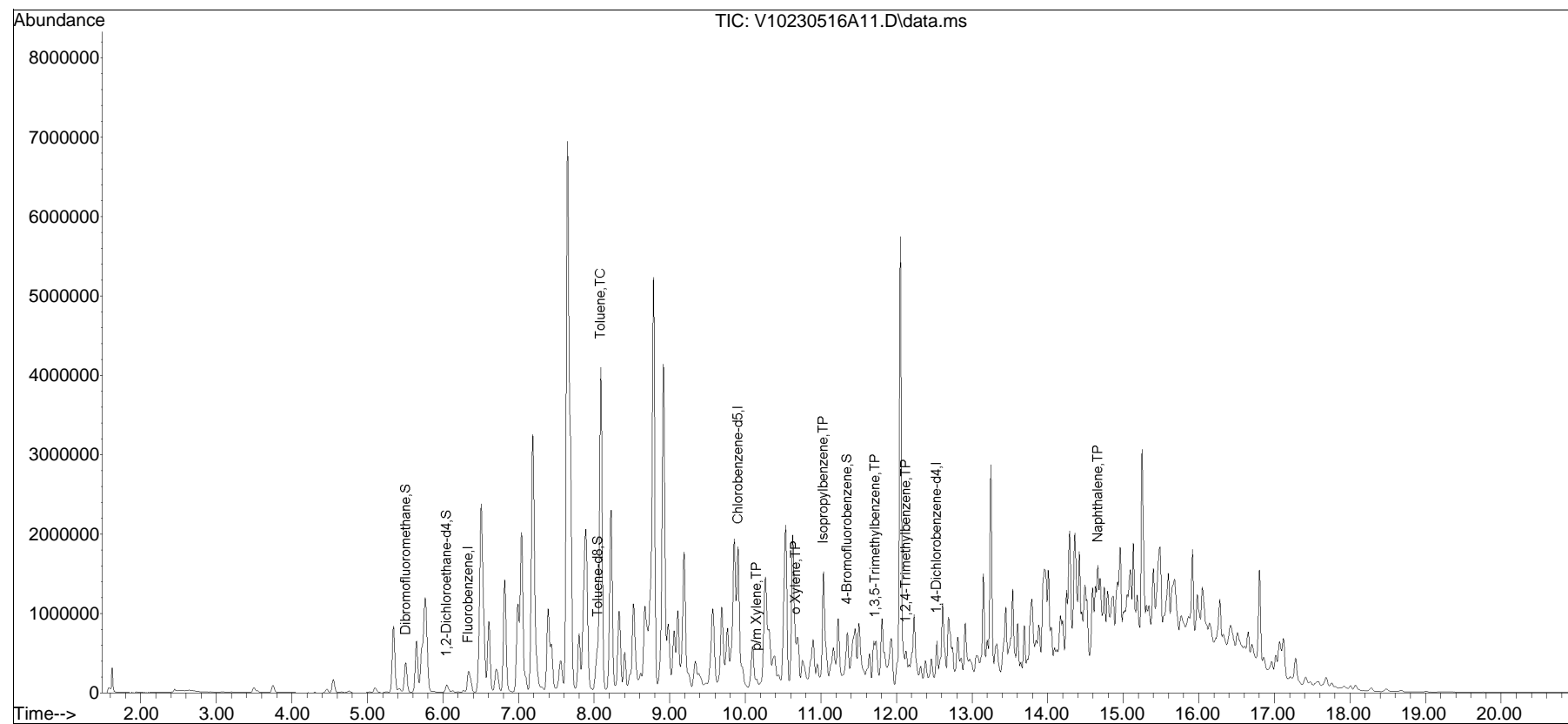
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230516A\
Data File : V10230516A11.D
Acq On : 16 May 2023 12:44 pm
Operator : VOA110:AJK
Sample : 12325992-01,31h,5.41,5,0.100,,a
Misc : WG1779942,ICAL19973
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 16 14:27:13 2023
Quant Method : I:\VOLATILES\VOA110\2023\230516A\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list16A\V10230516A01.D•

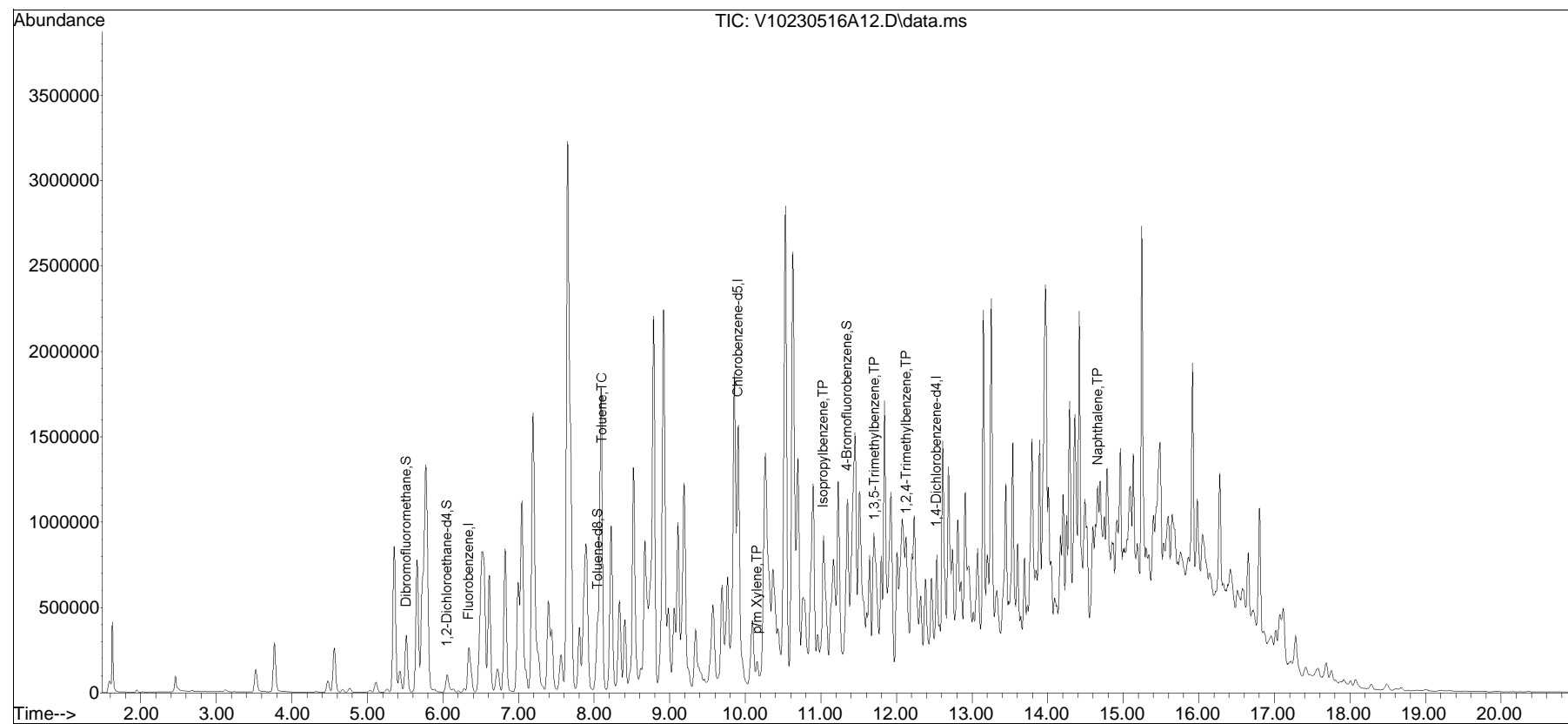


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230516A\
Data File : V10230516A12.D
Acq On : 16 May 2023 1:11 pm
Operator : VOA110:AJK
Sample : 12325992-03d,31h,5.97,5,0.01,,a
Misc : WG1779942,ICAL19973
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 17 10:35:20 2023
Quant Method : I:\VOLATILES\VOA110\2023\230516A\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list16A\V10230516A01.D•

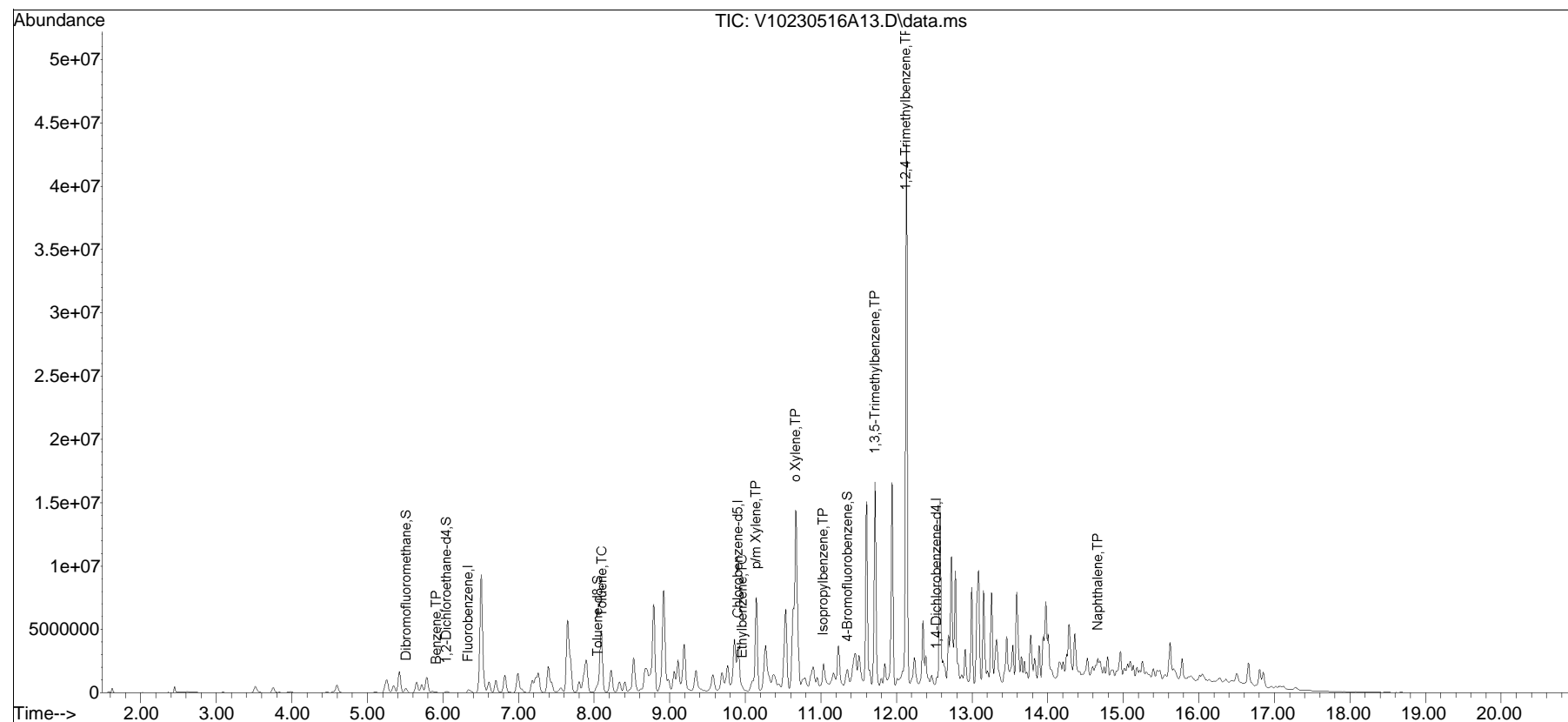


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230516A\
 Data File : V10230516A13.D
 Acq On : 16 May 2023 1:38 pm
 Operator : VOA110:AJK
 Sample : 12325992-05,31h,3.73,5,0.100,,a
 Misc : WG1779942,ICAL19973
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 16 14:28:00 2023
 Quant Method : I:\VOLATILES\VOA110\2023\230516A\V110_230501A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Tue May 02 12:02:28 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list16A\V10230516A01.D•

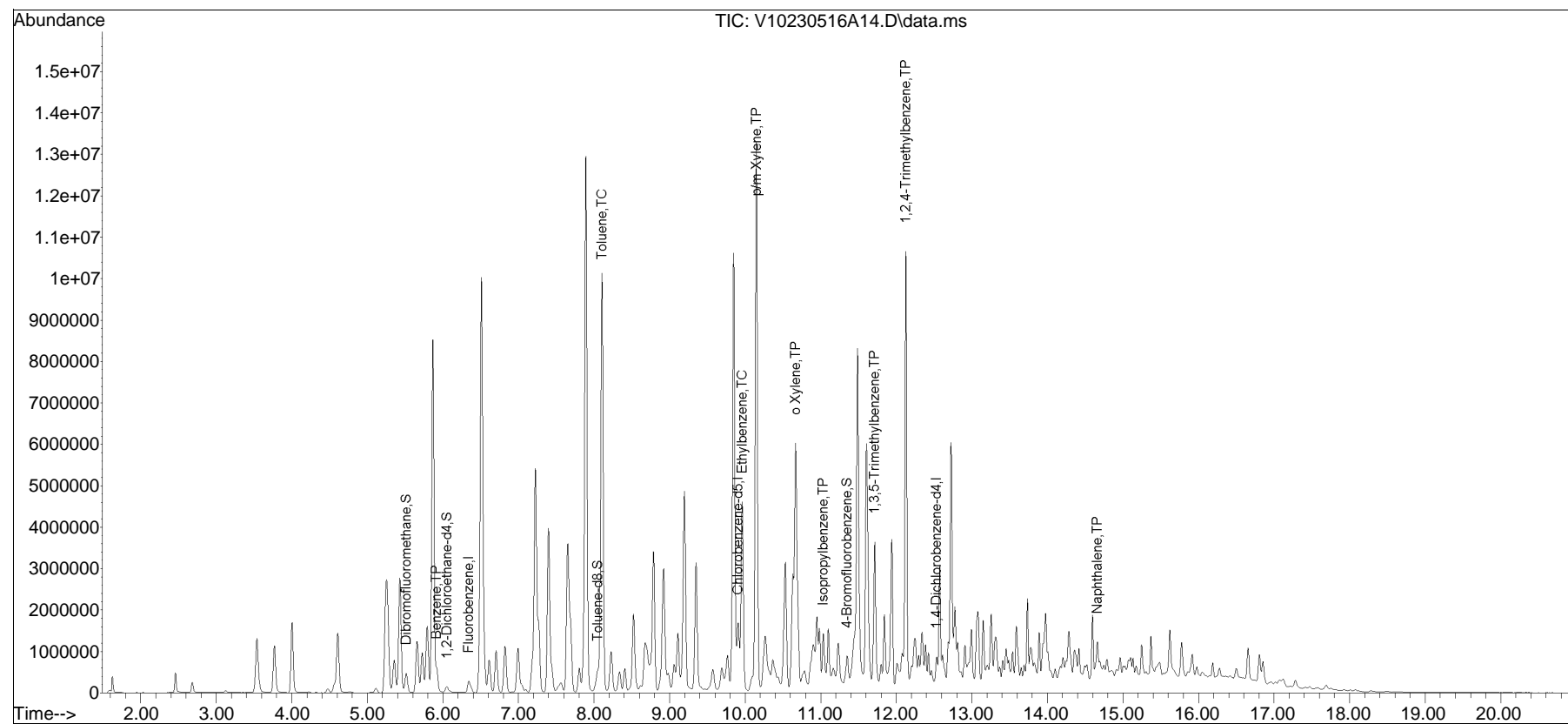


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230516A\
Data File : V10230516A14.D
Acq On : 16 May 2023 2:05 pm
Operator : VOA110:AJK
Sample : 12325992-07d,31h,5.37,5,0.01,,a
Misc : WG1779942,ICAL19973
ALS Vial : 14 Sample Multiplier: 1

Quant Time: May 16 14:30:35 2023
Quant Method : I:\VOLATILES\VOA110\2023\230516A\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list16A\V10230516A01.D•

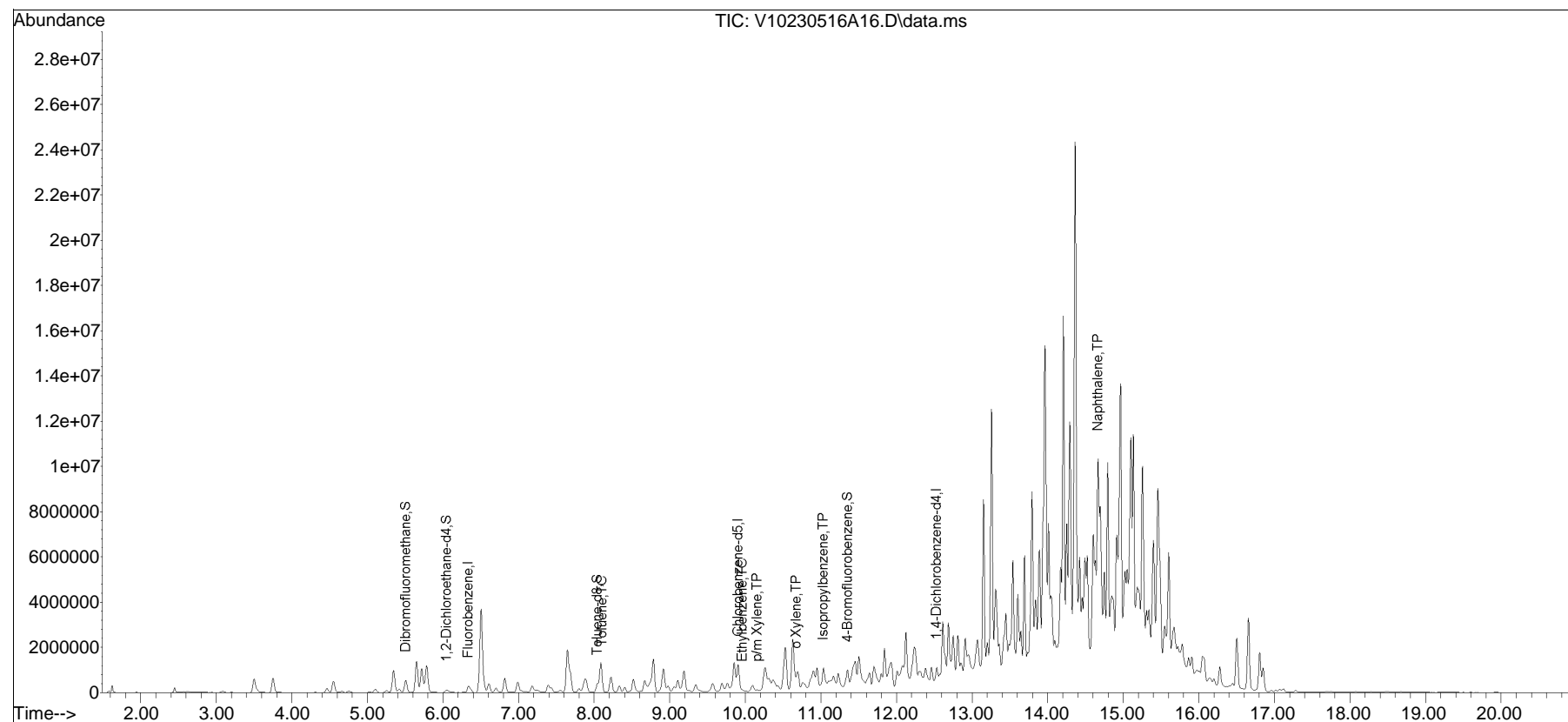


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230516A\
Data File : V10230516A16.D
Acq On : 16 May 2023 3:00 pm
Operator : VOA110:JIC
Sample : 12325992-11,31h,6.27,5,0.100,,a
Misc : WG1779942,ICAL19973
ALS Vial : 16 Sample Multiplier: 1

Quant Time: May 17 07:03:00 2023
Quant Method : I:\VOLATILES\VOA110\2023\230516A\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list16A\V10230516A01.D•

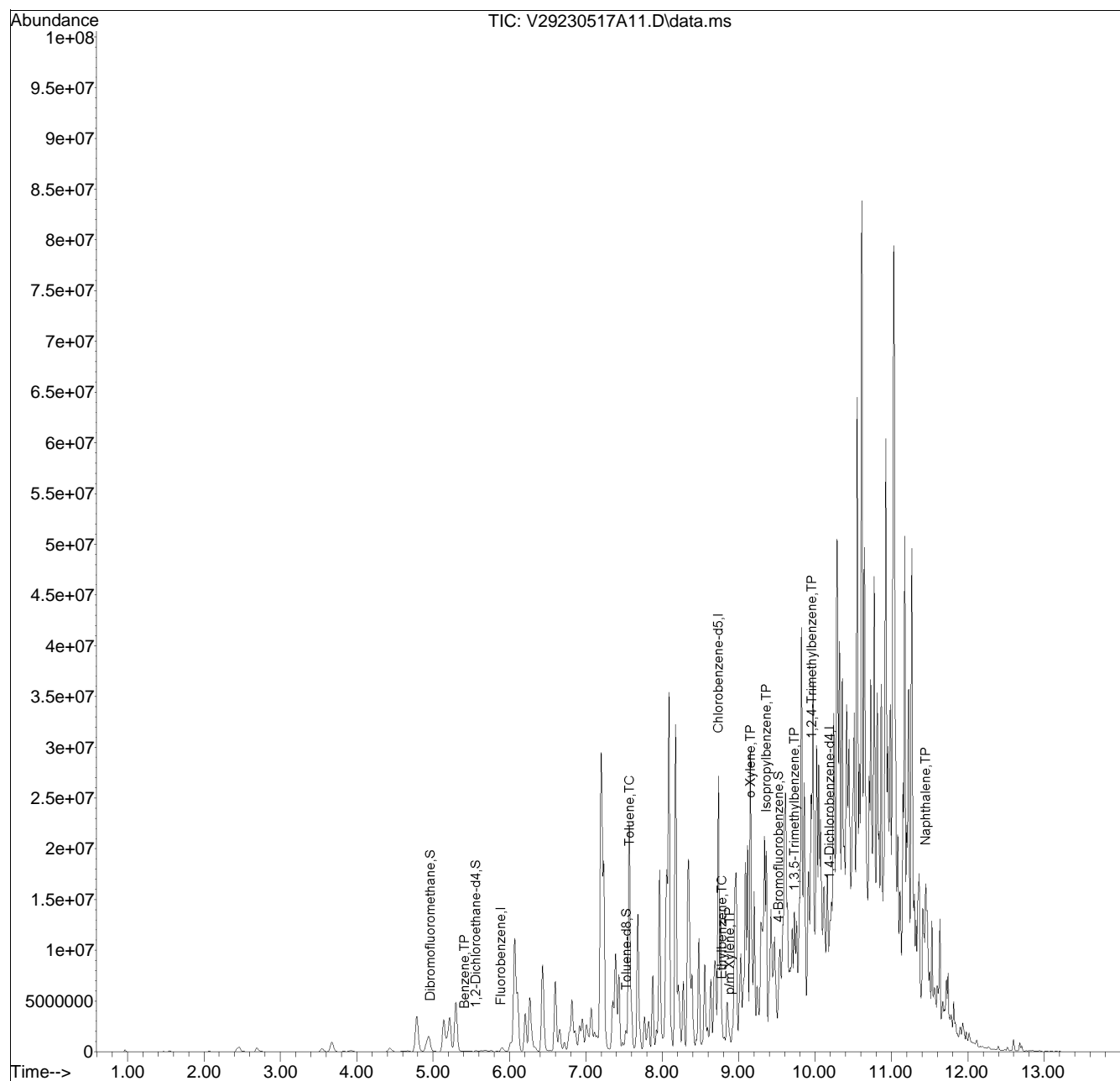


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
 Data File : V29230517A11.D
 Acq On : 17 May 2023 11:14 am
 Operator : VOA129:AJK
 Sample : L2325992-13,31,5.86,5,,B
 Misc : WG1780074,ICAL19799
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 17 11:35:51 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•

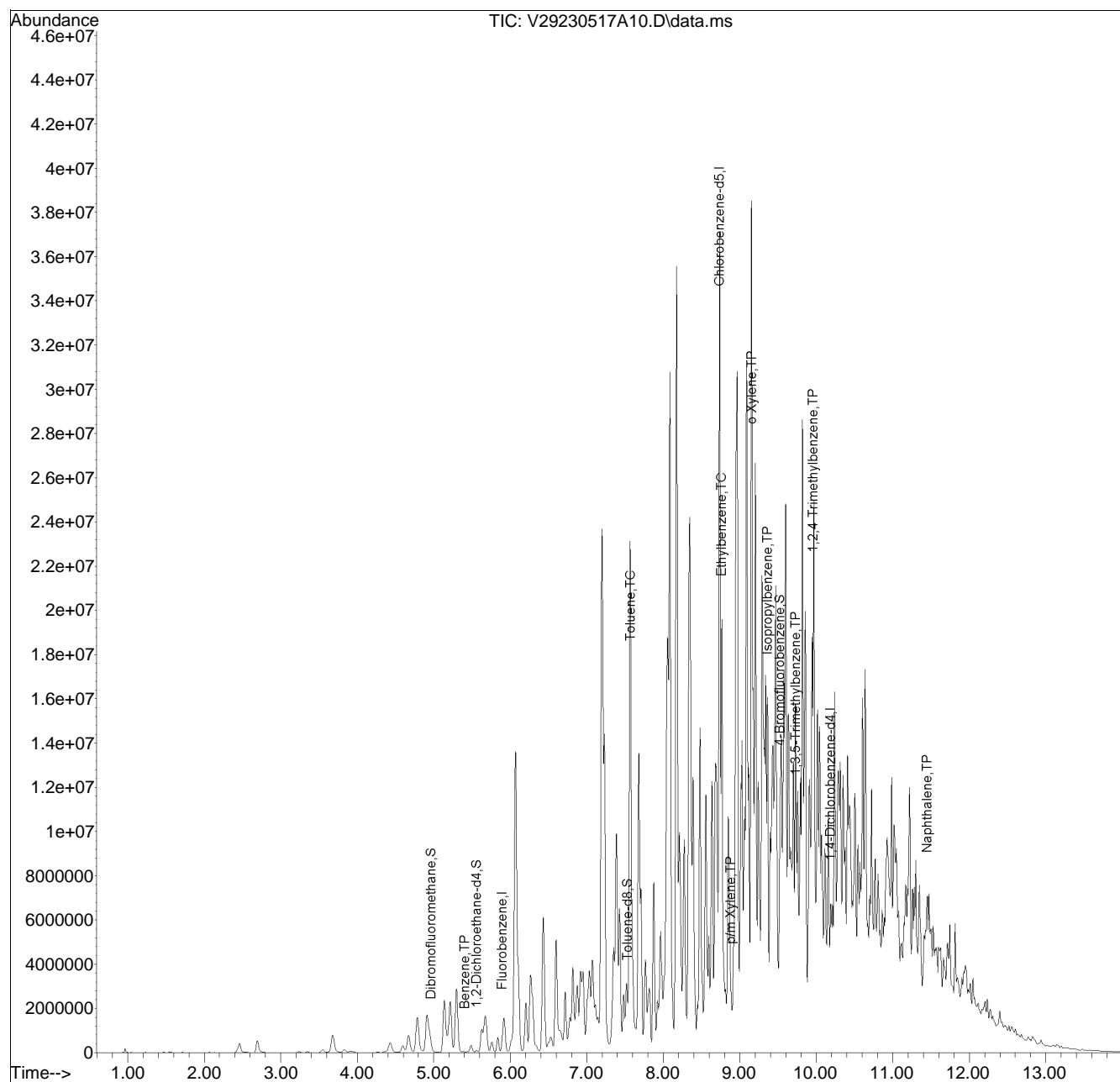


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
 Data File : V29230517A10.D
 Acq On : 17 May 2023 10:53 am
 Operator : VOA129:AJK
 Sample : L2325992-15,31,4.95,5,,B
 Misc : WG1780074,ICAL19799
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 17 11:34:54 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•

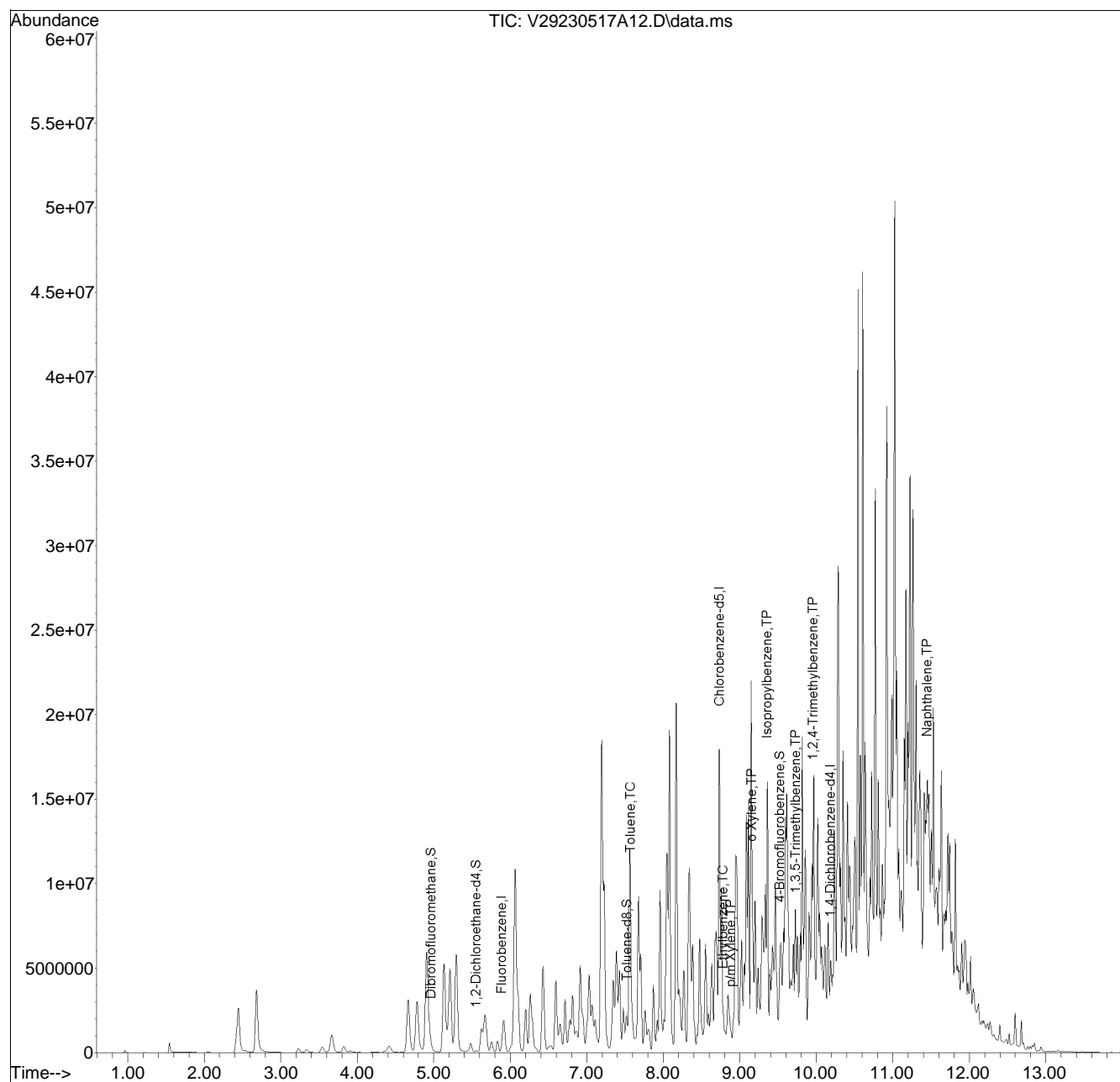


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
 Data File : V29230517A12.D
 Acq On : 17 May 2023 11:35 am
 Operator : VOA129:JIC
 Sample : L2325992-17,31H,6.06,5,0.100,,A
 Misc : WG1780073,ICAL19799
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 17 12:26:20 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•





ANALYTICAL REPORT

Lab Number:	L2326354
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/18/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2326354-01	LS-A-G04-C1-VOC	SOIL	PHILADELPHIA, PA	05/11/23 10:55	05/11/23
L2326354-02	LS-A-G04-C1-COMP	SOIL	PHILADELPHIA, PA	05/11/23 10:55	05/11/23
L2326354-03	LS-A-G04-C2-VOC	SOIL	PHILADELPHIA, PA	05/11/23 11:05	05/11/23
L2326354-04	LS-A-G04-C2-COMP	SOIL	PHILADELPHIA, PA	05/11/23 11:05	05/11/23
L2326354-05	LS-A-G04-C3-VOC	SOIL	PHILADELPHIA, PA	05/11/23 11:20	05/11/23
L2326354-06	LS-A-G04-C3-COMP	SOIL	PHILADELPHIA, PA	05/11/23 11:20	05/11/23
L2326354-07	LS-A-G02-C1-VOC	SOIL	PHILADELPHIA, PA	05/11/23 12:15	05/11/23
L2326354-08	LS-A-G02-C1-COMP	SOIL	PHILADELPHIA, PA	05/11/23 12:15	05/11/23
L2326354-09	LS-A-G02-C2-VOC	SOIL	PHILADELPHIA, PA	05/11/23 12:30	05/11/23
L2326354-10	LS-A-G02-C2-COMP	SOIL	PHILADELPHIA, PA	05/11/23 12:30	05/11/23
L2326354-11	LS-A-G02-C3-VOC	SOIL	PHILADELPHIA, PA	05/11/23 12:40	05/11/23
L2326354-12	LS-A-G02-C3-COMP	SOIL	PHILADELPHIA, PA	05/11/23 12:40	05/11/23
L2326354-13	LS-A-H01-C1-VOC	SOIL	PHILADELPHIA, PA	05/11/23 13:50	05/11/23
L2326354-14	LS-A-H01-C1-COMP	SOIL	PHILADELPHIA, PA	05/11/23 13:50	05/11/23
L2326354-15	LS-A-H01-C2-VOC	SOIL	PHILADELPHIA, PA	05/11/23 14:05	05/11/23
L2326354-16	LS-A-H01-C2-COMP	SOIL	PHILADELPHIA, PA	05/11/23 14:05	05/11/23
L2326354-17	LS-A-H01-C3-VOC	SOIL	PHILADELPHIA, PA	05/11/23 14:20	05/11/23
L2326354-18	LS-A-H01-C3-COMP	SOIL	PHILADELPHIA, PA	05/11/23 14:20	05/11/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

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
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

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

L2326354-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (227%); 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.

L2326354-01, -05, and -09: 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.

L2326354-03: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (23%) and the surrogate recovery for 4-bromofluorobenzene (2700%) 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 below method criteria, all associated compounds are considered to have a potentially high bias. The results of both analyses are reported.

L2326354-05: The surrogate recovery is outside the method acceptance criteria for 1,2-dichloroethane-d4 (67%) due to interference with the Internal Standard.

L2326354-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (351%); 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.

L2326354-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (188%); 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.

L2326354-09: 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

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

Case Narrative (continued)

chromatogram is included as an attachment to this report.

L2326354-11D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (174%); 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.

L2326354-11D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2326354-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (199%); 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.

L2326354-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (257%); 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.

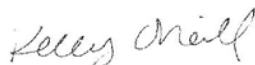
L2326354-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (421%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

PAHs

L2326354-02D, -04D, -06D, -10D, -12D, -16D and -18D: 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:



Kelly O'Neill

Title: Technical Director/Representative

Date: 05/18/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-01
 Client ID: LS-A-G04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 10:55
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 13:20
 Analyst: AJK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.097	0.0098	1
Benzene	ND		mg/kg	0.024	0.0080	1
1,2-Dichloroethane	ND		mg/kg	0.048	0.012	1
Toluene	ND		mg/kg	0.048	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	ND		mg/kg	0.048	0.0068	1
p/m-Xylene	ND		mg/kg	0.097	0.027	1
o-Xylene	ND		mg/kg	0.048	0.014	1
Xylenes, Total	ND		mg/kg	0.048	0.014	1
Isopropylbenzene	0.46		mg/kg	0.048	0.0053	1
1,3,5-Trimethylbenzene	0.013	J	mg/kg	0.097	0.0094	1
1,2,4-Trimethylbenzene	0.039	J	mg/kg	0.097	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	227	Q	70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-03
 Client ID: LS-A-G04-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 11:05
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 04:14
 Analyst: JIC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.095	0.0095	1
Benzene	ND		mg/kg	0.024	0.0079	1
1,2-Dichloroethane	ND		mg/kg	0.047	0.012	1
Toluene	ND		mg/kg	0.047	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	ND		mg/kg	0.047	0.0067	1
p/m-Xylene	ND		mg/kg	0.095	0.026	1
o-Xylene	0.024	J	mg/kg	0.047	0.014	1
Xylenes, Total	0.024	J	mg/kg	0.047	0.014	1
Isopropylbenzene	1.0		mg/kg	0.047	0.0052	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.095	0.0092	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.095	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	116		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-03
 Client ID: LS-A-G04-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 11:05
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 09:21
 Analyst: AJK
 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	0.0019	0.00019	1
Benzene	0.00020	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	0.0018		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.0037		mg/kg	0.00096	0.00014	1
p/m-Xylene	0.0020		mg/kg	0.0019	0.00054	1
o-Xylene	0.0072		mg/kg	0.00096	0.00028	1
Xylenes, Total	0.0092		mg/kg	0.00096	0.00028	1
Isopropylbenzene	1.2	E	mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	0.0018	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.0097		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	2700	Q	70-130
Dibromofluoromethane	113		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-05
 Client ID: LS-A-G04-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 11:20
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 14:03
 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	0.093	0.0094	1
Benzene	ND		mg/kg	0.023	0.0078	1
1,2-Dichloroethane	ND		mg/kg	0.047	0.012	1
Toluene	0.034	J	mg/kg	0.047	0.025	1
1,2-Dibromoethane	ND		mg/kg	0.023	0.014	1
Ethylbenzene	ND		mg/kg	0.047	0.0066	1
p/m-Xylene	0.23		mg/kg	0.093	0.026	1
o-Xylene	0.031	J	mg/kg	0.047	0.014	1
Xylenes, Total	0.26	J	mg/kg	0.047	0.014	1
Isopropylbenzene	1.2		mg/kg	0.047	0.0051	1
1,3,5-Trimethylbenzene	0.13		mg/kg	0.093	0.0090	1
1,2,4-Trimethylbenzene	0.42		mg/kg	0.093	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	67	Q	70-130
Toluene-d8	120		70-130
4-Bromofluorobenzene	351	Q	70-130
Dibromofluoromethane	73		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-07
 Client ID: LS-A-G02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 12:15
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 14:24
 Analyst: AJK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.082	0.0083	1
Benzene	ND		mg/kg	0.021	0.0068	1
1,2-Dichloroethane	ND		mg/kg	0.041	0.010	1
Toluene	0.033	J	mg/kg	0.041	0.022	1
1,2-Dibromoethane	ND		mg/kg	0.021	0.012	1
Ethylbenzene	0.014	J	mg/kg	0.041	0.0058	1
p/m-Xylene	0.062	J	mg/kg	0.082	0.023	1
o-Xylene	0.050		mg/kg	0.041	0.012	1
Xylenes, Total	0.11	J	mg/kg	0.041	0.012	1
Isopropylbenzene	6.2		mg/kg	0.041	0.0045	1
1,3,5-Trimethylbenzene	0.089		mg/kg	0.082	0.0080	1
1,2,4-Trimethylbenzene	0.33		mg/kg	0.082	0.014	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	188	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-09
 Client ID: LS-A-G02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 12:30
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 14:45
 Analyst: JIC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.087	0.0087	1
Benzene	ND		mg/kg	0.022	0.0072	1
1,2-Dichloroethane	ND		mg/kg	0.044	0.011	1
Toluene	ND		mg/kg	0.044	0.024	1
1,2-Dibromoethane	ND		mg/kg	0.022	0.013	1
Ethylbenzene	ND		mg/kg	0.044	0.0061	1
p/m-Xylene	ND		mg/kg	0.087	0.024	1
o-Xylene	ND		mg/kg	0.044	0.013	1
Xylenes, Total	ND		mg/kg	0.044	0.013	1
Isopropylbenzene	0.37		mg/kg	0.044	0.0047	1
1,3,5-Trimethylbenzene	0.014	J	mg/kg	0.087	0.0084	1
1,2,4-Trimethylbenzene	0.028	J	mg/kg	0.087	0.014	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	122		70-130
4-Bromofluorobenzene	165	Q	70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-11 D
 Client ID: LS-A-G02-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 12:40
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 15:06
 Analyst: JIC
 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	0.95	0.096	10
Benzene	ND		mg/kg	0.24	0.079	10
1,2-Dichloroethane	ND		mg/kg	0.48	0.12	10
Toluene	ND		mg/kg	0.48	0.26	10
1,2-Dibromoethane	ND		mg/kg	0.24	0.14	10
Ethylbenzene	ND		mg/kg	0.48	0.067	10
p/m-Xylene	ND		mg/kg	0.95	0.27	10
o-Xylene	ND		mg/kg	0.48	0.14	10
Xylenes, Total	ND		mg/kg	0.48	0.14	10
Isopropylbenzene	22.		mg/kg	0.48	0.052	10
1,3,5-Trimethylbenzene	ND		mg/kg	0.95	0.092	10
1,2,4-Trimethylbenzene	ND		mg/kg	0.95	0.16	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	174	Q	70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-13
 Client ID: LS-A-H01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 13:50
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 15:27
 Analyst: JIC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.090	0.0090	1
Benzene	0.012	J	mg/kg	0.022	0.0074	1
1,2-Dichloroethane	ND		mg/kg	0.045	0.012	1
Toluene	ND		mg/kg	0.045	0.024	1
1,2-Dibromoethane	ND		mg/kg	0.022	0.013	1
Ethylbenzene	0.15		mg/kg	0.045	0.0063	1
p/m-Xylene	ND		mg/kg	0.090	0.025	1
o-Xylene	ND		mg/kg	0.045	0.013	1
Xylenes, Total	ND		mg/kg	0.045	0.013	1
Isopropylbenzene	2.2		mg/kg	0.045	0.0049	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.090	0.0086	1
1,2,4-Trimethylbenzene	0.10		mg/kg	0.090	0.015	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	123		70-130
4-Bromofluorobenzene	199	Q	70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-15
 Client ID: LS-A-H01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 14:05
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/17/23 15:48
 Analyst: JIC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.086	0.0086	1
Benzene	0.26		mg/kg	0.021	0.0071	1
1,2-Dichloroethane	ND		mg/kg	0.043	0.011	1
Toluene	0.069		mg/kg	0.043	0.023	1
1,2-Dibromoethane	ND		mg/kg	0.021	0.012	1
Ethylbenzene	0.21		mg/kg	0.043	0.0060	1
p/m-Xylene	0.072	J	mg/kg	0.086	0.024	1
o-Xylene	ND		mg/kg	0.043	0.012	1
Xylenes, Total	0.072	J	mg/kg	0.043	0.012	1
Isopropylbenzene	4.0		mg/kg	0.043	0.0047	1
1,3,5-Trimethylbenzene	0.012	J	mg/kg	0.086	0.0083	1
1,2,4-Trimethylbenzene	0.10		mg/kg	0.086	0.014	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	257	Q	70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-17
 Client ID: LS-A-H01-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 14:20
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 09:00
 Analyst: AJK
 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	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	0.00092		mg/kg	0.00088	0.00026	1
Xylenes, Total	0.00092		mg/kg	0.00088	0.00026	1
Isopropylbenzene	0.010		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	0.00073	J	mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.0015	J	mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	123		70-130
4-Bromofluorobenzene	421	Q	70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/17/23 08:36
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,05,07,09,11,13,15 Batch: WG1780073-5					
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	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/17/23 20:32
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 03 Batch: WG1780491-5					
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	91		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	126		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/18/23 08:38
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,17 Batch: WG1780531-5					
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	107		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	115		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,05,07,09,11,13,15 Batch: WG1780073-3 WG1780073-4								
Methyl tert butyl ether	109		107		66-130	2		30
Benzene	113		111		70-130	2		30
1,2-Dichloroethane	96		93		70-130	3		30
Toluene	94		92		70-130	2		30
1,2-Dibromoethane	96		94		70-130	2		30
Ethylbenzene	96		95		70-130	1		30
p/m-Xylene	99		97		70-130	2		30
o-Xylene	98		96		70-130	2		30
Isopropylbenzene	98		96		70-130	2		30
1,3,5-Trimethylbenzene	96		94		70-130	2		30
1,2,4-Trimethylbenzene	95		93		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		100		70-130
Toluene-d8	95		96		70-130
4-Bromofluorobenzene	91		91		70-130
Dibromofluoromethane	112		113		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 03 Batch: WG1780491-3 WG1780491-4								
Methyl tert butyl ether	100		101		66-130	1		30
Benzene	107		106		70-130	1		30
1,2-Dichloroethane	101		101		70-130	0		30
Toluene	84		81		70-130	4		30
1,2-Dibromoethane	77		76		70-130	1		30
Ethylbenzene	85		81		70-130	5		30
p/m-Xylene	92		86		70-130	7		30
o-Xylene	91		86		70-130	6		30
Isopropylbenzene	78		73		70-130	7		30
1,3,5-Trimethylbenzene	85		78		70-130	9		30
1,2,4-Trimethylbenzene	86		78		70-130	10		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	100		104		70-130
Toluene-d8	93		92		70-130
4-Bromofluorobenzene	88		85		70-130
Dibromofluoromethane	107		107		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,17 Batch: WG1780531-3 WG1780531-4								
Methyl tert butyl ether	105		102		66-130	3		30
Benzene	106		103		70-130	3		30
1,2-Dichloroethane	95		92		70-130	3		30
Toluene	89		87		70-130	2		30
1,2-Dibromoethane	92		90		70-130	2		30
Ethylbenzene	94		92		70-130	2		30
p/m-Xylene	96		93		70-130	3		30
o-Xylene	96		93		70-130	3		30
Isopropylbenzene	90		88		70-130	2		30
1,3,5-Trimethylbenzene	90		88		70-130	2		30
1,2,4-Trimethylbenzene	90		88		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	93		91		70-130
Dibromofluoromethane	110		110		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-02 D
 Client ID: LS-A-G04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 10:55
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/18/23 14:38
 Analyst: IM
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.57		mg/kg	0.17	0.11	5
Fluorene	11.		mg/kg	0.87	0.085	5
Phenanthrene	40.	E	mg/kg	0.52	0.11	5
Anthracene	14.		mg/kg	0.52	0.17	5
Pyrene	20.		mg/kg	0.52	0.087	5
Benzo(a)anthracene	5.8		mg/kg	0.52	0.098	5
Chrysene	5.9		mg/kg	0.52	0.091	5
Benzo(b)fluoranthene	5.1		mg/kg	0.52	0.15	5
Benzo(a)pyrene	4.9		mg/kg	0.70	0.21	5
Benzo(ghi)perylene	3.1		mg/kg	0.70	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	83		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-02 D
 Client ID: LS-A-G04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 10:55
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/18/23 16:53
 Analyst: MG
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenanthrene	39.		mg/kg	2.6	0.53	25

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-04 D
 Client ID: LS-A-G04-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 11:05
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/18/23 14:55
 Analyst: IM
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.13	J	mg/kg	0.17	0.10	5
Fluorene	17.		mg/kg	0.86	0.083	5
Phenanthrene	52.	E	mg/kg	0.51	0.10	5
Anthracene	12.		mg/kg	0.51	0.17	5
Pyrene	34.		mg/kg	0.51	0.085	5
Benzo(a)anthracene	9.6		mg/kg	0.51	0.097	5
Chrysene	7.6		mg/kg	0.51	0.089	5
Benzo(b)fluoranthene	7.7		mg/kg	0.51	0.14	5
Benzo(a)pyrene	6.6		mg/kg	0.69	0.21	5
Benzo(ghi)perylene	3.7		mg/kg	0.69	0.10	5

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

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-04 D
 Client ID: LS-A-G04-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 11:05
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/18/23 16:36
 Analyst: MG
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenanthrene	54.		mg/kg	2.6	0.52	25

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-06 D
 Client ID: LS-A-G04-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 11:20
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/18/23 15:12
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.23		mg/kg	0.18	0.11	5
Fluorene	4.3		mg/kg	0.92	0.089	5
Phenanthrene	14.		mg/kg	0.55	0.11	5
Anthracene	3.2		mg/kg	0.55	0.18	5
Pyrene	7.3		mg/kg	0.55	0.091	5
Benzo(a)anthracene	2.4		mg/kg	0.55	0.10	5
Chrysene	2.5		mg/kg	0.55	0.096	5
Benzo(b)fluoranthene	1.7		mg/kg	0.55	0.15	5
Benzo(a)pyrene	1.7		mg/kg	0.74	0.22	5
Benzo(ghi)perylene	0.84		mg/kg	0.74	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-08
 Client ID: LS-A-G02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 12:15
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/16/23 21:41
 Analyst: ALS
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.064		mg/kg	0.035	0.021	1
Fluorene	0.18		mg/kg	0.17	0.017	1
Phenanthrene	0.74		mg/kg	0.10	0.021	1
Anthracene	0.17		mg/kg	0.10	0.034	1
Pyrene	0.49		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.17		mg/kg	0.10	0.020	1
Chrysene	0.26		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.13		mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.20		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.17		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-10 D
 Client ID: LS-A-G02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 12:30
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/18/23 15:29
 Analyst: IM
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.16	J	mg/kg	0.17	0.10	5
Fluorene	0.77	J	mg/kg	0.86	0.084	5
Phenanthrene	2.1		mg/kg	0.52	0.10	5
Anthracene	0.45	J	mg/kg	0.52	0.17	5
Pyrene	1.5		mg/kg	0.52	0.086	5
Benzo(a)anthracene	0.50	J	mg/kg	0.52	0.097	5
Chrysene	0.93		mg/kg	0.52	0.090	5
Benzo(b)fluoranthene	0.35	J	mg/kg	0.52	0.14	5
Benzo(a)pyrene	0.42	J	mg/kg	0.69	0.21	5
Benzo(ghi)perylene	0.36	J	mg/kg	0.69	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-12 D
 Client ID: LS-A-G02-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 12:40
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/18/23 15:46
 Analyst: IM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.37		mg/kg	0.18	0.11	5
Fluorene	2.0		mg/kg	0.89	0.086	5
Phenanthrene	5.2		mg/kg	0.53	0.11	5
Anthracene	1.0		mg/kg	0.53	0.17	5
Pyrene	1.1		mg/kg	0.53	0.088	5
Benzo(a)anthracene	0.43	J	mg/kg	0.53	0.10	5
Chrysene	0.86		mg/kg	0.53	0.092	5
Benzo(b)fluoranthene	0.31	J	mg/kg	0.53	0.15	5
Benzo(a)pyrene	0.35	J	mg/kg	0.71	0.22	5
Benzo(ghi)perylene	0.30	J	mg/kg	0.71	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	157	Q	23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-14
 Client ID: LS-A-H01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 13:50
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/17/23 02:59
 Analyst: ALS
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.074		mg/kg	0.035	0.022	1
Fluorene	0.039	J	mg/kg	0.18	0.017	1
Phenanthrene	0.36		mg/kg	0.11	0.021	1
Anthracene	0.083	J	mg/kg	0.11	0.034	1
Pyrene	0.14		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.090	J	mg/kg	0.11	0.020	1
Chrysene	0.12		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.11		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.096	J	mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.094	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	34		30-120
4-Terphenyl-d14	26		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-16 D
 Client ID: LS-A-H01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 14:05
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/18/23 16:02
 Analyst: MG
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.11	5
Fluorene	ND		mg/kg	0.87	0.085	5
Phenanthrene	ND		mg/kg	0.52	0.10	5
Anthracene	ND		mg/kg	0.52	0.17	5
Pyrene	ND		mg/kg	0.52	0.086	5
Benzo(a)anthracene	ND		mg/kg	0.52	0.098	5
Chrysene	ND		mg/kg	0.52	0.090	5
Benzo(b)fluoranthene	ND		mg/kg	0.52	0.15	5
Benzo(a)pyrene	ND		mg/kg	0.70	0.21	5
Benzo(ghi)perylene	ND		mg/kg	0.70	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	48		23-120
2-Fluorobiphenyl	48		30-120
4-Terphenyl-d14	45		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-18 D
 Client ID: LS-A-H01-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 14:20
 Date Received: 05/11/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/18/23 15:18
 Analyst: ALS
 Percent Solids: 97%

Extraction Method: EPA 3546
 Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.10	5
Fluorene	1.6		mg/kg	0.84	0.082	5
Phenanthrene	1.2		mg/kg	0.51	0.10	5
Anthracene	0.56		mg/kg	0.51	0.16	5
Pyrene	0.89		mg/kg	0.51	0.084	5
Benzo(a)anthracene	0.26	J	mg/kg	0.51	0.095	5
Chrysene	0.88		mg/kg	0.51	0.088	5
Benzo(b)fluoranthene	0.20	J	mg/kg	0.51	0.14	5
Benzo(a)pyrene	ND		mg/kg	0.68	0.21	5
Benzo(ghi)perylene	0.12	J	mg/kg	0.68	0.099	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	79		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/16/23 16:16
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 05/15/23 08:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1778902-1					
Naphthalene	ND		mg/kg	0.032	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	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	75		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	78		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1778902-2 WG1778902-3								
Naphthalene	72		94		40-140	27		50
Fluorene	75		97		40-140	26		50
Phenanthrene	75		95		40-140	24		50
Anthracene	79		101		40-140	24		50
Pyrene	79		100		35-142	23		50
Benzo(a)anthracene	76		96		40-140	23		50
Chrysene	77		96		40-140	22		50
Benzo(b)fluoranthene	75		99		40-140	28		50
Benzo(a)pyrene	82		104		40-140	24		50
Benzo(ghi)perylene	71		88		40-140	21		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	77		102		23-120
2-Fluorobiphenyl	74		96		30-120
4-Terphenyl-d14	71		89		18-120



METALS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-02
 Client ID: LS-A-G04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 10:55
 Date Received: 05/11/23
 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	26.5		mg/kg	2.11	0.113	1	05/17/23 06:10	05/17/23 10:54	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-04
 Client ID: LS-A-G04-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 11:05
 Date Received: 05/11/23
 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	10.5		mg/kg	2.06	0.110	1	05/17/23 06:10	05/17/23 17:02	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-06

Date Collected: 05/11/23 11:20

Client ID: LS-A-G04-C3-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	5.70		mg/kg	2.20	0.118	1	05/17/23 06:10	05/17/23 17:05	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-08

Date Collected: 05/11/23 12:15

Client ID: LS-A-G02-C1-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	39.2		mg/kg	2.06	0.110	1	05/17/23 06:10	05/17/23 17:09	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-10

Date Collected: 05/11/23 12:30

Client ID: LS-A-G02-C2-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	17.4		mg/kg	2.03	0.109	1	05/17/23 06:10	05/17/23 17:12	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-12

Date Collected: 05/11/23 12:40

Client ID: LS-A-G02-C3-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	50.8		mg/kg	2.08	0.112	1	05/17/23 06:10	05/17/23 17:15	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-14

Date Collected: 05/11/23 13:50

Client ID: LS-A-H01-C1-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	48.5		mg/kg	2.09	0.112	1	05/17/23 06:10	05/17/23 17:18	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-16

Date Collected: 05/11/23 14:05

Client ID: LS-A-H01-C2-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	33.6		mg/kg	2.01	0.108	1	05/17/23 06:10	05/17/23 17:21	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-18

Date Collected: 05/11/23 14:20

Client ID: LS-A-H01-C3-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	13.9		mg/kg	1.98	0.106	1	05/17/23 06:10	05/17/23 18:07	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

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): 02,04,06,08,10,12,14,16,18 Batch: WG1778244-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/17/23 06:10	05/17/23 10:36	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1778244-2 SRM Lot Number: D119-540								
Lead, Total	96		-		82-118			-

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1778244-3 QC Sample: L2326354-02 Client ID: LS-A-G04-C1-COMP												
Lead, Total	26.5	44.9	69.1	95	-	-	-	-	75-125	-	-	20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2326354

Report Date: 05/18/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1778244-4 QC Sample: L2326354-02 Client ID: LS-A-G04-C1-COMP						
Lead, Total	26.5	28.3	mg/kg	7		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-01

Date Collected: 05/11/23 10:55

Client ID: LS-A-G04-C1-VOC

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	92.4		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-02
Client ID: LS-A-G04-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 10:55
Date Received: 05/11/23
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	92.9		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-03

Date Collected: 05/11/23 11:05

Client ID: LS-A-G04-C2-VOC

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	94.4		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-04

Date Collected: 05/11/23 11:05

Client ID: LS-A-G04-C2-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	95.6		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-05

Date Collected: 05/11/23 11:20

Client ID: LS-A-G04-C3-VOC

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	88.4		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-06

Date Collected: 05/11/23 11:20

Client ID: LS-A-G04-C3-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	88.7		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-07

Date Collected: 05/11/23 12:15

Client ID: LS-A-G02-C1-VOC

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	95.0		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-08

Date Collected: 05/11/23 12:15

Client ID: LS-A-G02-C1-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	95.3		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-09

Date Collected: 05/11/23 12:30

Client ID: LS-A-G02-C2-VOC

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	93.3		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-10

Date Collected: 05/11/23 12:30

Client ID: LS-A-G02-C2-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	94.0		%	0.100	NA	1	-	05/12/23 12:37	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-11
 Client ID: LS-A-G02-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 12:40
 Date Received: 05/11/23
 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	91.4		%	0.100	NA	1	-	05/12/23 12:48	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

SAMPLE RESULTS

Lab ID: L2326354-12
Client ID: LS-A-G02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/11/23 12:40
Date Received: 05/11/23
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	91.3		%	0.100	NA	1	-	05/12/23 12:48	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-13

Date Collected: 05/11/23 13:50

Client ID: LS-A-H01-C1-VOC

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	92.9		%	0.100	NA	1	-	05/12/23 12:48	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-14

Date Collected: 05/11/23 13:50

Client ID: LS-A-H01-C1-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	93.7		%	0.100	NA	1	-	05/12/23 12:48	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-15

Date Collected: 05/11/23 14:05

Client ID: LS-A-H01-C2-VOC

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	93.9		%	0.100	NA	1	-	05/12/23 12:48	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-16

Date Collected: 05/11/23 14:05

Client ID: LS-A-H01-C2-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	95.0		%	0.100	NA	1	-	05/12/23 12:48	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-17

Date Collected: 05/11/23 14:20

Client ID: LS-A-H01-C3-VOC

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	96.7		%	0.100	NA	1	-	05/12/23 12:48	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**SAMPLE RESULTS**

Lab ID: L2326354-18

Date Collected: 05/11/23 14:20

Client ID: LS-A-H01-C3-COMP

Date Received: 05/11/23

Sample Location: PHILADELPHIA, PA

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	97.2		%	0.100	NA	1	-	05/12/23 12:48	121,2540G	ROI



Lab Duplicate Analysis *Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2326354

Report Date: 05/18/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10 QC Batch ID: WG1778216-1 QC Sample: L2326213-01 Client ID: DUP Sample						
Solids, Total	87.4	88.5	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 11-18 QC Batch ID: WG1778304-1 QC Sample: L2320435-23 Client ID: DUP Sample						
Solids, Total	43.4	43.8	%	1		20



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**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(*)
L2326354-01A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2326354-01B	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-01C	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-01D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2326354-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2326354-02B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2326354-03A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2326354-03B	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260H(14),PA-8260HLW(14)
L2326354-03C	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260H(14),PA-8260HLW(14)
L2326354-03D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2326354-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2326354-04B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2326354-05A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2326354-05B	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-05C	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-05D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2326354-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2326354-06B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2326354-07A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2326354-07B	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-07C	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-07D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2326354-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326354**Project Number:** 200.00135.023**Report Date:** 05/18/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2326354-08B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2326354-09A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2326354-09B	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-09C	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-09D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2326354-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2326354-10B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2326354-11A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2326354-11B	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-11C	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-11D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2326354-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2326354-12B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2326354-13A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2326354-13B	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-13C	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-13D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2326354-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2326354-14B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2326354-15A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2326354-15B	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-15C	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-15D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2326354-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2326354-16B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2326354-17A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2326354-17B	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)
L2326354-17C	Vial water preserved	A	NA		2.7	Y	Absent	12-MAY-23 09:53	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Serial_No:05182319:24
Lab Number: L2326354
Report Date: 05/18/23

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2326354-17D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2326354-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2326354-18B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

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
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

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
Project Number: 200.00135.023

Lab Number: L2326354
Report Date: 05/18/23

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.)

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326354

Project Number: 200.00135.023

Report Date: 05/18/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

Date Rec'd in Lab: 5/12/23

ALPHA Job #: L2326384

Project Information

Project Name: Philadelphia Refinery
 Project Location: Philadelphia, PA
 Project #: 200.00135.023
 Project Manager: William Schmidt
 ALPHA Quote #: 18559

Report Information - Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #:

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

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
 Date Due: Time:

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:
 Report only project specific analyte list of PDEP leached/unleached gasolines and No. 4, 5 & 6 fuel oils short list. Run map that use using method 8270 ONLY!
 Email results to add@terraphase.com, william.schmidt@ransomenv.com, & jjeremy@hitecglobal.com

ANALYSIS VOCs (8260) SVOCs (8270) Lead	SAMPLE HANDLING	
	Filtration _____ <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	Sample Specific Comments										TOTAL # BOTTLES						
		Date	Time																			
26354-01	LS-A-G04-C1-VOC	05/11/23	10:55	S	ND	X															4	
-02	-01 LS-A-G04-C1-comp		10:55							X	X											2
-03	-02 LS-A-G04-C2-VOC		11:05			X																4
-04	-02 LS-A-G04-C2-comp		11:05							X	X											2
-05	-03 LS-A-G04-C3-VOC		11:20			X																4
-06	-03 LS-A-G04-C3-comp		11:20							X	X											2
-07	-04 LS-A-G02-C1-VOC		12:15			X																4
-08	-04 LS-A-G02-C1-comp		12:15							X	X											2
-09	-05 LS-A-G02-C2-VOC		12:30			X																4
-10	MI 5/12 LS-A-G02-C2-comp		12:30							X	X											2

32 slabs 0245
05/12/23-024

Container Type	G	G	G
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
<u>Michael Dault</u>	<u>05/11/23 15:35</u>	<u>[Signature]</u>	<u>5/11/23 15:35</u>
<u>[Signature]</u>	<u>5/11/23 1608</u>	<u>[Signature]</u>	<u>5-11-23 1608</u>
<u>[Signature]</u>	<u>5-11-23</u>	<u>[Signature]</u>	<u>5-11-23 2100</u>

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.



CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 5/12/23

ALPHA Job #: L2326354

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

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

Project Information

Project Name: Philadelphia Robbery

Project Location: Philadelphia PA

Project #: 200-00135-023

Project Manager: William Schmidt

ALPHA Quote #: 18559

Report Information - Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #:

Client Information

Client: Ransom Consulting LLC

Address: 2127 Hamilton Avenue
Hamilton, NJ 08619

Phone: 215-901-4974

Fax:

Email: william.schmidt@ransomenu.com

These samples have been previously analyzed by Alpha

Turn-Around Time

Standard RUSH (only confirmed if pre-approved!)

Date Due: Time:

Regulatory Requirements/Report Limits

State /Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:

Report only project specific analyte list of PADEP listed/unloaded gasoline and No. 3, 4, 5 fuel oils standards. Run naphthalene using method 8270 ONLY! Email results to edd@terraphase.com, william.schmidt@ransomenu.com, joerny@hitecglobal.com

ANALYSIS VOCs (8260) SVOCs (8270) Lead	SAMPLE HANDLING										TOTAL # BOTTLES
	Filtration _____ <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)										

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										Sample Specific Comments	TOTAL # BOTTLES	
		Date	Time			VOCs (8260)	SVOCs (8270)	Lead										
26354-11	LS-A-G02-C3-VOC	05/11/23	12:40	S	ND	X												4
-12	LS-A-G02-C3-comp		12:40				X	X										2
-13	LS-A-H01-C1-VOC		13:50			X												4
-14	LS-A-H01-C1-comp		13:50				X	X										2
-15	LS-A-H01-C2-VOC		14:05			X												4
-16	LS-A-H01-C2-comp		14:05				X	X										2
-17	LS-A-H01-C3-VOC		14:20			X												4
-18	LS-A-H01-C3-comp		14:20				X	X										2

Rel 5/12/23 0245
MORNING

Container Type	G	G	G
Preservative	F	VA	VA

Relinquished By:	Date/Time	Received By:	Date/Time
<u>Michael Doyt</u>	<u>05/11/23 15:35</u>	<u>William Schmidt</u>	<u>5/11/23 15:35</u>
<u>Nelson</u>	<u>5/11/23 1608</u>	<u>Nelson</u>	<u>5/11/23 1608</u>
	<u>5-11-23</u>		<u>5-11-23 2100</u>

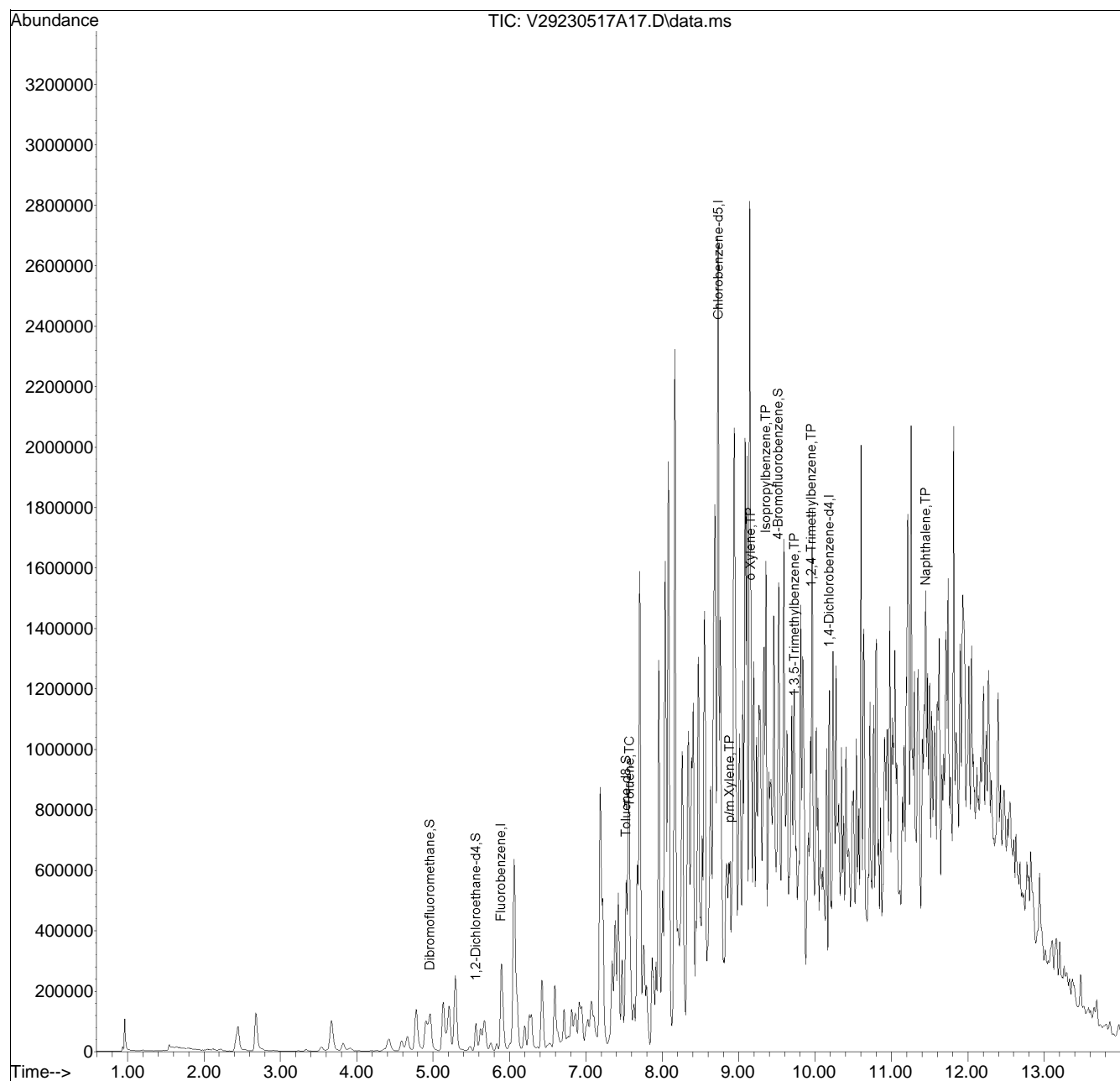
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
 Data File : V29230517A17.D
 Acq On : 17 May 2023 01:20 pm
 Operator : VOA129:AJK
 Sample : L2326354-01,31H,6.09,5,0.100,,A
 Misc : WG1780073,ICAL19799
 ALS Vial : 17 Sample Multiplier: 1

Quant Time: May 18 08:53:26 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•

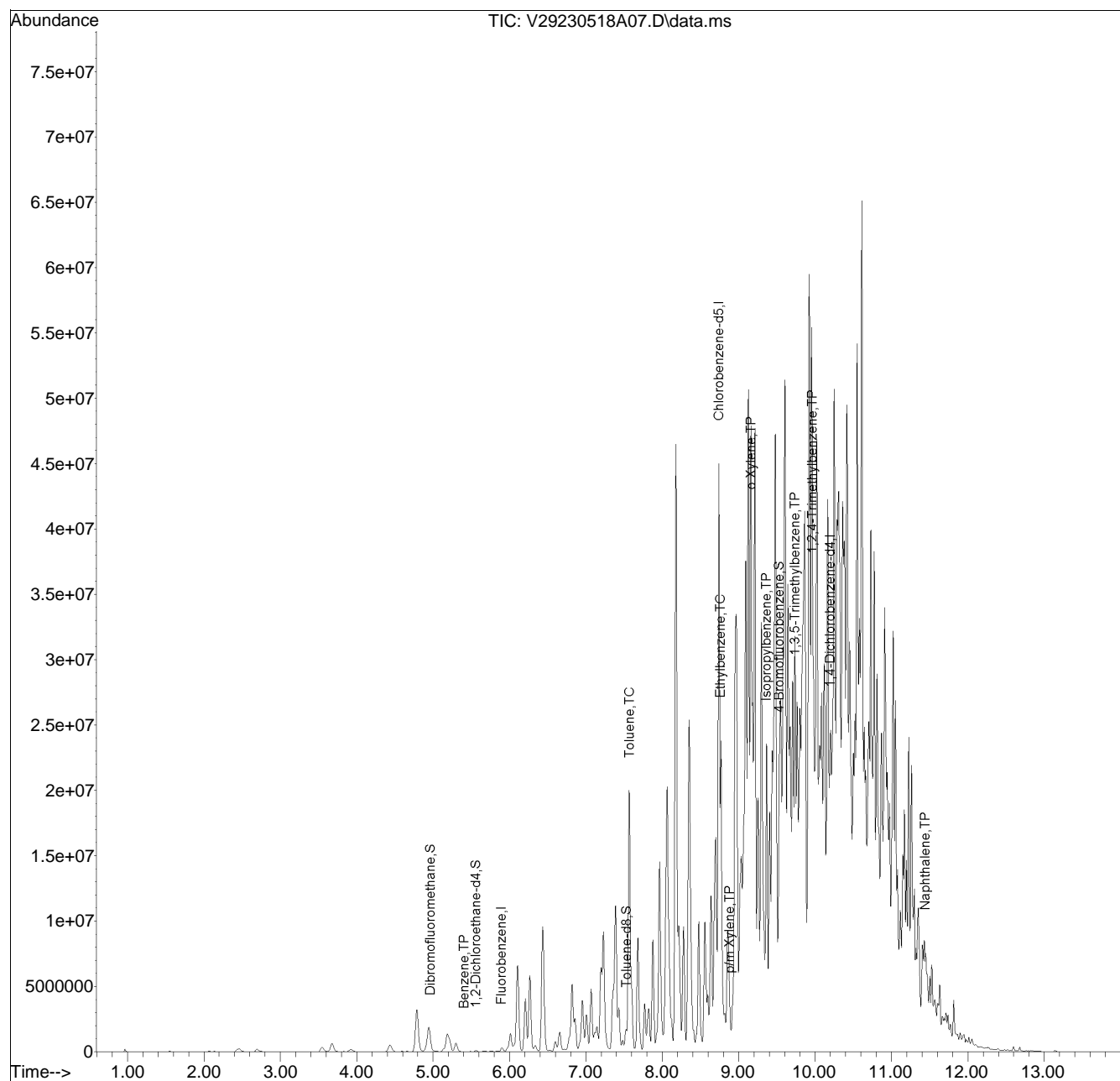


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230518A\
Data File : V29230518A07.D
Acq On : 18 May 2023 09:21 am
Operator : VOA129:AJK
Sample : L2326354-03,31,5.52,5,,B
Misc : WG1780531,ICAL19799
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 18 10:40:16 2023
Quant Method : I:\VOLATILES\VOA129\2023\230518A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V29230518A02.D•

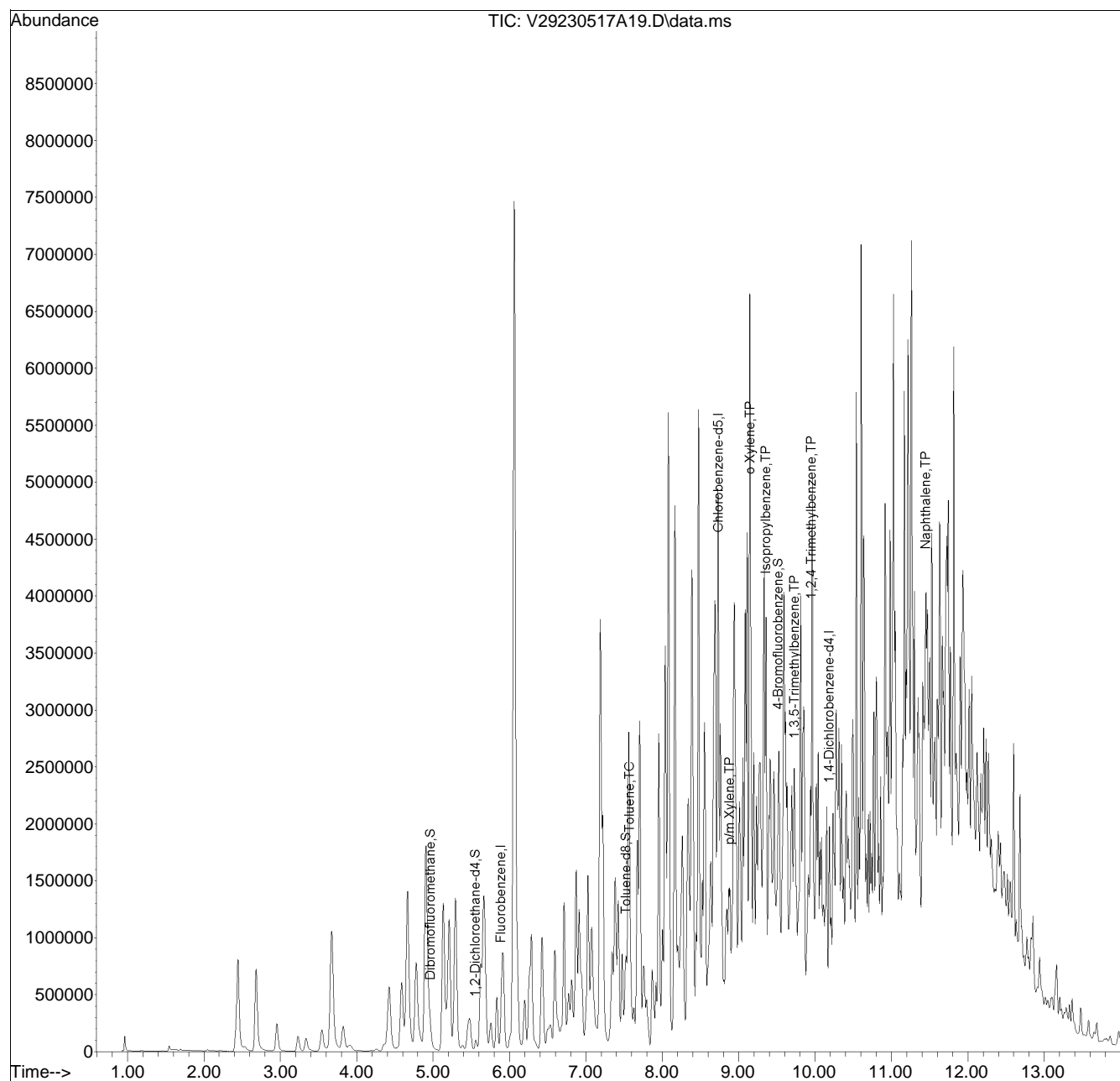


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
Data File : V29230517A19.D
Acq On : 17 May 2023 02:03 pm
Operator : VOA129:AJK
Sample : L2326354-05,31H,7.04,5,0.100,,A
Misc : WG1780073,ICAL19799
ALS Vial : 19 Sample Multiplier: 1

Quant Time: May 18 08:54:18 2023
Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•

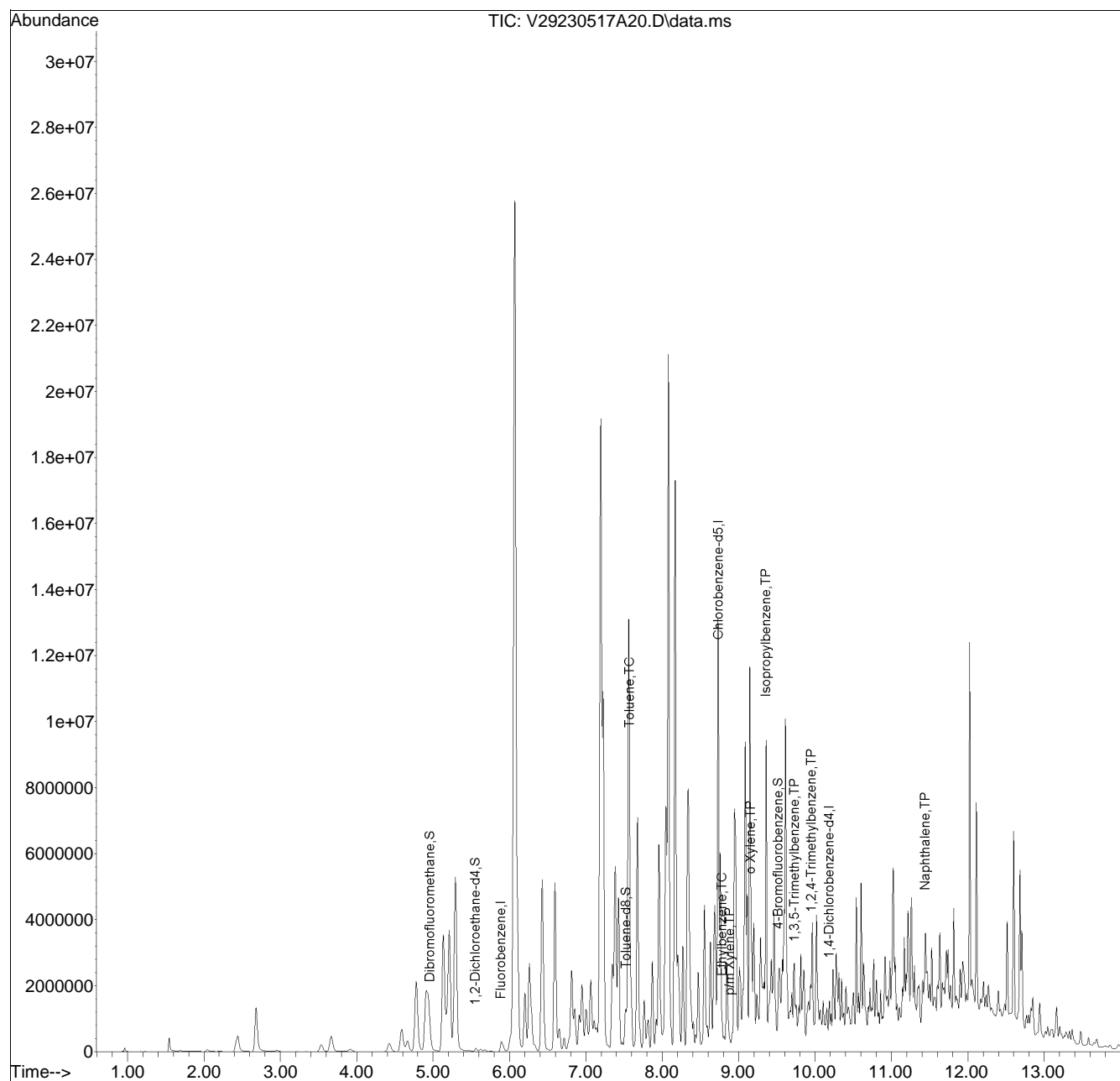


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
 Data File : V29230517A20.D
 Acq On : 17 May 2023 02:24 pm
 Operator : VOA129:AJK
 Sample : L2326354-07,31H,6.82,5,0.100,,A
 Misc : WG1780073,ICAL19799
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 18 08:54:37 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•

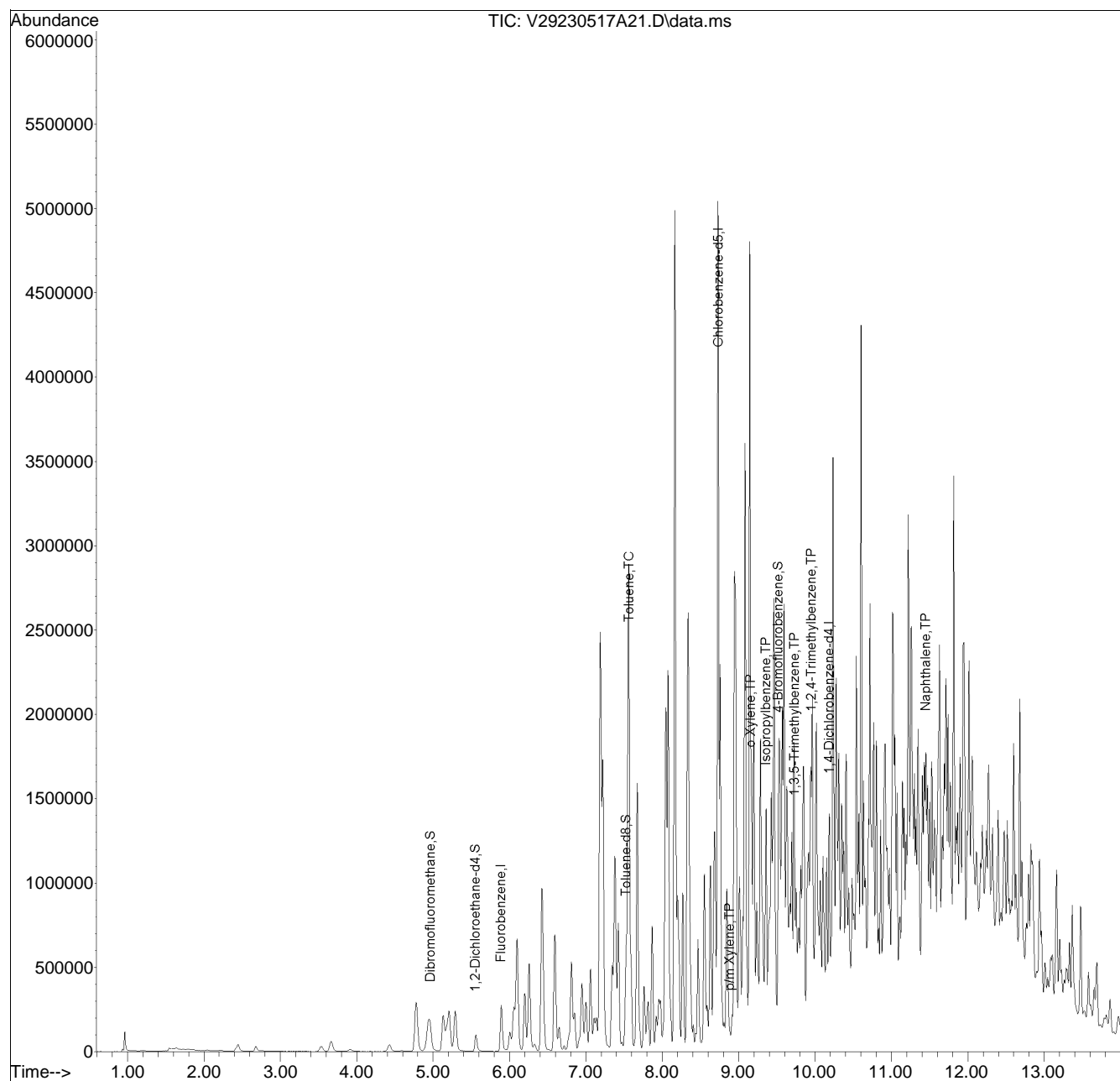


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
Data File : V29230517A21.D
Acq On : 17 May 2023 02:45 pm
Operator : VOA129:JIC
Sample : L2326354-09,31H,6.71,5,0.100,,A
Misc : WG1780073,ICAL19799
ALS Vial : 21 Sample Multiplier: 1

Quant Time: May 18 08:42:38 2023
Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•

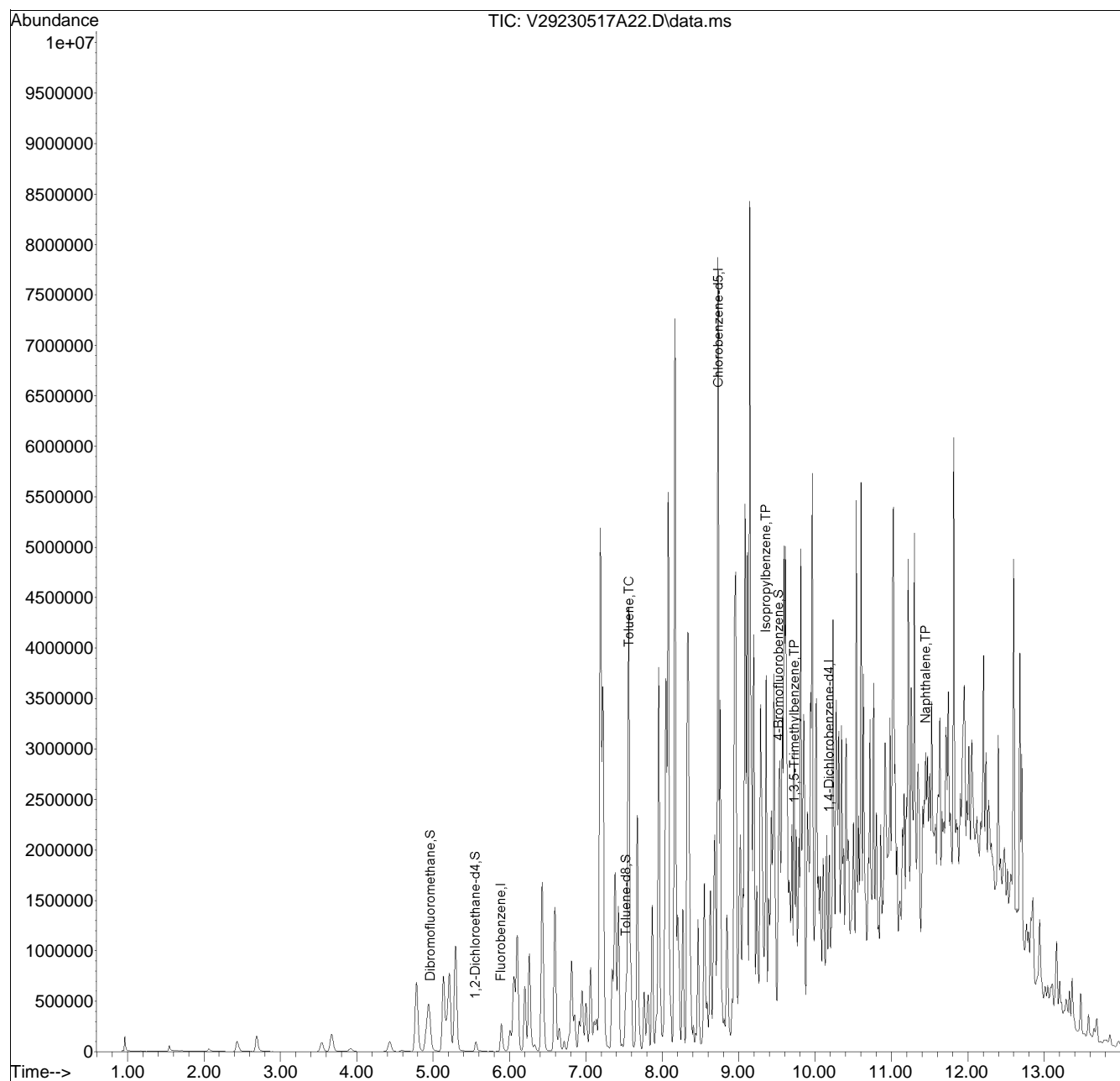


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
Data File : V29230517A22.D
Acq On : 17 May 2023 03:06 pm
Operator : VOA129:JIC
Sample : L2326354-11D,31H,6.36,5,0.01,,A
Misc : WG1780073,ICAL19799
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 18 08:44:41 2023
Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•

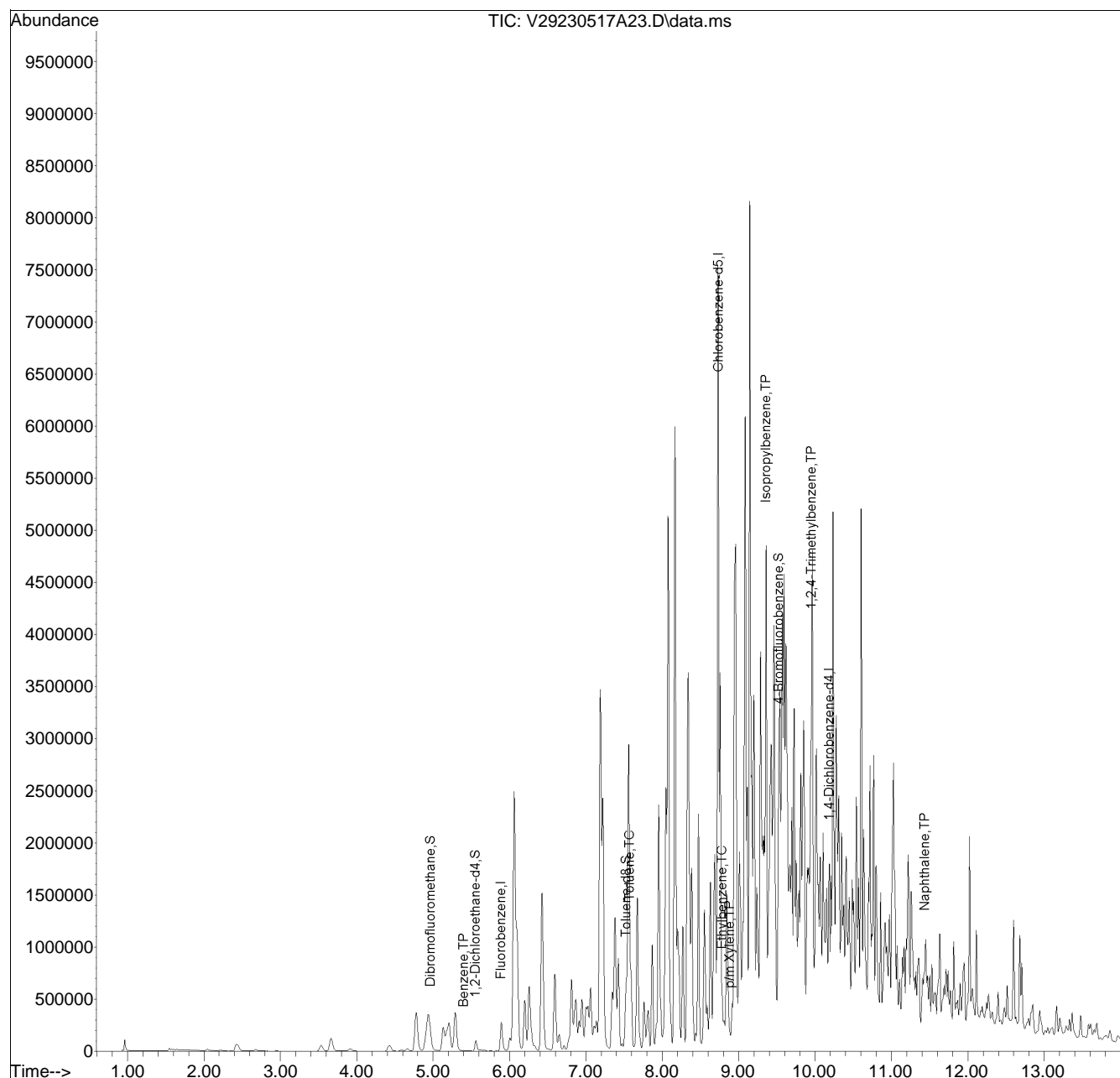


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
Data File : V29230517A23.D
Acq On : 17 May 2023 03:27 pm
Operator : VOA129:JIC
Sample : L2326354-13,31H,6.57,5,0.100,,A
Misc : WG1780073,ICAL19799
ALS Vial : 23 Sample Multiplier: 1

Quant Time: May 18 08:43:28 2023
Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•

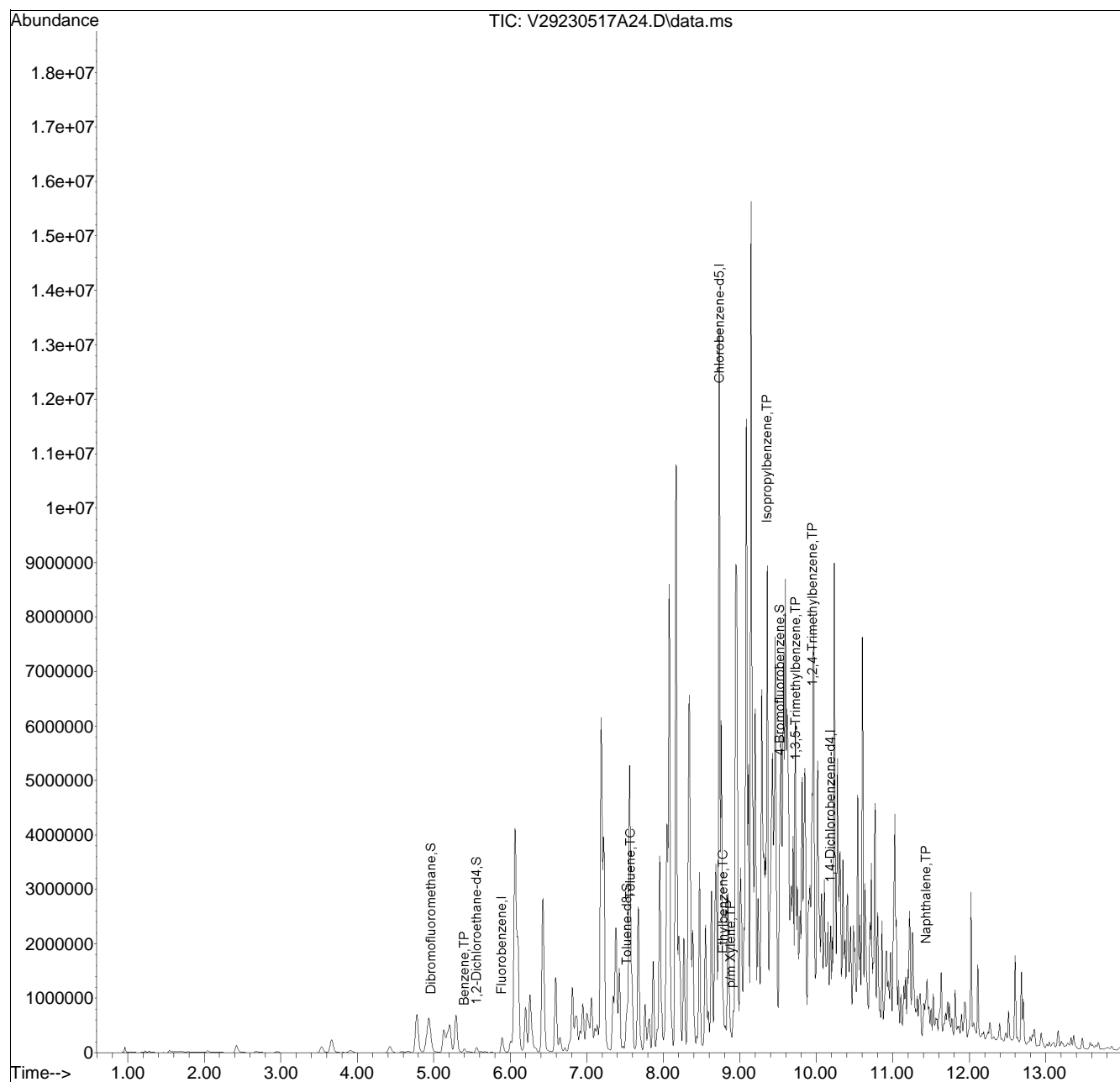


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230517A\
 Data File : V29230517A24.D
 Acq On : 17 May 2023 03:48 pm
 Operator : VOA129:JIC
 Sample : L2326354-15,31H,6.73,5,0.100,,A
 Misc : WG1780073,ICAL19799
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: May 18 08:43:44 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230517A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list17A\V29230517A01.D•

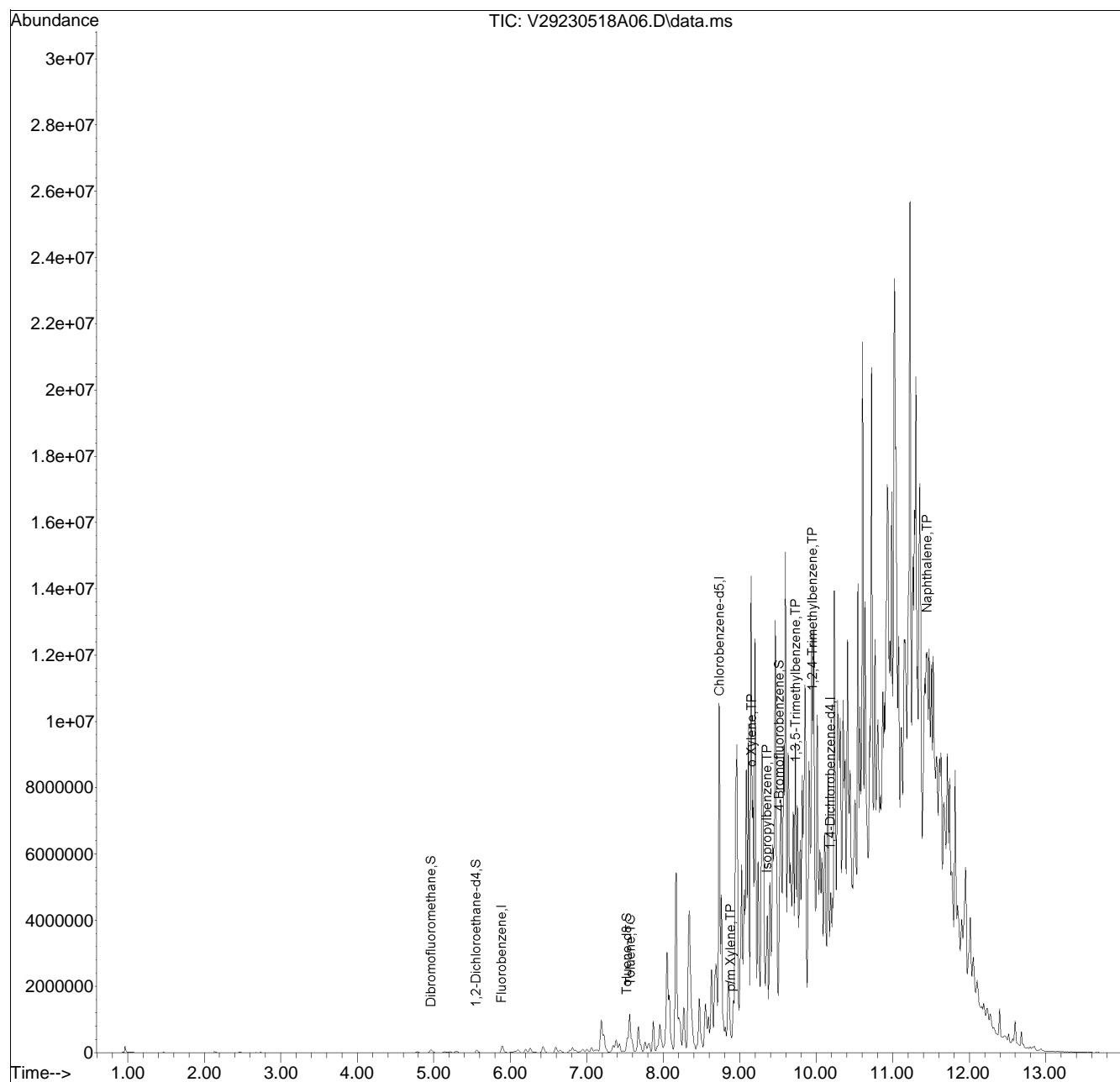


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230518A\
 Data File : V29230518A06.D
 Acq On : 18 May 2023 09:00 am
 Operator : VOA129:AJK
 Sample : L2326354-17,31,5.89,5,,B
 Misc : WG1780531,ICAL19799
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 10:39:20 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230518A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V29230518A02.D•





ANALYTICAL REPORT

Lab Number:	L2326619
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/19/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2326619

Report Date: 05/19/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2326619-01	LS-A-H03-C1-VOC	SOIL	PHILADELPHIA, PA	05/12/23 09:55	05/12/23
L2326619-02	LS-A-H03-C1-COMP	SOIL	PHILADELPHIA, PA	05/12/23 09:55	05/12/23
L2326619-03	LS-A-H03-C2-VOC	SOIL	PHILADELPHIA, PA	05/12/23 10:10	05/12/23
L2326619-04	LS-A-H03-C2-COMP	SOIL	PHILADELPHIA, PA	05/12/23 10:10	05/12/23
L2326619-05	LS-A-H03-C3-VOC	SOIL	PHILADELPHIA, PA	05/12/23 10:25	05/12/23
L2326619-06	LS-A-H03-C3-COMP	SOIL	PHILADELPHIA, PA	05/12/23 10:25	05/12/23
L2326619-07	LS-A-H05-C1-VOC	SOIL	PHILADELPHIA, PA	05/12/23 11:30	05/12/23
L2326619-08	LS-A-H05-C1-COMP	SOIL	PHILADELPHIA, PA	05/12/23 11:30	05/12/23
L2326619-09	LS-A-H05-C2-VOC	SOIL	PHILADELPHIA, PA	05/12/23 11:45	05/12/23
L2326619-10	LS-A-H05-C2-COMP	SOIL	PHILADELPHIA, PA	05/12/23 11:45	05/12/23
L2326619-11	LS-B-H01-C1-VOC	SOIL	PHILADELPHIA, PA	05/12/23 12:50	05/12/23
L2326619-12	LS-B-H01-C1-COMP	SOIL	PHILADELPHIA, PA	05/12/23 12:50	05/12/23
L2326619-13	LS-A-H06-C1-VOC	SOIL	PHILADELPHIA, PA	05/12/23 13:45	05/12/23
L2326619-14	LS-A-H06-C1-COMP	SOIL	PHILADELPHIA, PA	05/12/23 13:45	05/12/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

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
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

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

L2326619-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (220%); 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.

L2326619-03, -09, -11, and -13: 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.

L2326619-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (277%); 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.

L2326619-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (188%); 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.

L2326619-07: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (30%) and the surrogate recoveries for toluene-d8 (131%) and 4-bromofluorobenzene (656%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was below method criteria, all associated compounds are considered to have a potentially high bias. A high-level analysis was performed, and those results are also reported.

L2326619-09: 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.

L2326619-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (327%); 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.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

Case Narrative (continued)

L2326619-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (225%); 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.

PAHs

L2326619-06D: The sample has elevated detection limits due to the dilution required by the sample matrix.

Total Metals

The WG1779139-3 MS recovery, performed on L2326619-02, is outside the acceptance criteria for lead (129%). A post digestion spike was performed and was within acceptance criteria.

The WG1779139-4 Laboratory Duplicate RPD for lead (31%), performed on L2326619-02, 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:



Kelly O'Neill

Title: Technical Director/Representative

Date: 05/19/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-01
 Client ID: LS-A-H03-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 09:55
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 10:03
 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	0.10	0.010	1
Benzene	ND		mg/kg	0.026	0.0086	1
1,2-Dichloroethane	ND		mg/kg	0.052	0.013	1
Toluene	ND		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	5.0		mg/kg	0.052	0.0056	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0099	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	220	Q	70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-03
 Client ID: LS-A-H03-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 10:10
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 10:23
 Analyst: JIC
 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	0.11	0.011	1
Benzene	0.012	J	mg/kg	0.027	0.0088	1
1,2-Dichloroethane	ND		mg/kg	0.053	0.014	1
Toluene	0.052	J	mg/kg	0.053	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	ND		mg/kg	0.053	0.0075	1
p/m-Xylene	ND		mg/kg	0.11	0.030	1
o-Xylene	0.030	J	mg/kg	0.053	0.016	1
Xylenes, Total	0.030	J	mg/kg	0.053	0.016	1
Isopropylbenzene	0.48		mg/kg	0.053	0.0058	1
1,3,5-Trimethylbenzene	0.010	J	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	105		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	277	Q	70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-05
 Client ID: LS-A-H03-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 10:25
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 10:44
 Analyst: JIC
 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	0.028	0.0094	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.014	1
Toluene	ND		mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.017	1
Ethylbenzene	ND		mg/kg	0.057	0.0080	1
p/m-Xylene	ND		mg/kg	0.11	0.032	1
o-Xylene	ND		mg/kg	0.057	0.016	1
Xylenes, Total	ND		mg/kg	0.057	0.016	1
Isopropylbenzene	2.4		mg/kg	0.057	0.0062	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	188	Q	70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-07
 Client ID: LS-A-H05-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 11:30
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 11:05
 Analyst: JIC
 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	0.11	0.011	1
Benzene	ND		mg/kg	0.028	0.0093	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	0.0079	1
p/m-Xylene	0.069	J	mg/kg	0.11	0.031	1
o-Xylene	0.022	J	mg/kg	0.056	0.016	1
Xylenes, Total	0.091	J	mg/kg	0.056	0.016	1
Isopropylbenzene	0.062		mg/kg	0.056	0.0061	1
1,3,5-Trimethylbenzene	0.019	J	mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	0.049	J	mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-07
 Client ID: LS-A-H05-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 11:30
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/19/23 10:49
 Analyst: MKS
 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	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	0.0018		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.0016		mg/kg	0.00097	0.00014	1
p/m-Xylene	0.025		mg/kg	0.0019	0.00054	1
o-Xylene	0.0081		mg/kg	0.00097	0.00028	1
Xylenes, Total	0.033		mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.044		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	0.0090		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	0.028		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	131	Q	70-130
4-Bromofluorobenzene	656	Q	70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-09
 Client ID: LS-A-H05-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 11:45
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 11:26
 Analyst: JIC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.090	0.0090	1
Benzene	ND		mg/kg	0.022	0.0075	1
1,2-Dichloroethane	ND		mg/kg	0.045	0.012	1
Toluene	0.024	J	mg/kg	0.045	0.024	1
1,2-Dibromoethane	ND		mg/kg	0.022	0.013	1
Ethylbenzene	0.0071	J	mg/kg	0.045	0.0063	1
p/m-Xylene	0.064	J	mg/kg	0.090	0.025	1
o-Xylene	0.013	J	mg/kg	0.045	0.013	1
Xylenes, Total	0.077	J	mg/kg	0.045	0.013	1
Isopropylbenzene	1.6		mg/kg	0.045	0.0049	1
1,3,5-Trimethylbenzene	0.12		mg/kg	0.090	0.0087	1
1,2,4-Trimethylbenzene	0.076	J	mg/kg	0.090	0.015	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	133	Q	70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-11
 Client ID: LS-B-H01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 12:50
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 11:47
 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	0.10	0.010	1
Benzene	ND		mg/kg	0.026	0.0085	1
1,2-Dichloroethane	ND		mg/kg	0.051	0.013	1
Toluene	ND		mg/kg	0.051	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	ND		mg/kg	0.051	0.0072	1
p/m-Xylene	ND		mg/kg	0.10	0.028	1
o-Xylene	ND		mg/kg	0.051	0.015	1
Xylenes, Total	ND		mg/kg	0.051	0.015	1
Isopropylbenzene	0.96		mg/kg	0.051	0.0056	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0098	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	327	Q	70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-13
 Client ID: LS-A-H06-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 13:45
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/18/23 12:08
 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	0.11	0.011	1
Benzene	ND		mg/kg	0.028	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	0.028	0.016	1
Ethylbenzene	0.021	J	mg/kg	0.055	0.0078	1
p/m-Xylene	ND		mg/kg	0.11	0.031	1
o-Xylene	0.090		mg/kg	0.055	0.016	1
Xylenes, Total	0.090		mg/kg	0.055	0.016	1
Isopropylbenzene	0.54		mg/kg	0.055	0.0060	1
1,3,5-Trimethylbenzene	0.039	J	mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	0.063	J	mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	225	Q	70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/18/23 08:38
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,05,07,09,11,13 Batch: WG1780565-5					
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	107		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	114		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/19/23 09:04
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07 Batch: WG1781092-5					
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	96		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	108		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13 Batch: WG1780565-3 WG1780565-4								
Methyl tert butyl ether	105		102		66-130	3		30
Benzene	106		103		70-130	3		30
1,2-Dichloroethane	95		92		70-130	3		30
Toluene	89		87		70-130	2		30
1,2-Dibromoethane	92		90		70-130	2		30
Ethylbenzene	94		92		70-130	2		30
p/m-Xylene	96		93		70-130	3		30
o-Xylene	96		93		70-130	3		30
Isopropylbenzene	90		88		70-130	2		30
1,3,5-Trimethylbenzene	90		88		70-130	2		30
1,2,4-Trimethylbenzene	90		88		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	93		91		70-130
Dibromofluoromethane	110		110		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07 Batch: WG1781092-3 WG1781092-4								
Methyl tert butyl ether	104		106		66-130	2		30
Benzene	105		108		70-130	3		30
1,2-Dichloroethane	92		92		70-130	0		30
Toluene	88		88		70-130	0		30
1,2-Dibromoethane	92		92		70-130	0		30
Ethylbenzene	91		90		70-130	1		30
p/m-Xylene	94		92		70-130	2		30
o-Xylene	93		92		70-130	1		30
Isopropylbenzene	91		88		70-130	3		30
1,3,5-Trimethylbenzene	90		86		70-130	5		30
1,2,4-Trimethylbenzene	88		86		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		100		70-130
Toluene-d8	97		95		70-130
4-Bromofluorobenzene	91		89		70-130
Dibromofluoromethane	111		112		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-02
 Client ID: LS-A-H03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 09:55
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/19/23 05:44
 Analyst: IM
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/18/23 00:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.038		mg/kg	0.038	0.023	1
Fluorene	0.44		mg/kg	0.19	0.018	1
Phenanthrene	1.4		mg/kg	0.11	0.023	1
Anthracene	0.20		mg/kg	0.11	0.037	1
Pyrene	0.32		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.21		mg/kg	0.11	0.021	1
Chrysene	0.34		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.12		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.14	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.076	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	51		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-04
 Client ID: LS-A-H03-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 10:10
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/19/23 06:01
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/18/23 00:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.038	0.023	1
Fluorene	0.042	J	mg/kg	0.19	0.018	1
Phenanthrene	0.14		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	0.038	J	mg/kg	0.11	0.021	1
Chrysene	0.081	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.040	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.037	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-06 D
 Client ID: LS-A-H03-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 10:25
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/19/23 16:11
 Analyst: ALS
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/18/23 00:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.11	5
Fluorene	0.50	J	mg/kg	0.92	0.089	5
Phenanthrene	1.5		mg/kg	0.55	0.11	5
Anthracene	0.22	J	mg/kg	0.55	0.18	5
Pyrene	0.64		mg/kg	0.55	0.091	5
Benzo(a)anthracene	0.28	J	mg/kg	0.55	0.10	5
Chrysene	0.66		mg/kg	0.55	0.095	5
Benzo(b)fluoranthene	0.24	J	mg/kg	0.55	0.15	5
Benzo(a)pyrene	0.23	J	mg/kg	0.73	0.22	5
Benzo(ghi)perylene	0.16	J	mg/kg	0.73	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	98		30-120
4-Terphenyl-d14	87		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-08
 Client ID: LS-A-H05-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 11:30
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/19/23 06:35
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/18/23 00:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.053		mg/kg	0.036	0.022	1
Fluorene	0.54		mg/kg	0.18	0.018	1
Phenanthrene	1.3		mg/kg	0.11	0.022	1
Anthracene	0.15		mg/kg	0.11	0.035	1
Pyrene	0.27		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.37		mg/kg	0.11	0.020	1
Chrysene	0.084	J	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	77		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	53		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-10
 Client ID: LS-A-H05-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 11:45
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/19/23 06:52
 Analyst: IM
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 05/18/23 00:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.022	J	mg/kg	0.036	0.022	1
Fluorene	0.30		mg/kg	0.18	0.018	1
Phenanthrene	0.52		mg/kg	0.11	0.022	1
Anthracene	0.097	J	mg/kg	0.11	0.035	1
Pyrene	0.12		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.054	J	mg/kg	0.11	0.020	1
Chrysene	0.30		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	64		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-12
 Client ID: LS-B-H01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 12:50
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/19/23 07:08
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/18/23 00:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.16		mg/kg	0.038	0.023	1
Fluorene	0.21		mg/kg	0.19	0.018	1
Phenanthrene	0.48		mg/kg	0.11	0.023	1
Anthracene	0.058	J	mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.039	J	mg/kg	0.11	0.021	1
Chrysene	0.073	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	78		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	54		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-14
 Client ID: LS-A-H06-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 13:45
 Date Received: 05/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/19/23 16:12
 Analyst: JG
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/19/23 01:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.075		mg/kg	0.040	0.024	1
Fluorene	0.49		mg/kg	0.20	0.019	1
Phenanthrene	1.6		mg/kg	0.12	0.024	1
Anthracene	0.44		mg/kg	0.12	0.039	1
Pyrene	1.9		mg/kg	0.12	0.020	1
Benzo(a)anthracene	1.0		mg/kg	0.12	0.022	1
Chrysene	1.4		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.50		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.74		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.62		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	54		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 05/17/23 18:42
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 05/17/23 07:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12 Batch: WG1779892-1					
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	68		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	67		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E
 Analytical Date: 05/19/23 14:47
 Analyst: IM

Extraction Method: EPA 3546
 Extraction Date: 05/19/23 01:07

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 14 Batch: WG1780771-1					
Naphthalene	ND		mg/kg	0.033	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	60		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	54		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12 Batch: WG1779892-2 WG1779892-3								
Naphthalene	61		58		40-140	5		50
Fluorene	63		60		40-140	5		50
Phenanthrene	60		57		40-140	5		50
Anthracene	63		60		40-140	5		50
Pyrene	61		58		35-142	5		50
Benzo(a)anthracene	62		58		40-140	7		50
Chrysene	59		55		40-140	7		50
Benzo(b)fluoranthene	62		58		40-140	7		50
Benzo(a)pyrene	69		64		40-140	8		50
Benzo(ghi)perylene	63		59		40-140	7		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	67		66		23-120
2-Fluorobiphenyl	64		61		30-120
4-Terphenyl-d14	60		58		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 14 Batch: WG1780771-2 WG1780771-3								
Naphthalene	59		55		40-140	7		50
Fluorene	59		56		40-140	5		50
Phenanthrene	60		57		40-140	5		50
Anthracene	63		59		40-140	7		50
Pyrene	59		55		35-142	7		50
Benzo(a)anthracene	67		63		40-140	6		50
Chrysene	64		62		40-140	3		50
Benzo(b)fluoranthene	65		63		40-140	3		50
Benzo(a)pyrene	72		70		40-140	3		50
Benzo(ghi)perylene	62		59		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	64		62		23-120
2-Fluorobiphenyl	60		57		30-120
4-Terphenyl-d14	55		52		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-02

Date Collected: 05/12/23 09:55

Client ID: LS-A-H03-C1-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	32.9		mg/kg	2.25	0.121	1	05/17/23 01:40	05/18/23 11:18	EPA 3050B	1,6010D	JMF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-04

Date Collected: 05/12/23 10:10

Client ID: LS-A-H03-C2-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	94.2		mg/kg	2.25	0.121	1	05/17/23 01:40	05/18/23 11:04	EPA 3050B	1,6010D	JMF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-06

Date Collected: 05/12/23 10:25

Client ID: LS-A-H03-C3-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	14.7		mg/kg	2.21	0.118	1	05/17/23 01:40	05/18/23 11:09	EPA 3050B	1,6010D	JMF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-08
 Client ID: LS-A-H05-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 11:30
 Date Received: 05/12/23
 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	49.4		mg/kg	2.20	0.118	1	05/17/23 01:40	05/18/23 11:13	EPA 3050B	1,6010D	JMF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-10

Date Collected: 05/12/23 11:45

Client ID: LS-A-H05-C2-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	20.4		mg/kg	2.15	0.115	1	05/17/23 01:40	05/18/23 11:57	EPA 3050B	1,6010D	JMF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-12
 Client ID: LS-B-H01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 12:50
 Date Received: 05/12/23
 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	11.7		mg/kg	2.26	0.121	1	05/17/23 01:40	05/18/23 12:01	EPA 3050B	1,6010D	JMF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-14

Date Collected: 05/12/23 13:45

Client ID: LS-A-H06-C1-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	485		mg/kg	2.38	0.128	1	05/17/23 01:40	05/18/23 12:06	EPA 3050B	1,6010D	JMF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

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): 02,04,06,08,10,12,14 Batch: WG1779139-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/17/23 01:40	05/18/23 10:55	1,6010D	JMF

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

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 Batch: WG1779139-2 SRM Lot Number: D119-540								
Lead, Total	91		-		82-118	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

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): 02,04,06,08,10,12,14 QC Batch ID: WG1779139-3 QC Sample: L2326619-02 Client ID: LS-A-H03-C1-COMP												
Lead, Total	32.9	47.4	93.9	129	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2326619

Report Date: 05/19/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 QC Batch ID: WG1779139-4 QC Sample: L2326619-02 Client ID: LS-A-H03-C1-COMP						
Lead, Total	32.9	45.2	mg/kg	31	Q	20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**SAMPLE RESULTS**

Lab ID: L2326619-01

Date Collected: 05/12/23 09:55

Client ID: LS-A-H03-C1-VOC

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**SAMPLE RESULTS**

Lab ID: L2326619-02

Date Collected: 05/12/23 09:55

Client ID: LS-A-H03-C1-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**SAMPLE RESULTS**

Lab ID: L2326619-03

Date Collected: 05/12/23 10:10

Client ID: LS-A-H03-C2-VOC

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-04

Date Collected: 05/12/23 10:10

Client ID: LS-A-H03-C2-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**SAMPLE RESULTS**

Lab ID: L2326619-05

Date Collected: 05/12/23 10:25

Client ID: LS-A-H03-C3-VOC

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**SAMPLE RESULTS**

Lab ID: L2326619-06

Date Collected: 05/12/23 10:25

Client ID: LS-A-H03-C3-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	88.6		%	0.100	NA	1	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-07

Date Collected: 05/12/23 11:30

Client ID: LS-A-H05-C1-VOC

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**SAMPLE RESULTS**

Lab ID: L2326619-08

Date Collected: 05/12/23 11:30

Client ID: LS-A-H05-C1-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	89.3		%	0.100	NA	1	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**SAMPLE RESULTS**

Lab ID: L2326619-09

Date Collected: 05/12/23 11:45

Client ID: LS-A-H05-C2-VOC

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	92.8		%	0.100	NA	1	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-10

Date Collected: 05/12/23 11:45

Client ID: LS-A-H05-C2-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	90.4		%	0.100	NA	1	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-11

Date Collected: 05/12/23 12:50

Client ID: LS-B-H01-C1-VOC

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

SAMPLE RESULTS

Lab ID: L2326619-12
Client ID: LS-B-H01-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/12/23 12:50
Date Received: 05/12/23
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	87.2		%	0.100	NA	1	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**SAMPLE RESULTS**

Lab ID: L2326619-13

Date Collected: 05/12/23 13:45

Client ID: LS-A-H06-C1-VOC

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	-	05/13/23 11:44	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**SAMPLE RESULTS**

Lab ID: L2326619-14

Date Collected: 05/12/23 13:45

Client ID: LS-A-H06-C1-COMP

Date Received: 05/12/23

Sample Location: PHILADELPHIA, PA

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	-	05/13/23 11:44	121,2540G	ROI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2326619

Report Date: 05/19/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-14 QC Batch ID: WG1778571-1 QC Sample: L2326619-01 Client ID: LS-A-H03-C1-VOC						
Solids, Total	85.3	85.0	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**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(*)
L2326619-01A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2326619-01B	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-01C	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-01D	Plastic 120ml unpreserved	A	NA		3.5	Y	Absent		TS(7)
L2326619-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2326619-02B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2326619-03A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2326619-03B	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-03C	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-03D	Plastic 120ml unpreserved	A	NA		3.5	Y	Absent		TS(7)
L2326619-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2326619-04B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2326619-05A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2326619-05B	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-05C	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-05D	Plastic 120ml unpreserved	A	NA		3.5	Y	Absent		TS(7)
L2326619-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2326619-06B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2326619-07A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2326619-07B	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260H(14),PA-8260HLW(14)
L2326619-07C	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260H(14),PA-8260HLW(14)
L2326619-07D	Plastic 120ml unpreserved	A	NA		3.5	Y	Absent		TS(7)
L2326619-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2326619**Project Number:** 200.00135.023**Report Date:** 05/19/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2326619-08B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2326619-09A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2326619-09B	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-09C	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-09D	Plastic 120ml unpreserved	A	NA		3.5	Y	Absent		TS(7)
L2326619-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2326619-10B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2326619-11A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2326619-11B	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-11C	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-11D	Plastic 120ml unpreserved	A	NA		3.5	Y	Absent		TS(7)
L2326619-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2326619-12B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2326619-13A	Vial MeOH preserved	A	NA		3.5	Y	Absent		PA-8260HLW(14)
L2326619-13B	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-13C	Vial water preserved	A	NA		3.5	Y	Absent	13-MAY-23 06:27	PA-8260HLW(14)
L2326619-13D	Plastic 120ml unpreserved	A	NA		3.5	Y	Absent		TS(7)
L2326619-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.5	Y	Absent		PB-TI(180)
L2326619-14B	Glass 120ml/4oz unpreserved	A	NA		3.5	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2326619
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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
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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
Project Number: 200.00135.023

Lab Number: L2326619
Report Date: 05/19/23

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.)

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY

Lab Number: L2326619

Project Number: 200.00135.023

Report Date: 05/19/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

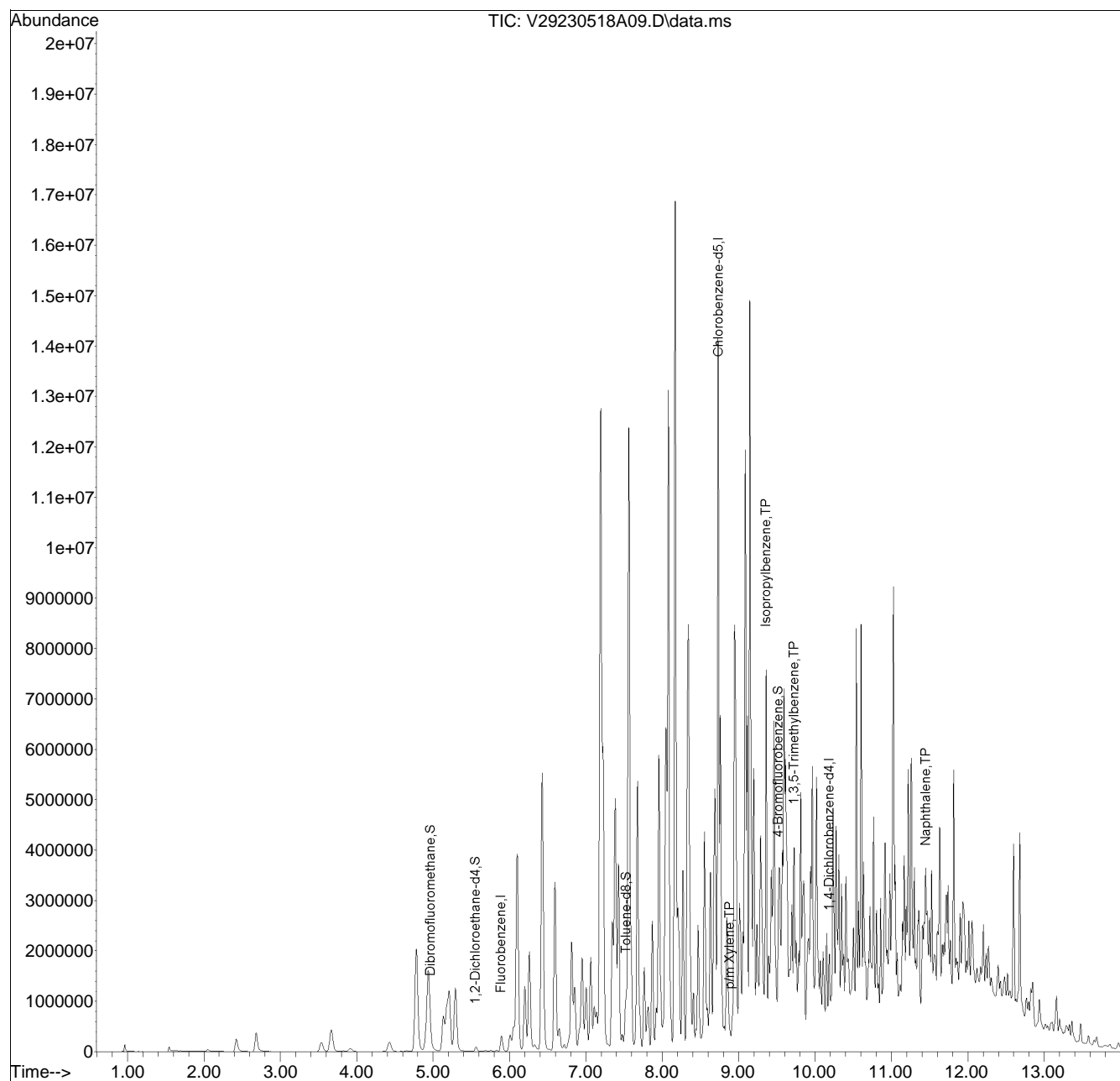
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

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Data File : V29230518A09.D
Acq On : 18 May 2023 10:03 am
Operator : VOA129:JIC
Sample : L2326619-01,31H,6.83,5,0.100,,A
Misc : WG1780565,ICAL19799
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 18 12:35:58 2023
Quant Method : I:\VOLATILES\VOA129\2023\230518A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
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Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V29230518A02.D•

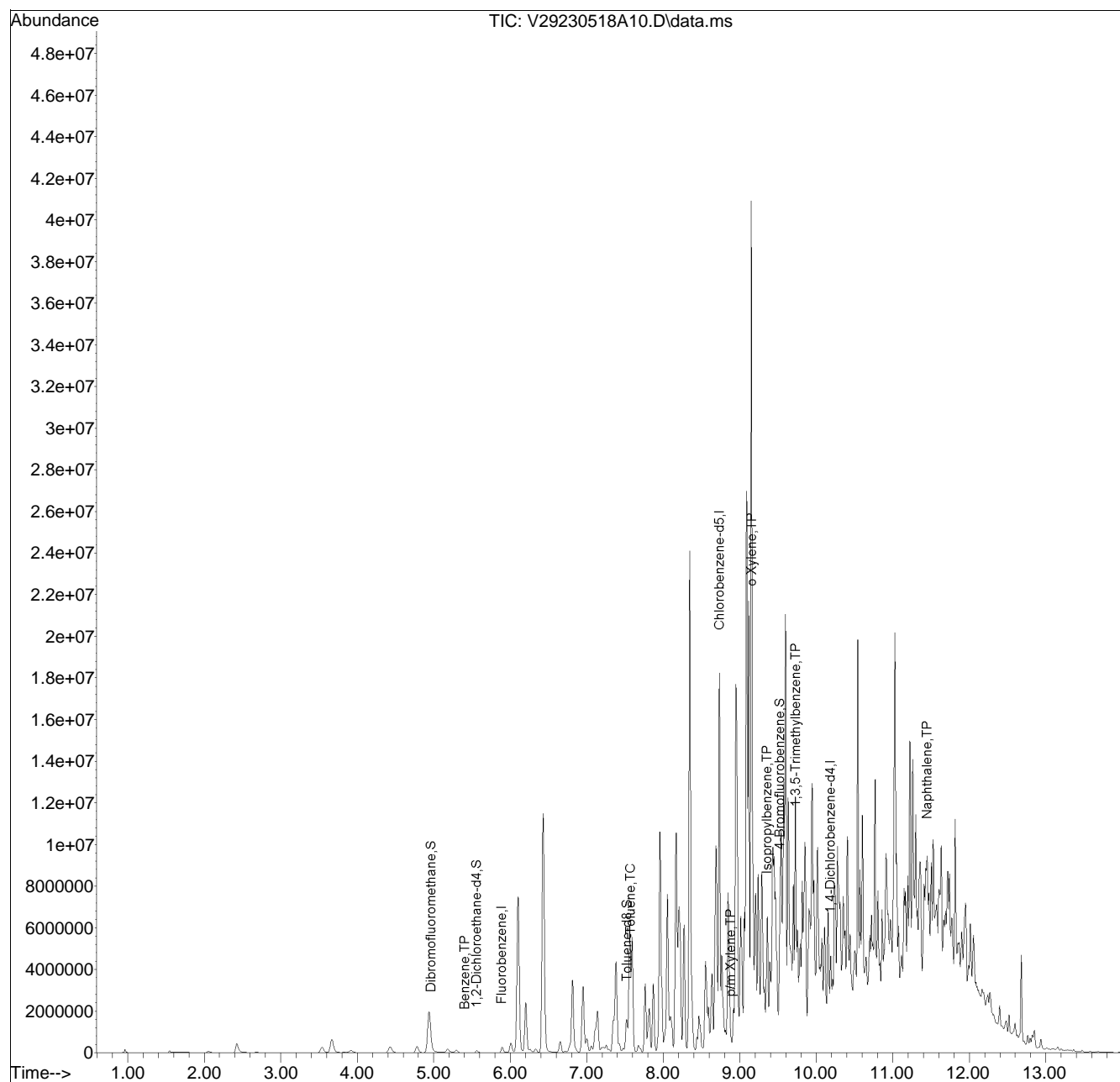


Quantitation Report (QT Reviewed)

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 Operator : VOA129:JIC
 Sample : L2326619-03,31H,5.84,5,0.100,,A
 Misc : WG1780565,ICAL19799
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 18 12:35:28 2023
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 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V29230518A02.D•

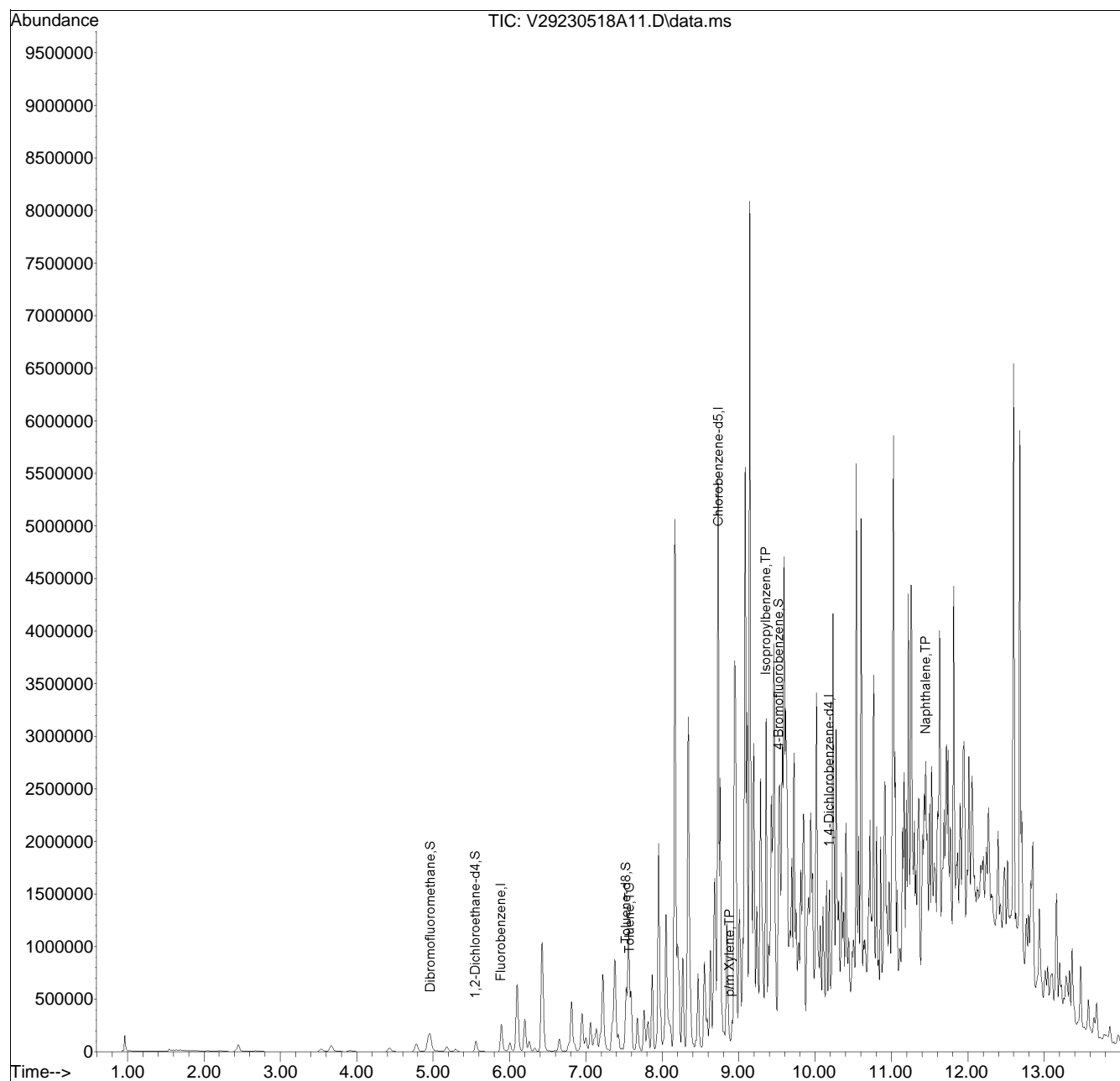


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Operator : VOA129:JIC
Sample : L2326619-05,31H,5.53,5,0.100,,A
Misc : WG1780565,ICAL19799
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 18 12:36:26 2023
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Quant Title : VOLATILES BY GC/MS
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Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V29230518A02.D•

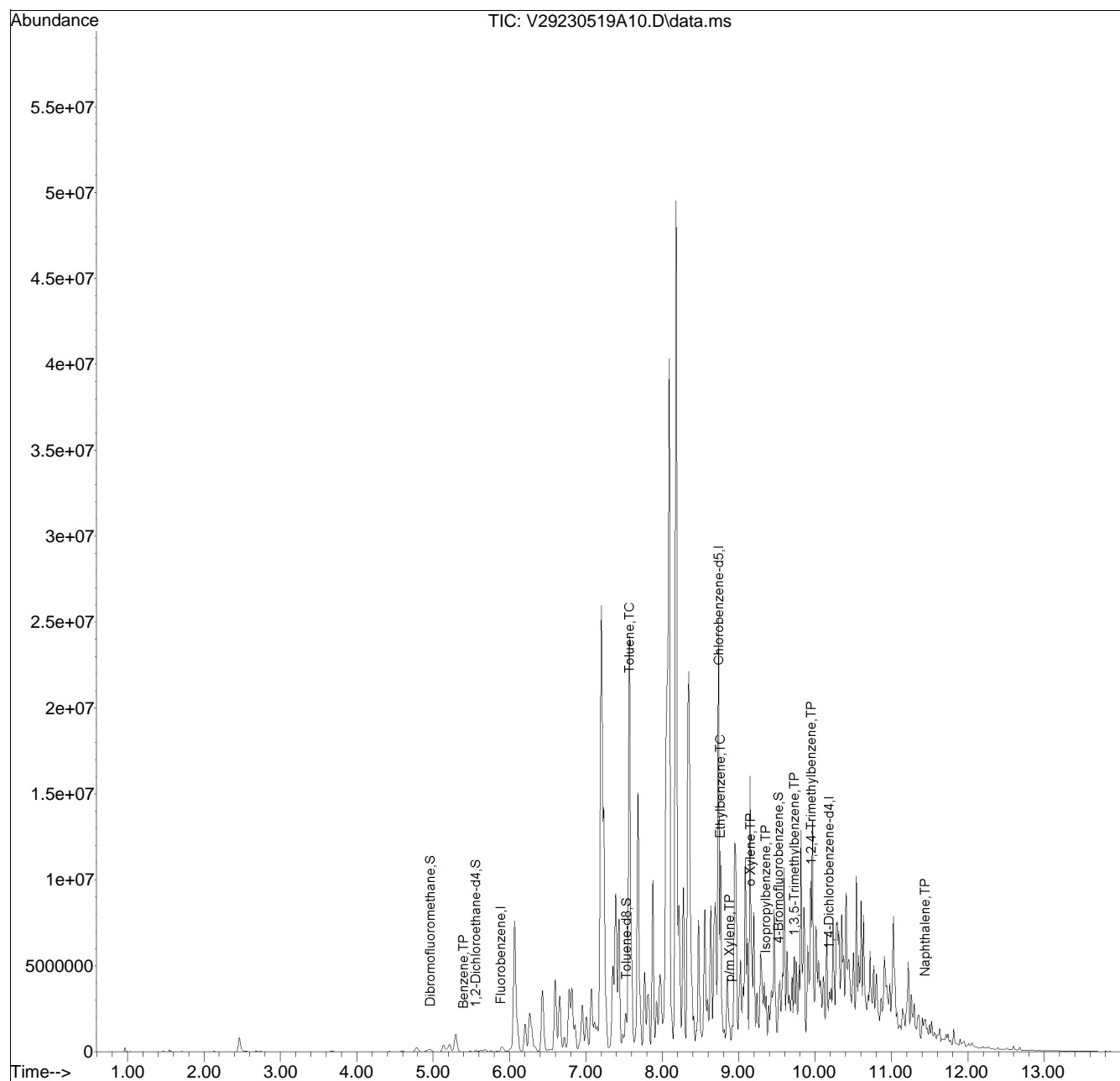


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Acq On : 19 May 2023 10:49 am
Operator : VOA129:MKS
Sample : L2326619-07,31,5.89,5,,B
Misc : WG1781092,ICAL19799
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 19 11:41:24 2023
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Quant Title : VOLATILES BY GC/MS
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Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19A\V29230519A02.D•

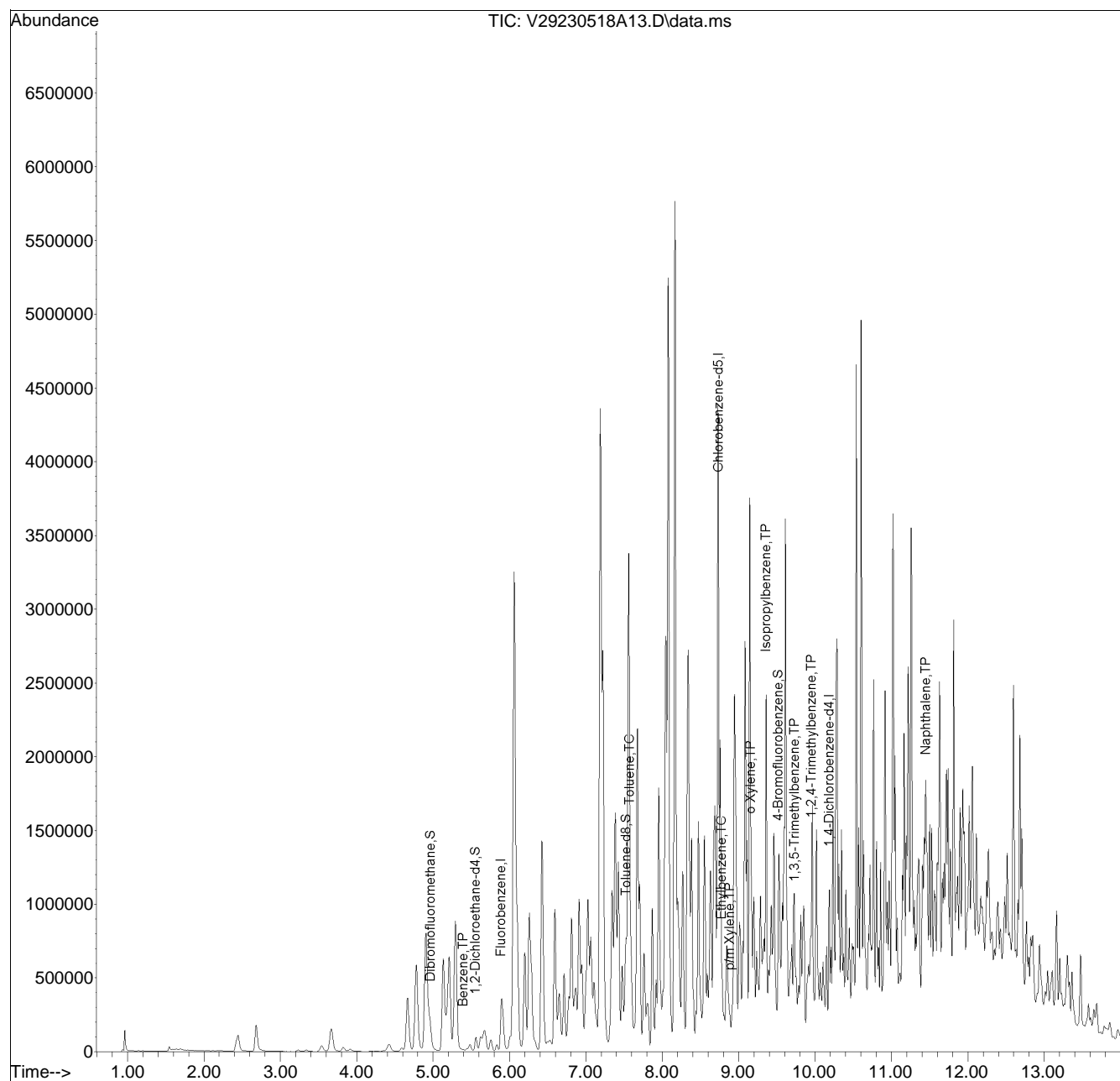


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Operator : VOA129:JIC
Sample : L2326619-09,31H,6.56,5,0.100,,A
Misc : WG1780565,ICAL19799
ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 18 12:37:29 2023
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Quant Title : VOLATILES BY GC/MS
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Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V29230518A02.D•

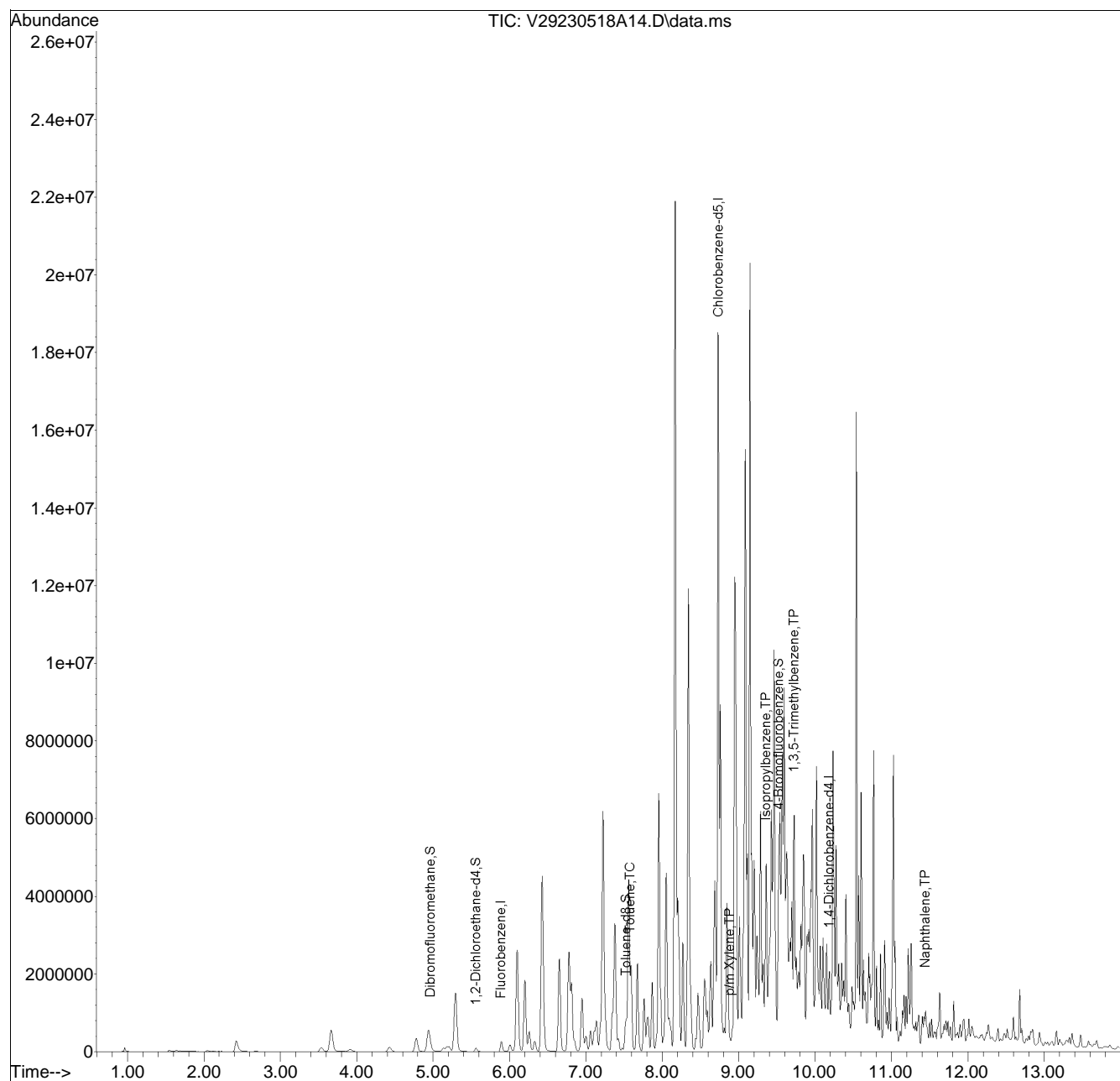


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Sample : L2326619-11,31H,6.81,5,0.100,,A
Misc : WG1780565,ICAL19799
ALS Vial : 14 Sample Multiplier: 1

Quant Time: May 18 12:38:10 2023
Quant Method : I:\VOLATILES\VOA129\2023\230518A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
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Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V29230518A02.D•

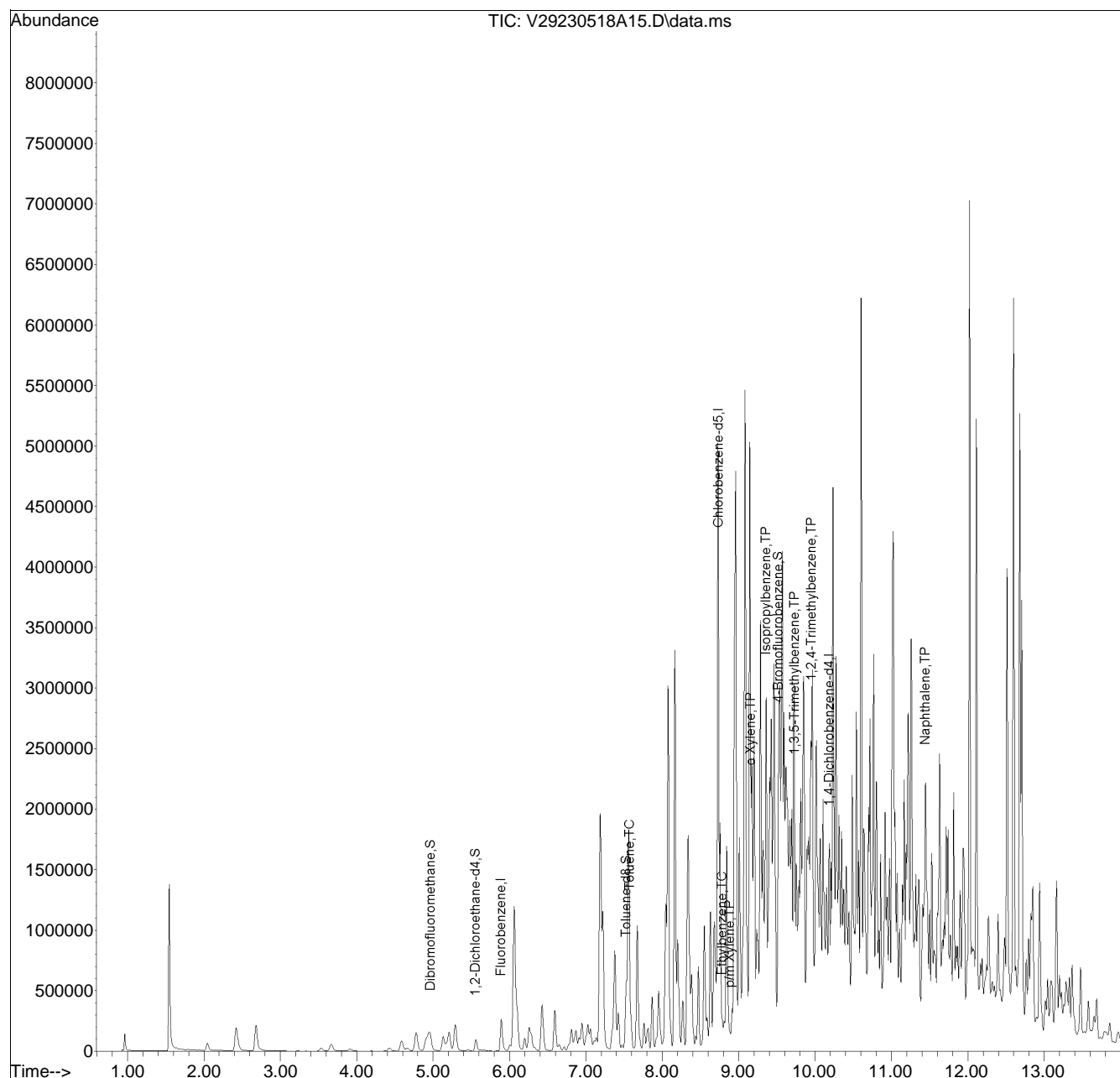


Quantitation Report (QT Reviewed)

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Data File : V29230518A15.D
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Operator : VOA129:JIC
Sample : L2326619-13,31H,6.14,5,0.100,,A
Misc : WG1780565,ICAL19799
ALS Vial : 15 Sample Multiplier: 1

Quant Time: May 18 12:32:43 2023
Quant Method : I:\VOLATILES\VOA129\2023\230518A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V29230518A02.D•





ANALYTICAL REPORT

Lab Number:	L2327408
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/24/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2327408-01	LS-A-I03-C1-VOC	SOIL	PHILADELPHIA, PA	05/17/23 09:30	05/17/23
L2327408-02	LS-A-I03-C1-COMP	SOIL	PHILADELPHIA, PA	05/17/23 09:30	05/17/23
L2327408-03	LS-A-I03-C2-VOC	SOIL	PHILADELPHIA, PA	05/17/23 09:40	05/17/23
L2327408-04	LS-A-I03-C2-COMP	SOIL	PHILADELPHIA, PA	05/17/23 09:40	05/17/23
L2327408-05	LS-A-I03-C3-VOC	SOIL	PHILADELPHIA, PA	05/17/23 09:55	05/17/23
L2327408-06	LS-A-I03-C3-COMP	SOIL	PHILADELPHIA, PA	05/17/23 09:55	05/17/23
L2327408-07	LS-A-I03-C4-VOC	SOIL	PHILADELPHIA, PA	05/17/23 10:10	05/17/23
L2327408-08	LS-A-I03-C4-COMP	SOIL	PHILADELPHIA, PA	05/17/23 10:10	05/17/23
L2327408-09	LS-A-I04-C1-VOC	SOIL	PHILADELPHIA, PA	05/17/23 11:00	05/17/23
L2327408-10	LS-A-I04-C1-COMP	SOIL	PHILADELPHIA, PA	05/17/23 11:00	05/17/23
L2327408-11	LS-A-I04-C2-VOC	SOIL	PHILADELPHIA, PA	05/17/23 11:10	05/17/23
L2327408-12	LS-A-I04-C2-COMP	SOIL	PHILADELPHIA, PA	05/17/23 11:10	05/17/23
L2327408-13	LS-B-H02-C1-VOC	SOIL	PHILADELPHIA, PA	05/17/23 13:00	05/17/23
L2327408-14	LS-B-H02-C1-COMP	SOIL	PHILADELPHIA, PA	05/17/23 13:00	05/17/23
L2327408-15	LS-B-H02-C2-VOC	SOIL	PHILADELPHIA, PA	05/17/23 13:15	05/17/23
L2327408-16	LS-B-H02-C2-COMP	SOIL	PHILADELPHIA, PA	05/17/23 13:15	05/17/23
L2327408-17	LS-B-H02-C3-VOC	SOIL	PHILADELPHIA, PA	05/17/23 13:30	05/17/23
L2327408-18	LS-B-H02-C3-COMP	SOIL	PHILADELPHIA, PA	05/17/23 13:30	05/17/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

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
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

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

L2327408-01, -03, -13, and -17: 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.

L2327408-01: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (135%) and 4-bromofluorobenzene (238%); 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.

L2327408-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (199%); 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.

L2327408-05: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (144%) and 4-bromofluorobenzene (138%); 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.

L2327408-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (193%); 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.

L2327408-09: The internal standard (IS) responses for chlorobenzene-d5 (41%), and 1,4-dichlorobenzene-d4 (10%) and the surrogate recoveries for 1,2-dichloroethane-d4 (131%), toluene-d8 (167%) and 4-bromofluorobenzene (1575%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. A high-level analysis was performed, and those results are also reported.

L2327408-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (450%); 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.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

Case Narrative (continued)

L2327408-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (212%); 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.

L2327408-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (131%); 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.

L2327408-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (207%); 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.

PAHs

L2327408-10D, -14D, and -16D: 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:  Tiffani Morrissey

Title: Technical Director/Representative

Date: 05/24/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-01
 Client ID: LS-A-I03-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 09:30
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/23/23 10:55
 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	0.10	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	0.015	1
Ethylbenzene	ND		mg/kg	0.050	0.0070	1
p/m-Xylene	ND		mg/kg	0.10	0.028	1
o-Xylene	ND		mg/kg	0.050	0.014	1
Xylenes, Total	ND		mg/kg	0.050	0.014	1
Isopropylbenzene	1.0		mg/kg	0.050	0.0054	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	135	Q	70-130
4-Bromofluorobenzene	238	Q	70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-03
 Client ID: LS-A-I03-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 09:40
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/23/23 14:13
 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	0.11	0.011	1
Benzene	0.011	J	mg/kg	0.027	0.0090	1
1,2-Dichloroethane	ND		mg/kg	0.054	0.014	1
Toluene	ND		mg/kg	0.054	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	ND		mg/kg	0.054	0.0076	1
p/m-Xylene	ND		mg/kg	0.11	0.030	1
o-Xylene	ND		mg/kg	0.054	0.016	1
Xylenes, Total	ND		mg/kg	0.054	0.016	1
Isopropylbenzene	0.63		mg/kg	0.054	0.0059	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	128		70-130
Toluene-d8	120		70-130
4-Bromofluorobenzene	199	Q	70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-05
 Client ID: LS-A-I03-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 09:55
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/23/23 14:33
 Analyst: JIC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.015		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	0.0013		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.0046		mg/kg	0.00089	0.00012	1
p/m-Xylene	0.0026		mg/kg	0.0018	0.00050	1
o-Xylene	0.00072	J	mg/kg	0.00089	0.00026	1
Xylenes, Total	0.0033	J	mg/kg	0.00089	0.00026	1
Isopropylbenzene	0.0070		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	0.00047	J	mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.00058	J	mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	144	Q	70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-07
 Client ID: LS-A-I03-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 10:10
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/23/23 14:53
 Analyst: JIC
 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	0.16	0.016	1
Benzene	0.016	J	mg/kg	0.039	0.013	1
1,2-Dichloroethane	ND		mg/kg	0.078	0.020	1
Toluene	ND		mg/kg	0.078	0.042	1
1,2-Dibromoethane	ND		mg/kg	0.039	0.023	1
Ethylbenzene	0.025	J	mg/kg	0.078	0.011	1
p/m-Xylene	ND		mg/kg	0.16	0.044	1
o-Xylene	ND		mg/kg	0.078	0.023	1
Xylenes, Total	ND		mg/kg	0.078	0.023	1
Isopropylbenzene	12.		mg/kg	0.078	0.0085	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.16	0.015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.16	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	128		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	193	Q	70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-09
 Client ID: LS-A-I04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 11:00
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/23/23 15:12
 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	0.0017	0.00018	1
Benzene	0.0025		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	0.021		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.0081		mg/kg	0.00087	0.00012	1
p/m-Xylene	0.025		mg/kg	0.0017	0.00049	1
o-Xylene	0.016		mg/kg	0.00087	0.00025	1
Xylenes, Total	0.041		mg/kg	0.00087	0.00025	1
Isopropylbenzene	0.14		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	0.023		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	0.037		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	167	Q	70-130
4-Bromofluorobenzene	1580	Q	70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-09
 Client ID: LS-A-I04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 11:00
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/24/23 11:57
 Analyst: LAC
 Percent Solids: 87%

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	0.031	J	mg/kg	0.050	0.027	1
1,2-Dibromoethane	ND		mg/kg	0.025	0.015	1
Ethylbenzene	0.011	J	mg/kg	0.050	0.0071	1
p/m-Xylene	0.042	J	mg/kg	0.10	0.028	1
o-Xylene	0.036	J	mg/kg	0.050	0.014	1
Xylenes, Total	0.078	J	mg/kg	0.050	0.014	1
Isopropylbenzene	0.064		mg/kg	0.050	0.0055	1
1,3,5-Trimethylbenzene	0.017	J	mg/kg	0.10	0.0097	1
1,2,4-Trimethylbenzene	0.034	J	mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-11
 Client ID: LS-A-I04-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 11:10
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/24/23 16:43
 Analyst: LAC
 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	0.0016	0.00016	1
Benzene	0.00017	J	mg/kg	0.00039	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00079	0.00020	1
Toluene	0.0015		mg/kg	0.00079	0.00043	1
1,2-Dibromoethane	ND		mg/kg	0.00039	0.00023	1
Ethylbenzene	0.00043	J	mg/kg	0.00079	0.00011	1
p/m-Xylene	0.0024		mg/kg	0.0016	0.00044	1
o-Xylene	0.0026		mg/kg	0.00079	0.00023	1
Xylenes, Total	0.0050		mg/kg	0.00079	0.00023	1
Isopropylbenzene	0.087		mg/kg	0.00079	0.00008	1
1,3,5-Trimethylbenzene	0.0013	J	mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	0.0045		mg/kg	0.0016	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	450	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-13
 Client ID: LS-B-H02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 13:00
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/23/23 15:32
 Analyst: JIC
 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	0.14	0.014	1
Benzene	ND		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.071	0.018	1
Toluene	ND		mg/kg	0.071	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	ND		mg/kg	0.071	0.010	1
p/m-Xylene	ND		mg/kg	0.14	0.040	1
o-Xylene	0.044	J	mg/kg	0.071	0.021	1
Xylenes, Total	0.044	J	mg/kg	0.071	0.021	1
Isopropylbenzene	0.26		mg/kg	0.071	0.0078	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	212	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-15
 Client ID: LS-B-H02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 13:15
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/24/23 11:30
 Analyst: LAC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00025	1
Xylenes, Total	ND		mg/kg	0.00088	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	131	Q	70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-17
 Client ID: LS-B-H02-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 13:30
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/24/23 12:49
 Analyst: LAC
 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	0.11	0.011	1
Benzene	ND		mg/kg	0.026	0.0088	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	0.026	0.016	1
Ethylbenzene	ND		mg/kg	0.053	0.0075	1
p/m-Xylene	ND		mg/kg	0.11	0.030	1
o-Xylene	0.021	J	mg/kg	0.053	0.015	1
Xylenes, Total	0.021	J	mg/kg	0.053	0.015	1
Isopropylbenzene	0.36		mg/kg	0.053	0.0058	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	107		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	207	Q	70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/23/23 08:36
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,07,13 Batch: WG1782383-5					
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	131	Q	70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/23/23 08:36
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,09 Batch: WG1782799-5					
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	131	Q	70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/24/23 10:10
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 15 Batch: WG1782971-5					
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	113		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/24/23 10:10
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09,17 Batch: WG1782972-5					
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	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/24/23 15:11
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 11 Batch: WG1783007-5					
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	0.00019	J	mg/kg	0.0010	0.00014
p/m-Xylene	0.00095	J	mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	0.00095	J	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	121		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	85		70-130
Dibromofluoromethane	128		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,07,13 Batch: WG1782383-3 WG1782383-4								
Methyl tert butyl ether	132	Q	130		66-130	2		30
Benzene	118		123		70-130	4		30
1,2-Dichloroethane	127		128		70-130	1		30
Toluene	93		100		70-130	7		30
1,2-Dibromoethane	99		101		70-130	2		30
Ethylbenzene	97		104		70-130	7		30
p/m-Xylene	96		103		70-130	7		30
o-Xylene	97		104		70-130	7		30
Isopropylbenzene	92		104		70-130	12		30
1,3,5-Trimethylbenzene	96		106		70-130	10		30
1,2,4-Trimethylbenzene	96		106		70-130	10		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	124		119		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	102		105		70-130
Dibromofluoromethane	109		107		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,09 Batch: WG1782799-3 WG1782799-4								
Methyl tert butyl ether	132	Q	130		66-130	2		30
Benzene	118		123		70-130	4		30
1,2-Dichloroethane	127		128		70-130	1		30
Toluene	93		100		70-130	7		30
1,2-Dibromoethane	99		101		70-130	2		30
Ethylbenzene	97		104		70-130	7		30
p/m-Xylene	96		103		70-130	7		30
o-Xylene	97		104		70-130	7		30
Isopropylbenzene	92		104		70-130	12		30
1,3,5-Trimethylbenzene	96		106		70-130	10		30
1,2,4-Trimethylbenzene	96		106		70-130	10		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	124		119		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	102		105		70-130
Dibromofluoromethane	109		107		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 15 Batch: WG1782971-3 WG1782971-4								
Methyl tert butyl ether	124		126		66-130	2		30
Benzene	120		118		70-130	2		30
1,2-Dichloroethane	124		123		70-130	1		30
Toluene	100		97		70-130	3		30
1,2-Dibromoethane	106		107		70-130	1		30
Ethylbenzene	100		97		70-130	3		30
p/m-Xylene	101		98		70-130	3		30
o-Xylene	99		97		70-130	2		30
Isopropylbenzene	89		85		70-130	5		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	88		86		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	111		113		70-130
Toluene-d8	98		98		70-130
4-Bromofluorobenzene	95		95		70-130
Dibromofluoromethane	106		106		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09,17 Batch: WG1782972-3 WG1782972-4								
Methyl tert butyl ether	124		126		66-130	2		30
Benzene	120		118		70-130	2		30
1,2-Dichloroethane	124		123		70-130	1		30
Toluene	100		97		70-130	3		30
1,2-Dibromoethane	106		107		70-130	1		30
Ethylbenzene	100		97		70-130	3		30
p/m-Xylene	101		98		70-130	3		30
o-Xylene	99		97		70-130	2		30
Isopropylbenzene	89		85		70-130	5		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	88		86		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	111		112		70-130
Toluene-d8	98		98		70-130
4-Bromofluorobenzene	95		95		70-130
Dibromofluoromethane	106		106		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 11 Batch: WG1783007-3 WG1783007-4								
Methyl tert butyl ether	100		104		66-130	4		30
Benzene	118		116		70-130	2		30
1,2-Dichloroethane	101		105		70-130	4		30
Toluene	96		91		70-130	5		30
1,2-Dibromoethane	83		82		70-130	1		30
Ethylbenzene	95		91		70-130	4		30
p/m-Xylene	105		99		70-130	6		30
o-Xylene	101		97		70-130	4		30
Isopropylbenzene	88		82		70-130	7		30
1,3,5-Trimethylbenzene	94		86		70-130	9		30
1,2,4-Trimethylbenzene	95		87		70-130	9		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		103		70-130
Toluene-d8	91		90		70-130
4-Bromofluorobenzene	80		80		70-130
Dibromofluoromethane	108		109		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-02
 Client ID: LS-A-I03-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 09:30
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/23/23 14:30
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/22/23 23:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.039	0.024	1
Fluorene	0.042	J	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	0.062	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	0.036	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.051	J	mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-04
 Client ID: LS-A-I03-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 09:40
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/23/23 14:46
 Analyst: ALS
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/22/23 19:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.040		mg/kg	0.039	0.024	1
Fluorene	0.068	J	mg/kg	0.20	0.019	1
Phenanthrene	0.098	J	mg/kg	0.12	0.024	1
Anthracene	0.12		mg/kg	0.12	0.038	1
Pyrene	0.35		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.18		mg/kg	0.12	0.022	1
Chrysene	0.21		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.14		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.17		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	67		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-06
 Client ID: LS-A-I03-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 09:55
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/23/23 14:53
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 05/22/23 23:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.038	0.023	1
Fluorene	0.034	J	mg/kg	0.19	0.019	1
Phenanthrene	0.049	J	mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.037	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	0.022	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	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	94		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-08
Client ID: LS-A-I03-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 10:10
Date Received: 05/17/23
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8270E
Analytical Date: 05/23/23 15:19
Analyst: ALS
Percent Solids: 93%

Extraction Method: EPA 3546
Extraction Date: 05/22/23 19:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.036	0.022	1
Fluorene	0.058	J	mg/kg	0.18	0.017	1
Phenanthrene	0.085	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.064	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.029	J	mg/kg	0.11	0.020	1
Chrysene	0.046	J	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	0.055	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	65		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-10 D
 Client ID: LS-A-I04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 11:00
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/24/23 13:30
 Analyst: ALS
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/22/23 19:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.11	5
Fluorene	0.21	J	mg/kg	0.93	0.090	5
Phenanthrene	0.62		mg/kg	0.56	0.11	5
Anthracene	ND		mg/kg	0.56	0.18	5
Pyrene	0.27	J	mg/kg	0.56	0.092	5
Benzo(a)anthracene	0.40	J	mg/kg	0.56	0.10	5
Chrysene	0.95		mg/kg	0.56	0.097	5
Benzo(b)fluoranthene	0.38	J	mg/kg	0.56	0.16	5
Benzo(a)pyrene	0.26	J	mg/kg	0.74	0.23	5
Benzo(ghi)perylene	0.28	J	mg/kg	0.74	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-12
 Client ID: LS-A-I04-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 11:10
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/23/23 15:16
 Analyst: SLR
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/22/23 23:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.035	J	mg/kg	0.037	0.023	1
Fluorene	0.26		mg/kg	0.19	0.018	1
Phenanthrene	0.70		mg/kg	0.11	0.023	1
Anthracene	0.17		mg/kg	0.11	0.036	1
Pyrene	0.38		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.18		mg/kg	0.11	0.021	1
Chrysene	0.70		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.19		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.14	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.093	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-14 D
 Client ID: LS-B-H02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 13:00
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/24/23 13:54
 Analyst: ALS
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/22/23 19:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.61		mg/kg	0.19	0.12	5
Fluorene	3.3		mg/kg	0.95	0.092	5
Phenanthrene	4.2		mg/kg	0.57	0.12	5
Anthracene	0.71		mg/kg	0.57	0.18	5
Pyrene	1.2		mg/kg	0.57	0.094	5
Benzo(a)anthracene	0.47	J	mg/kg	0.57	0.11	5
Chrysene	0.78		mg/kg	0.57	0.099	5
Benzo(b)fluoranthene	0.29	J	mg/kg	0.57	0.16	5
Benzo(a)pyrene	0.34	J	mg/kg	0.76	0.23	5
Benzo(ghi)perylene	0.46	J	mg/kg	0.76	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	185	Q	23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-16 D
 Client ID: LS-B-H02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 13:15
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/24/23 14:18
 Analyst: ALS
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/22/23 19:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.69		mg/kg	0.20	0.12	5
Fluorene	4.7		mg/kg	1.0	0.097	5
Phenanthrene	9.6		mg/kg	0.60	0.12	5
Anthracene	1.3		mg/kg	0.60	0.19	5
Pyrene	4.9		mg/kg	0.60	0.099	5
Benzo(a)anthracene	2.1		mg/kg	0.60	0.11	5
Chrysene	2.4		mg/kg	0.60	0.10	5
Benzo(b)fluoranthene	1.9		mg/kg	0.60	0.17	5
Benzo(a)pyrene	1.6		mg/kg	0.80	0.24	5
Benzo(ghi)perylene	0.99		mg/kg	0.80	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	225	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-18
 Client ID: LS-B-H02-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 13:30
 Date Received: 05/17/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/23/23 16:26
 Analyst: ALS
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/22/23 19:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.16		mg/kg	0.038	0.023	1
Fluorene	1.3		mg/kg	0.19	0.019	1
Phenanthrene	2.8		mg/kg	0.11	0.023	1
Anthracene	0.26		mg/kg	0.11	0.037	1
Pyrene	0.43		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.22		mg/kg	0.11	0.022	1
Chrysene	0.42		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.16		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.29		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.38		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E
 Analytical Date: 05/23/23 14:06
 Analyst: SLR

Extraction Method: EPA 3546
 Extraction Date: 05/22/23 19:29

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1782013-1					
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
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	94		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1782013-2 WG1782013-3								
Naphthalene	79		78		40-140	1		50
Fluorene	89		89		40-140	0		50
Phenanthrene	82		84		40-140	2		50
Anthracene	87		88		40-140	1		50
Pyrene	82		84		35-142	2		50
Benzo(a)anthracene	83		85		40-140	2		50
Chrysene	80		81		40-140	1		50
Benzo(b)fluoranthene	87		88		40-140	1		50
Benzo(a)pyrene	96		98		40-140	2		50
Benzo(ghi)perylene	88		89		40-140	1		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	96		98		23-120
2-Fluorobiphenyl	84		86		30-120
4-Terphenyl-d14	84		86		18-120

METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-02

Date Collected: 05/17/23 09:30

Client ID: LS-A-I03-C1-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	10.6		mg/kg	2.30	0.123	1	05/23/23 11:21	05/23/23 16:10	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-04

Date Collected: 05/17/23 09:40

Client ID: LS-A-I03-C2-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	34.4		mg/kg	2.28	0.122	1	05/23/23 11:21	05/23/23 16:14	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-06

Date Collected: 05/17/23 09:55

Client ID: LS-A-I03-C3-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	85.1		mg/kg	2.29	0.123	1	05/23/23 11:21	05/23/23 16:19	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-08

Date Collected: 05/17/23 10:10

Client ID: LS-A-I03-C4-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	6.79		mg/kg	2.06	0.111	1	05/23/23 11:21	05/23/23 17:06	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-10

Date Collected: 05/17/23 11:00

Client ID: LS-A-I04-C1-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	16.8		mg/kg	2.18	0.117	1	05/23/23 11:21	05/23/23 17:10	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-12

Date Collected: 05/17/23 11:10

Client ID: LS-A-I04-C2-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	54.0		mg/kg	2.18	0.117	1	05/23/23 11:21	05/23/23 17:15	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-14

Date Collected: 05/17/23 13:00

Client ID: LS-B-H02-C1-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	41.3		mg/kg	2.22	0.119	1	05/23/23 11:21	05/23/23 17:20	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-16

Date Collected: 05/17/23 13:15

Client ID: LS-B-H02-C2-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	79.2		mg/kg	2.36	0.126	1	05/23/23 11:21	05/23/23 17:24	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-18

Date Collected: 05/17/23 13:30

Client ID: LS-B-H02-C3-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	30.2		mg/kg	2.31	0.124	1	05/23/23 11:21	05/23/23 17:29	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

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): 02,04,06,08,10,12,14,16,18 Batch: WG1781041-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/23/23 11:21	05/23/23 16:00	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1781041-2 SRM Lot Number: D119-540								
Lead, Total	100		-		82-118	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

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): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1781041-3 QC Sample: L2327784-02 Client ID: MS Sample												
Lead, Total	41.6	45.2	78.4	81		-	-		75-125	-		20



Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2327408

Report Date: 05/24/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1781041-4 QC Sample: L2327784-02 Client ID: DUP Sample						
Lead, Total	41.6	37.8	mg/kg	10		20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-01
Client ID: LS-A-I03-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 09:30
Date Received: 05/17/23
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	85.5		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-02

Date Collected: 05/17/23 09:30

Client ID: LS-A-I03-C1-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	84.7		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-03
Client ID: LS-A-I03-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 09:40
Date Received: 05/17/23
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	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327408**Project Number:** 200.00135.023**Report Date:** 05/24/23**SAMPLE RESULTS**

Lab ID: L2327408-04

Date Collected: 05/17/23 09:40

Client ID: LS-A-I03-C2-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-05
Client ID: LS-A-I03-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 09:55
Date Received: 05/17/23
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	86.6		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327408**Project Number:** 200.00135.023**Report Date:** 05/24/23**SAMPLE RESULTS**

Lab ID: L2327408-06

Date Collected: 05/17/23 09:55

Client ID: LS-A-I03-C3-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	85.4		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327408**Project Number:** 200.00135.023**Report Date:** 05/24/23**SAMPLE RESULTS**

Lab ID: L2327408-07

Date Collected: 05/17/23 10:10

Client ID: LS-A-I03-C4-VOC

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-08
 Client ID: LS-A-I03-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 10:10
 Date Received: 05/17/23
 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	92.8		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-09
Client ID: LS-A-I04-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 11:00
Date Received: 05/17/23
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	86.9		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

Project Number: 200.00135.023

Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-10

Date Collected: 05/17/23 11:00

Client ID: LS-A-I04-C1-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	88.4		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-11
Client ID: LS-A-I04-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 11:10
Date Received: 05/17/23
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	87.9		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327408**Project Number:** 200.00135.023**Report Date:** 05/24/23**SAMPLE RESULTS**

Lab ID: L2327408-12

Date Collected: 05/17/23 11:10

Client ID: LS-A-I04-C2-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-13
Client ID: LS-B-H02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 13:00
Date Received: 05/17/23
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	88.2		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327408**Project Number:** 200.00135.023**Report Date:** 05/24/23**SAMPLE RESULTS**

Lab ID: L2327408-14

Date Collected: 05/17/23 13:00

Client ID: LS-B-H02-C1-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327408**Project Number:** 200.00135.023**Report Date:** 05/24/23**SAMPLE RESULTS**

Lab ID: L2327408-15

Date Collected: 05/17/23 13:15

Client ID: LS-B-H02-C2-VOC

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	81.3		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327408**Project Number:** 200.00135.023**Report Date:** 05/24/23**SAMPLE RESULTS**

Lab ID: L2327408-16

Date Collected: 05/17/23 13:15

Client ID: LS-B-H02-C2-COMP

Date Received: 05/17/23

Sample Location: PHILADELPHIA, PA

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	83.1		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-17
Client ID: LS-B-H02-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 13:30
Date Received: 05/17/23
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	87.5		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
Report Date: 05/24/23

SAMPLE RESULTS

Lab ID: L2327408-18
 Client ID: LS-B-H02-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/17/23 13:30
 Date Received: 05/17/23
 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	85.7		%	0.100	NA	1	-	05/18/23 10:03	121,2540G	ROI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2327408

Report Date: 05/24/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1780374-1 QC Sample: L2327408-01 Client ID: LS-A-I03-C1-VOC						
Solids, Total	85.5	85.1	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327408**Project Number:** 200.00135.023**Report Date:** 05/24/23**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(*)
L2327408-01A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2327408-01B	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-01C	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-01D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2327408-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2327408-02B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2327408-03A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2327408-03B	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-03C	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-03D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2327408-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2327408-04B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2327408-05A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2327408-05B	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-05C	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-05D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2327408-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2327408-06B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2327408-06X	Glass 60ml unpreserved split	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2327408-07A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2327408-07B	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-07C	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-07D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327408**Project Number:** 200.00135.023**Report Date:** 05/24/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2327408-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2327408-08B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2327408-09A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2327408-09B	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260H(14),PA-8260HLW(14)
L2327408-09C	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260H(14),PA-8260HLW(14)
L2327408-09D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2327408-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2327408-10B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2327408-11A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2327408-11B	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-11C	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-11D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2327408-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2327408-12B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2327408-13A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2327408-13B	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-13C	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-13D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2327408-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2327408-14B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2327408-15A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2327408-15B	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-15C	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-15D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2327408-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2327408-16B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2327408-17A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2327408-17B	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Serial_No:05242318:00
Lab Number: L2327408
Report Date: 05/24/23

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2327408-17C	Vial water preserved	A	NA		3.7	Y	Absent	18-MAY-23 06:32	PA-8260HLW(14)
L2327408-17D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2327408-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2327408-18B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327408
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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.

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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

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Project Name: PHILADELPHIA REFINERY
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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.)

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Project Name: PHILADELPHIA REFINERY

Lab Number: L2327408

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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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

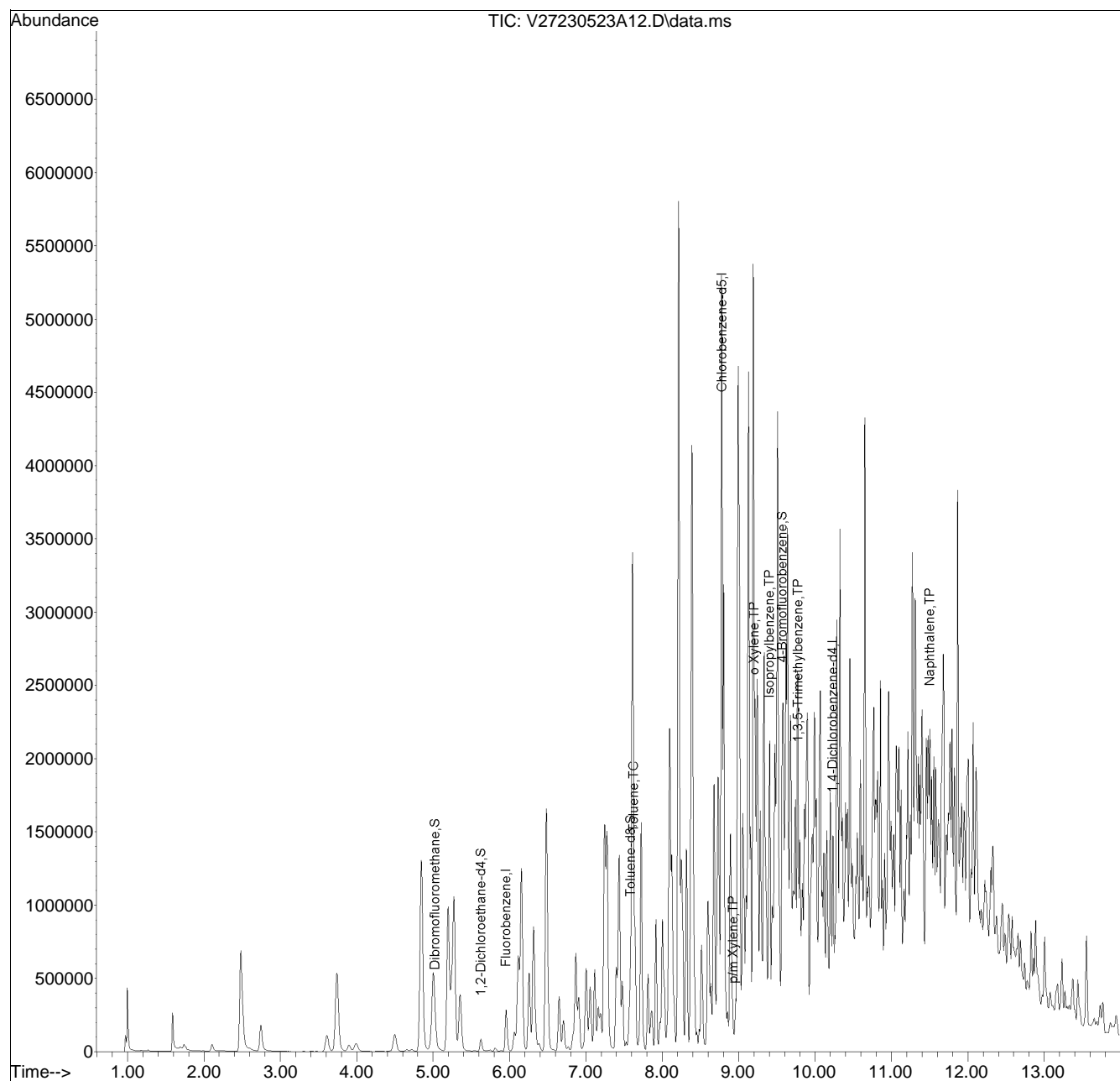
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230523A\
Data File : V27230523A12.D
Acq On : 23 May 2023 10:55 am
Operator : VOA127:JIC
Sample : L2327408-01,31H,7.04,5,0.100,,A
Misc : WG1782383,ICAL19866
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 24 12:55:29 2023
Quant Method : I:\VOLATILES\VOA127\2023\230523A\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 list23A\V27230523A02.D•

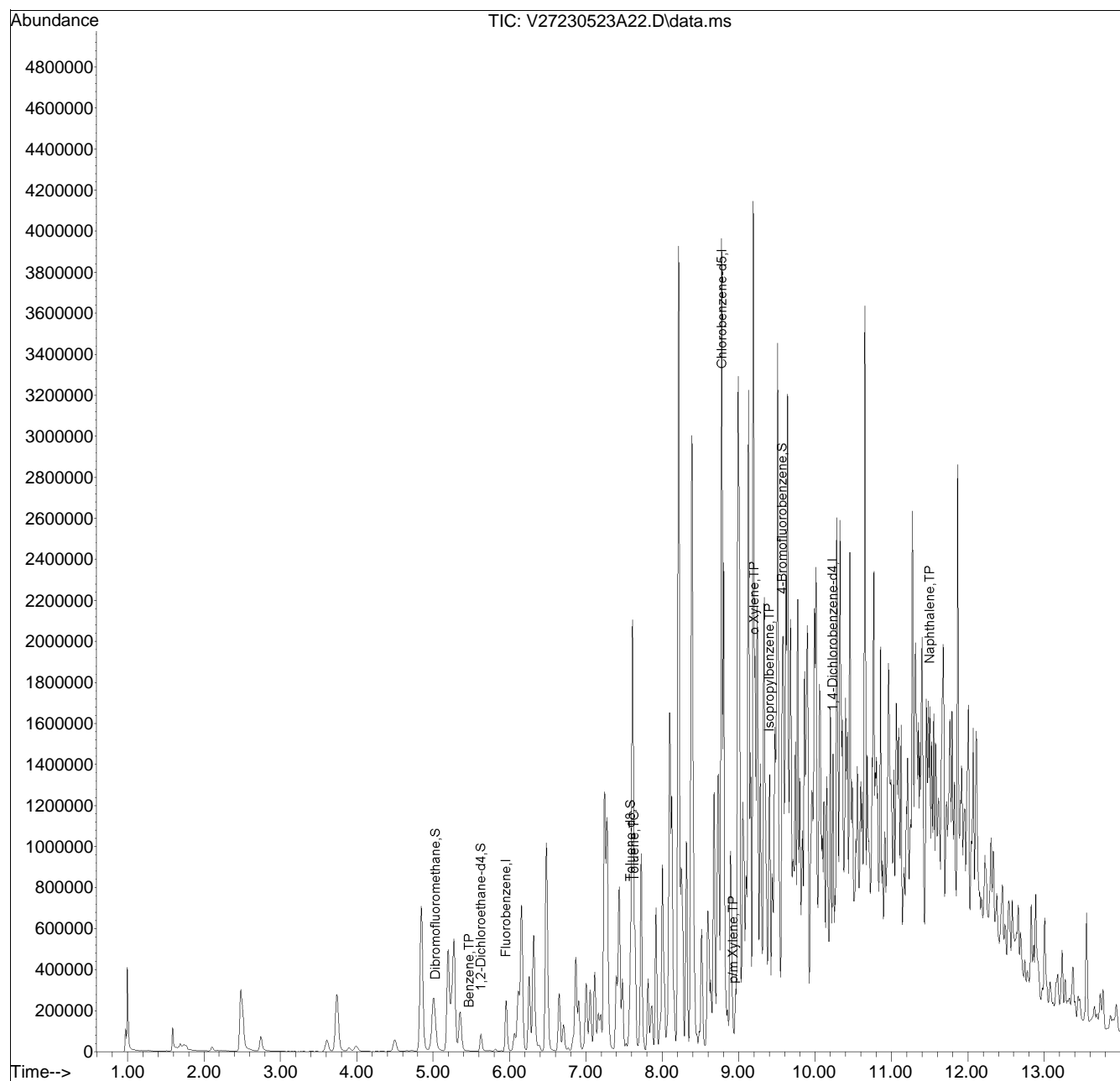


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230523A\
Data File : V27230523A22.D
Acq On : 23 May 2023 02:13 pm
Operator : VOA127:JIC
Sample : L2327408-03,31H,6.65,5,0.100,,A
Misc : WG1782383,ICAL19866
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 24 08:50:45 2023
Quant Method : I:\VOLATILES\VOA127\2023\230523A\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 list23A\V27230523A02.D•

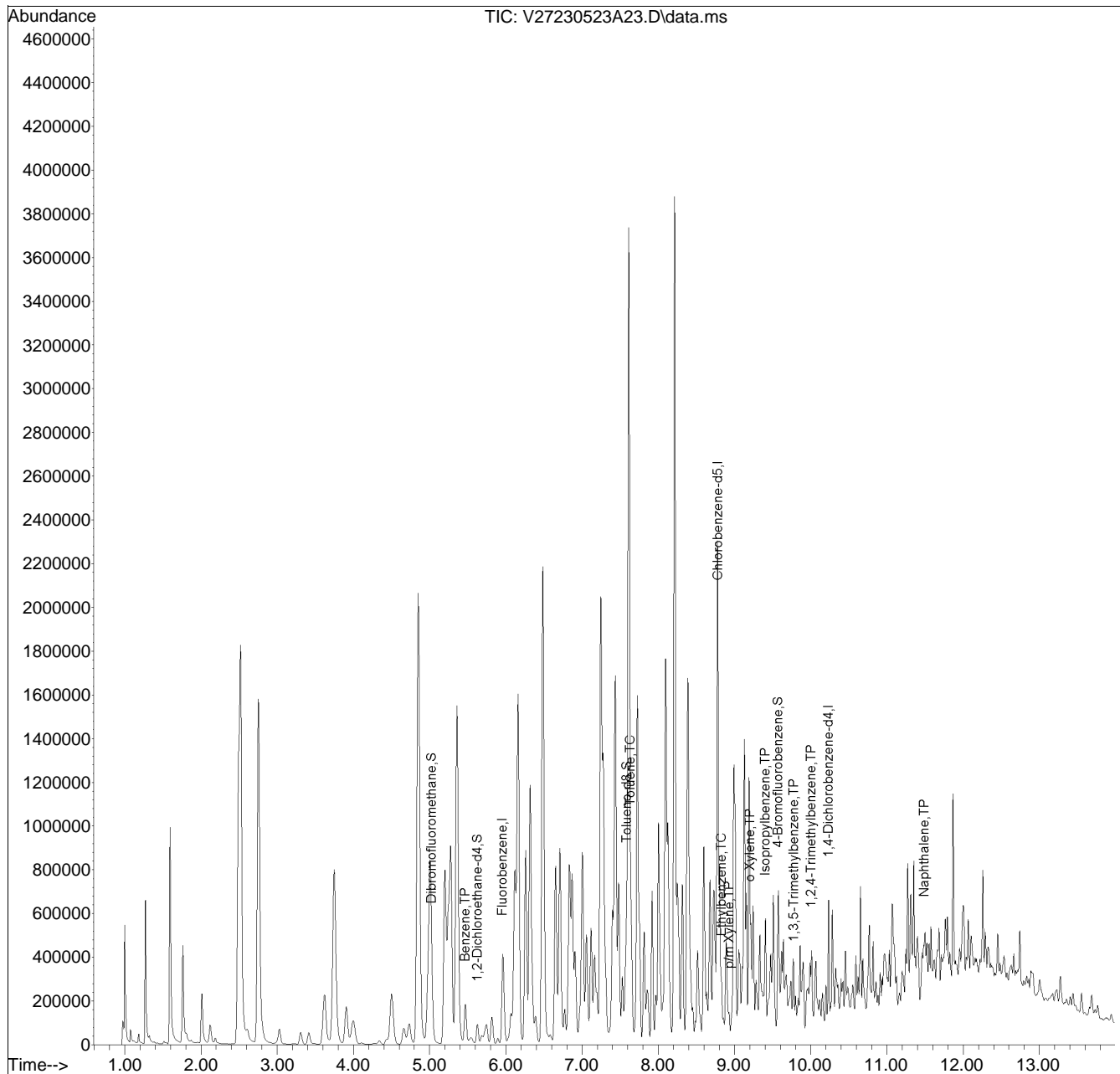


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230523A\
 Data File : V27230523A23.D
 Acq On : 23 May 2023 02:33 pm
 Operator : VOA127:JIC
 Sample : L2327408-05,31,6.49,5,,B
 Misc : WG1782799,ICAL19866
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: May 24 08:51:42 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230523A\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 list23A\V27230523A02.D•

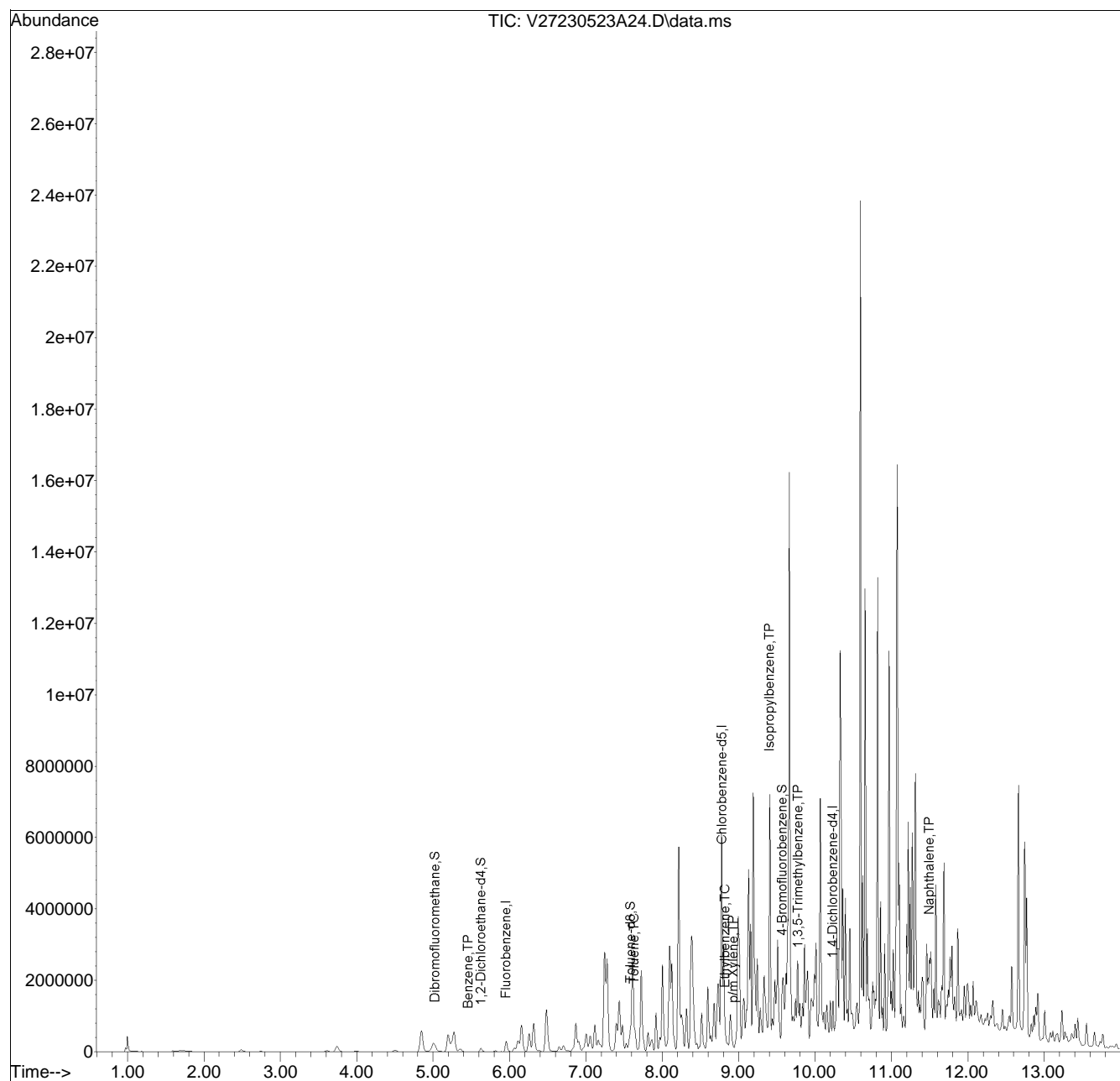


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230523A\
Data File : V27230523A24.D
Acq On : 23 May 2023 02:53 pm
Operator : VOA127:JIC
Sample : L2327408-07,31H,3.79,5,0.100,,A
Misc : WG1782383,ICAL19866
ALS Vial : 24 Sample Multiplier: 1

Quant Time: May 24 11:21:47 2023
Quant Method : I:\VOLATILES\VOA127\2023\230523A\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 list23A\V27230523A02.D•

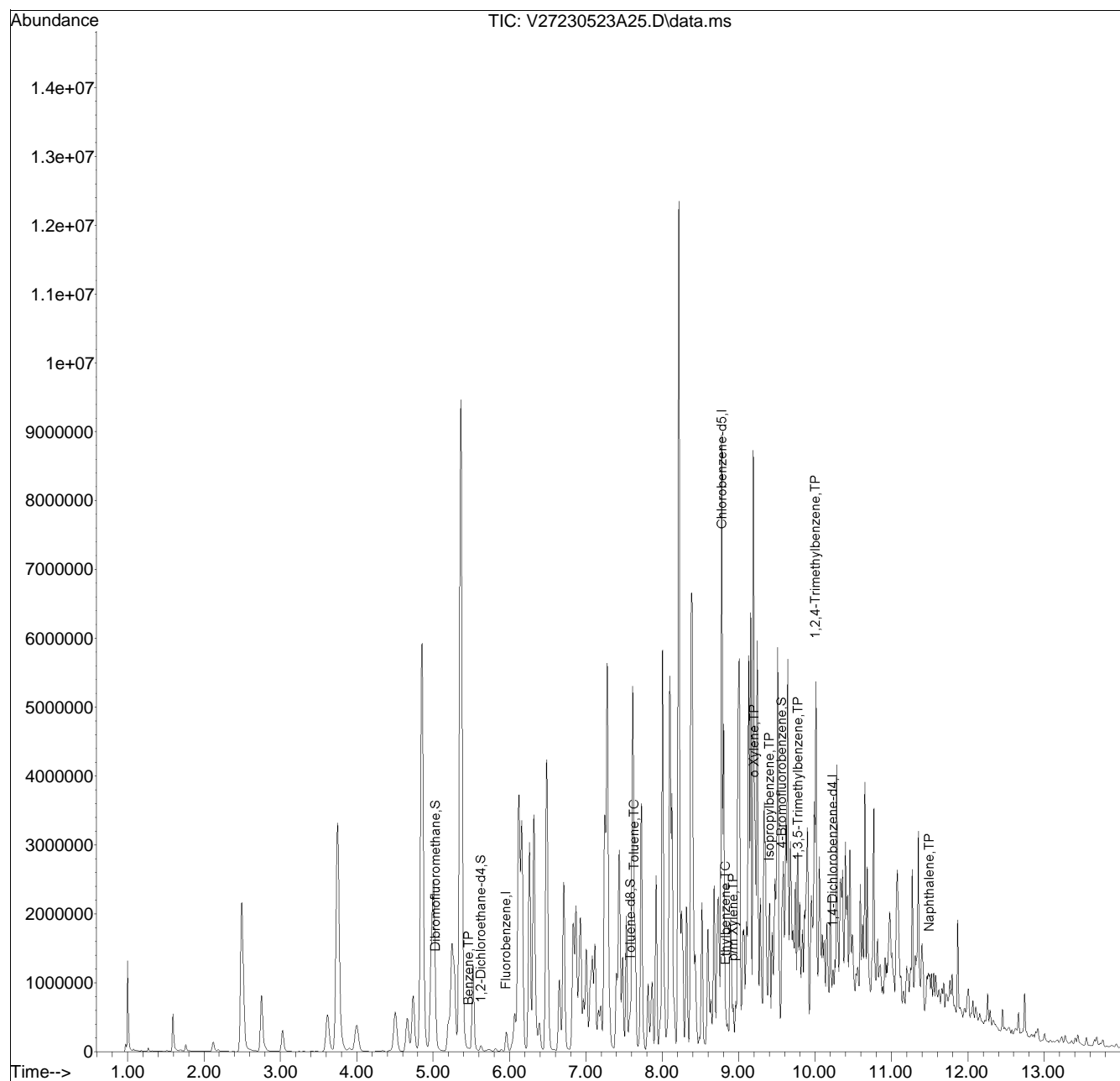


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230523A\
 Data File : V27230523A25.D
 Acq On : 23 May 2023 03:12 pm
 Operator : VOA127:JIC
 Sample : L2327408-09,31,6.58,5,,B
 Misc : WG1782799,ICAL19866
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: May 24 08:53:48 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230523A\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 list23A\V27230523A02.D•

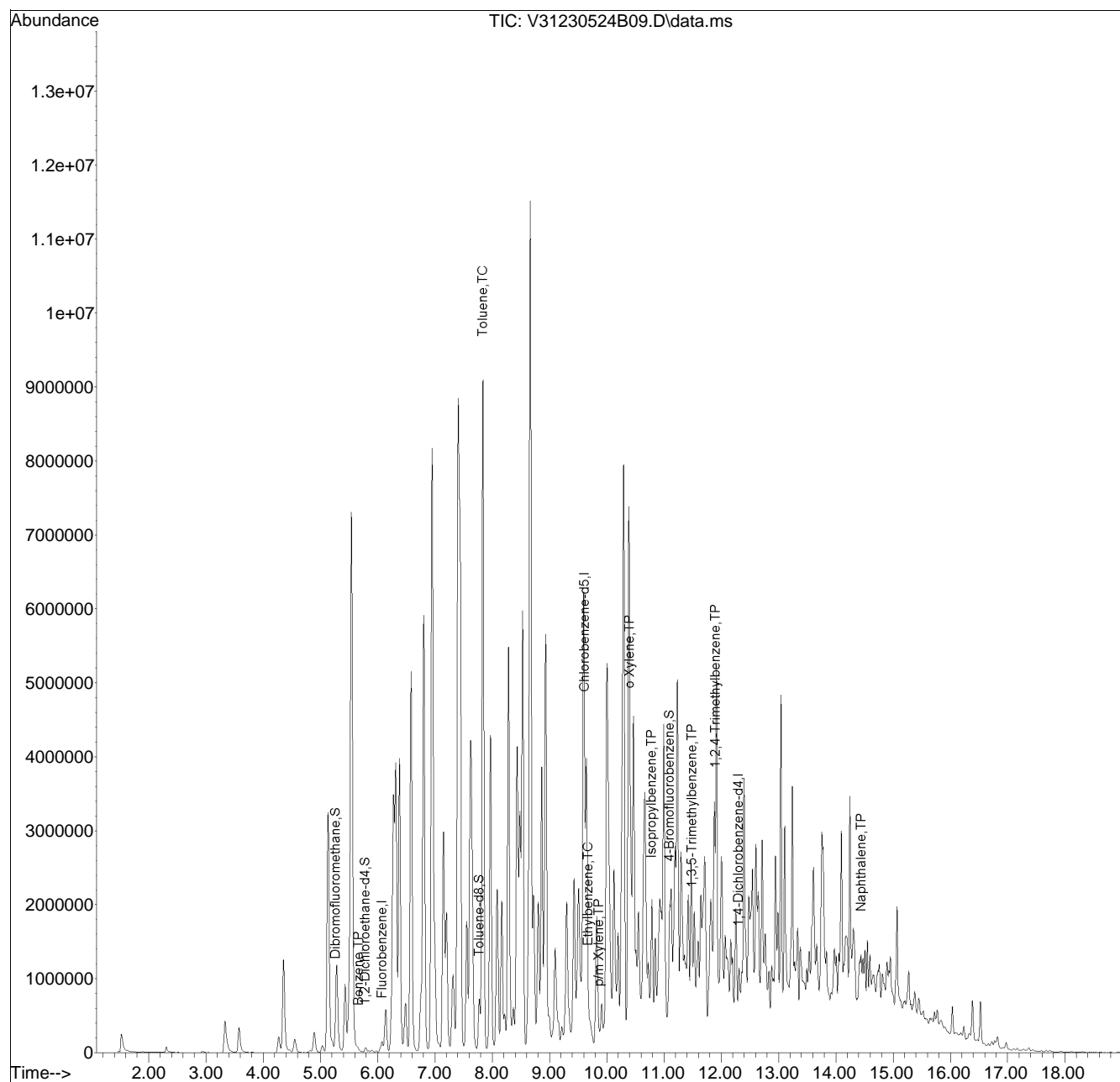


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2023\230524B\
 Data File : V31230524B09.D
 Acq On : 24 May 2023 04:43 pm
 Operator : VOA131:LAC
 Sample : L2327408-11,31,7.21,5,,C
 Misc : WG1783007,ICAL19865
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 24 16:54:48 2023
 Quant Method : I:\VOLATILES\VOA131\2023\230524B\V31_230328A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Wed Mar 29 10:40:23 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list24B\V31230524B01.D•

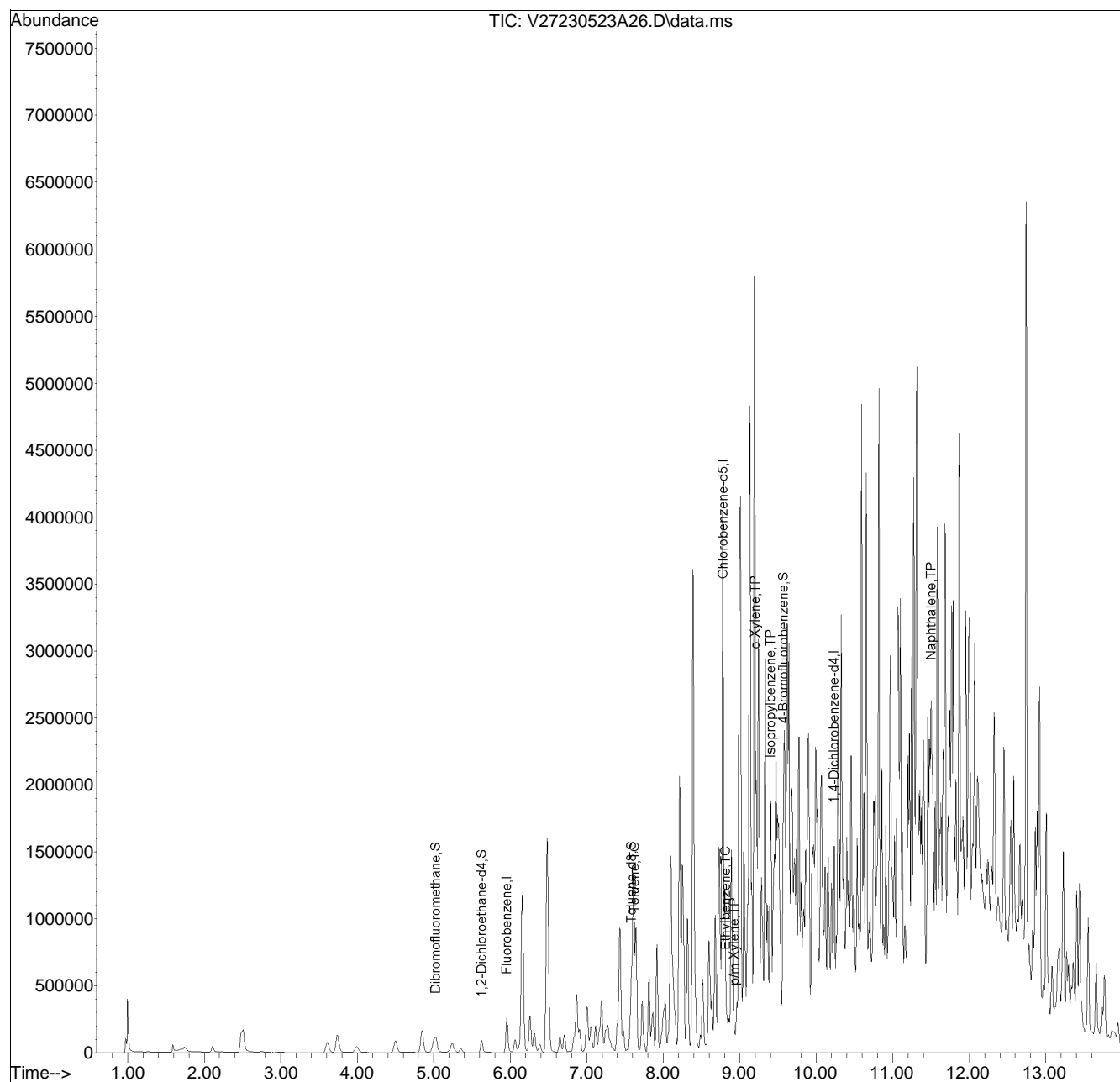


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230523A\
 Data File : V27230523A26.D
 Acq On : 23 May 2023 03:32 pm
 Operator : VOA127:JIC
 Sample : L2327408-13,31H,4.39,5,0.100,,A
 Misc : WG1782383,ICAL19866
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: May 24 08:55:21 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230523A\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 list23A\V27230523A02.D•

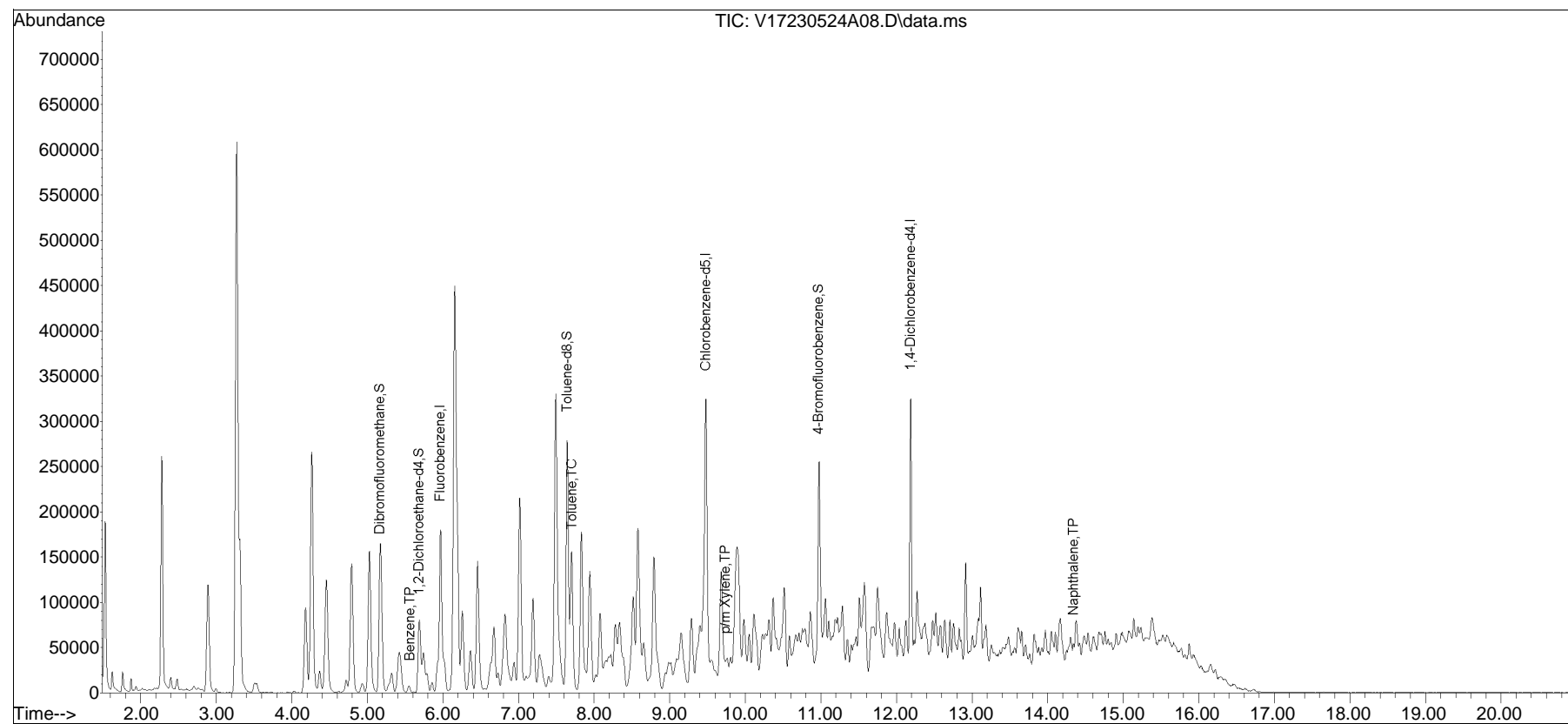


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA117\2023\230524A\
Data File : V17230524A08.D
Acq On : 24 May 2023 11:30 am
Operator : VOA117:LAC
Sample : 12327408-15,31,7.02,5,,c
Misc : WG1782971,ICAL19836
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 24 15:26:59 2023
Quant Method : I:\VOLATILES\VOA117\2023\230524A\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 list24A\V17230524A01.D•

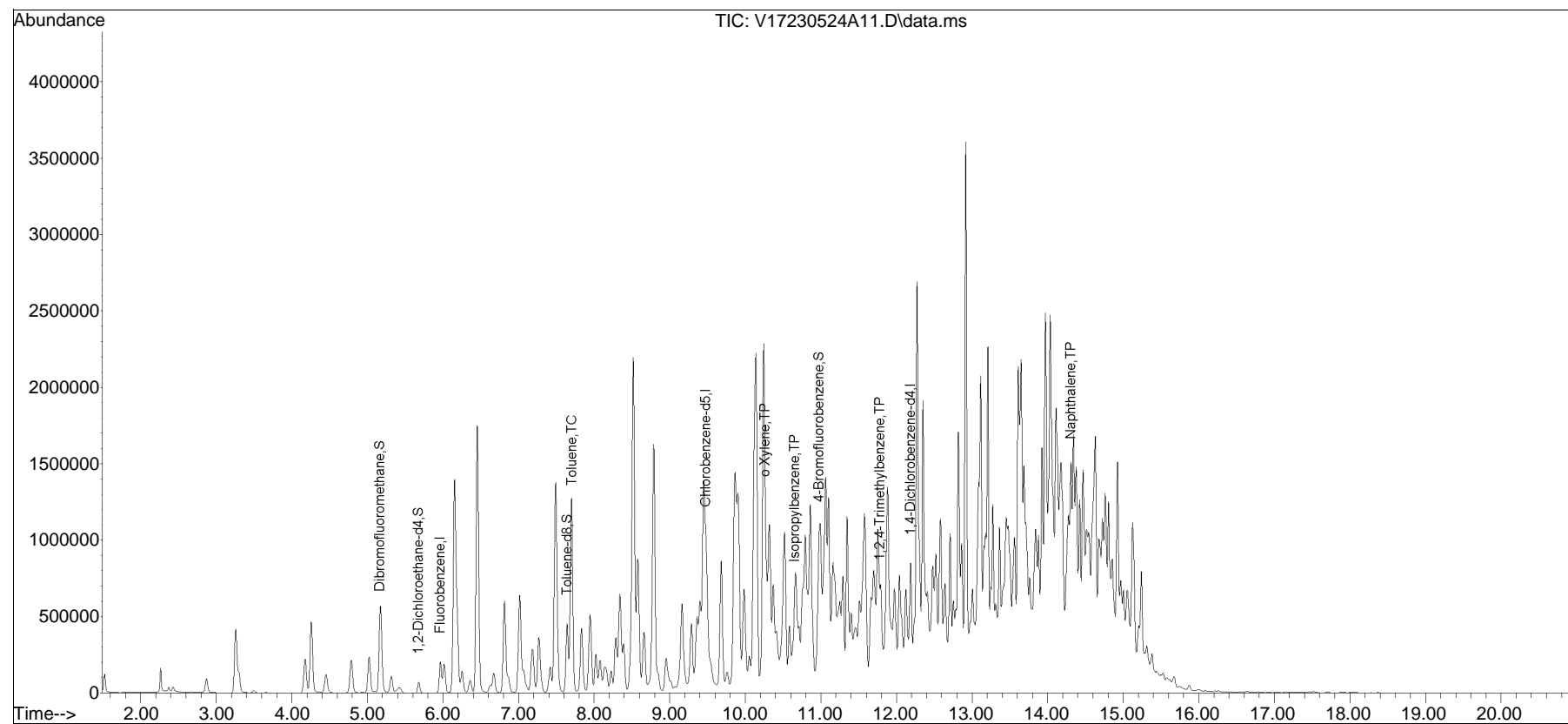


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA117\2023\230524A\
Data File : V17230524A11.D
Acq On : 24 May 2023 12:49 pm
Operator : VOA117:LAC
Sample : 12327408-17,31h,6.23,5,0.100,,a
Misc : WG1782972,ICAL19836
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 24 15:35:01 2023
Quant Method : I:\VOLATILES\VOA117\2023\230524A\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 list24A\V17230524A01.D•





ANALYTICAL REPORT

Lab Number:	L2327784
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/26/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2327784

Report Date: 05/26/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2327784-01	LS-A-H07-C1-VOC	SOIL	PHILADELPHIA, PA	05/18/23 09:10	05/18/23
L2327784-02	LS-A-H07-C1-COMP	SOIL	PHILADELPHIA, PA	05/18/23 09:10	05/18/23
L2327784-03	LS-A-H04-C1-VOC	SOIL	PHILADELPHIA, PA	05/18/23 10:15	05/18/23
L2327784-04	LS-A-H04-C1-COMP	SOIL	PHILADELPHIA, PA	05/18/23 10:15	05/18/23
L2327784-05	LS-A-H04-C2-VOC	SOIL	PHILADELPHIA, PA	05/18/23 10:30	05/18/23
L2327784-06	LS-A-H04-C2-COMP	SOIL	PHILADELPHIA, PA	05/18/23 10:30	05/18/23
L2327784-07	LS-A-H04-C3-VOC	SOIL	PHILADELPHIA, PA	05/18/23 10:45	05/18/23
L2327784-08	LS-A-H04-C3-COMP	SOIL	PHILADELPHIA, PA	05/18/23 10:45	05/18/23
L2327784-09	LS-A-H02-C1-VOC	SOIL	PHILADELPHIA, PA	05/18/23 11:40	05/18/23
L2327784-10	LS-A-H02-C1-COMP	SOIL	PHILADELPHIA, PA	05/18/23 11:40	05/18/23
L2327784-11	LS-A-H02-C2-VOC	SOIL	PHILADELPHIA, PA	05/18/23 11:55	05/18/23
L2327784-12	LS-A-H02-C2-COMP	SOIL	PHILADELPHIA, PA	05/18/23 11:55	05/18/23
L2327784-13	LS-A-H02-C3-VOC	SOIL	PHILADELPHIA, PA	05/18/23 12:10	05/18/23
L2327784-14	LS-A-H02-C3-COMP	SOIL	PHILADELPHIA, PA	05/18/23 12:10	05/18/23
L2327784-15	LS-A-H02-C4-VOC	SOIL	PHILADELPHIA, PA	05/18/23 12:25	05/18/23
L2327784-16	LS-A-H02-C4-COMP	SOIL	PHILADELPHIA, PA	05/18/23 12:25	05/18/23
L2327784-17	LS-A-H02-C5-VOC	SOIL	PHILADELPHIA, PA	05/18/23 12:40	05/18/23
L2327784-18	LS-A-H02-C5-COMP	SOIL	PHILADELPHIA, PA	05/18/23 12:40	05/18/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

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
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

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

L2327784-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (220%); 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.

L2327784-03: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (26%) and the surrogate recovery for 4-bromofluorobenzene (1320%) were outside the acceptance criteria; however, re-analysis achieved the following results: 1,4-dichlorobenzene-d4 (47%) and toluene-d8 (176%) and 4-bromofluorobenzene (607%). The results of both analyses are reported; however, since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias.

L2327784-05: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (158%) and 4-bromofluorobenzene (699%); 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.

L2327784-07: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (44%) and the surrogate recoveries for toluene-d8 (147%) and 4-bromofluorobenzene (312%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was below method criteria, all associated compounds are considered to have a potentially high bias. A high-level analysis was performed, and those results are also reported.

L2327784-09: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (24%) and the surrogate recovery for 4-bromofluorobenzene (220%) were outside the acceptance criteria; however, re-analysis achieved the following results: 1,4-dichlorobenzene-d4 (37%) and 4-bromofluorobenzene (169%). The results of both analyses are reported; however, since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

Case Narrative (continued)

L2327784-11: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (29%) and the surrogate recovery for 4-bromofluorobenzene (177%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was below method criteria, all associated compounds are considered to have a potentially high bias. A high-level analysis was performed, and those results are also reported.

L2327784-13: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (21%) and the surrogate recoveries for toluene-d8 (197%) and 4-bromofluorobenzene (1050%) 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 below method criteria, all associated compounds are considered to have a potentially high bias. The results of both analyses are reported.

L2327784-15: The internal standard (IS) response(s) for chlorobenzene-d5 (43%), and 1,4-dichlorobenzene-d4 (14%) and the surrogate recoveries for toluene-d8 (202%) and 4-bromofluorobenzene (1550%) 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 below method criteria, all associated compounds are considered to have a potentially high bias. The results of both analyses are reported.

L2327784-17: The internal standard (IS) response(s) for chlorobenzene-d5 (34%) and the surrogate recoveries for 1,2-dichloroethane-d4 (60%), toluene-d8 (139%) and 4-bromofluorobenzene (400%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was below method criteria, all associated compounds are considered to have a potentially high bias. A high-level analysis was performed, and those results are also reported.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

Case Narrative (continued)

PAHs

L2327784-02D, -12D, -16D, and -18D: 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:



Kelly O'Neill

Title: Technical Director/Representative

Date: 05/26/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-01
 Client ID: LS-A-H07-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 09:10
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 10:30
 Analyst: MKS
 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	0.097	0.0097	1
Benzene	ND		mg/kg	0.024	0.0080	1
1,2-Dichloroethane	ND		mg/kg	0.048	0.012	1
Toluene	ND		mg/kg	0.048	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	ND		mg/kg	0.048	0.0068	1
p/m-Xylene	ND		mg/kg	0.097	0.027	1
o-Xylene	ND		mg/kg	0.048	0.014	1
Xylenes, Total	ND		mg/kg	0.048	0.014	1
Isopropylbenzene	2.5		mg/kg	0.048	0.0053	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.097	0.0093	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.097	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	220	Q	70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-03
 Client ID: LS-A-H04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:15
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 10:09
 Analyst: MKS
 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	0.0021	0.00021	1
Benzene	0.00024	J	mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	0.00092	J	mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	0.00069	J	mg/kg	0.0011	0.00015	1
p/m-Xylene	0.0057		mg/kg	0.0021	0.00060	1
o-Xylene	0.0091		mg/kg	0.0011	0.00031	1
Xylenes, Total	0.015		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.048		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0057		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.0036		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	123		70-130
4-Bromofluorobenzene	1320	Q	70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-03 R
 Client ID: LS-A-H04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:15
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 16:27
 Analyst: LAC
 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	0.00038	J	mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	0.0011		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	0.00078	J	mg/kg	0.0011	0.00016	1
p/m-Xylene	0.0061		mg/kg	0.0022	0.00062	1
o-Xylene	0.010		mg/kg	0.0011	0.00032	1
Xylenes, Total	0.016		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.024		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0028		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	0.0026		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	176	Q	70-130
4-Bromofluorobenzene	607	Q	70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-05
 Client ID: LS-A-H04-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:30
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 21:59
 Analyst: LAC
 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	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	0.00056	J	mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.00027	J	mg/kg	0.00088	0.00012	1
p/m-Xylene	0.0038		mg/kg	0.0018	0.00049	1
o-Xylene	0.0076		mg/kg	0.00088	0.00026	1
Xylenes, Total	0.011		mg/kg	0.00088	0.00026	1
Isopropylbenzene	0.016		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	0.0068		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.0076		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	158	Q	70-130
4-Bromofluorobenzene	699	Q	70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-07
 Client ID: LS-A-H04-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:45
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 11:12
 Analyst: MKS
 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	0.095	0.0096	1
Benzene	ND		mg/kg	0.024	0.0079	1
1,2-Dichloroethane	ND		mg/kg	0.048	0.012	1
Toluene	ND		mg/kg	0.048	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	ND		mg/kg	0.048	0.0067	1
p/m-Xylene	0.029	J	mg/kg	0.095	0.027	1
o-Xylene	0.089		mg/kg	0.048	0.014	1
Xylenes, Total	0.12	J	mg/kg	0.048	0.014	1
Isopropylbenzene	0.13		mg/kg	0.048	0.0052	1
1,3,5-Trimethylbenzene	0.013	J	mg/kg	0.095	0.0092	1
1,2,4-Trimethylbenzene	0.048	J	mg/kg	0.095	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-07
 Client ID: LS-A-H04-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:45
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 22:19
 Analyst: LAC
 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	0.0016	0.00016	1
Benzene	0.00030	J	mg/kg	0.00041	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00081	0.00021	1
Toluene	0.0020		mg/kg	0.00081	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00041	0.00024	1
Ethylbenzene	0.00036	J	mg/kg	0.00081	0.00011	1
p/m-Xylene	0.0036		mg/kg	0.0016	0.00045	1
o-Xylene	0.014		mg/kg	0.00081	0.00024	1
Xylenes, Total	0.018		mg/kg	0.00081	0.00024	1
Isopropylbenzene	0.028		mg/kg	0.00081	0.00008	1
1,3,5-Trimethylbenzene	0.0024		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	0.0083		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	79		70-130
Toluene-d8	147	Q	70-130
4-Bromofluorobenzene	312	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-09
 Client ID: LS-A-H02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 11:40
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 09:48
 Analyst: MKS
 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	0.0024	0.00024	1
Benzene	0.0096		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	0.0097		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	0.0050		mg/kg	0.0012	0.00017	1
p/m-Xylene	0.023		mg/kg	0.0024	0.00068	1
o-Xylene	0.037		mg/kg	0.0012	0.00035	1
Xylenes, Total	0.060		mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.017		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.031		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.082		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	220	Q	70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-09 R
 Client ID: LS-A-H02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 11:40
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 16:48
 Analyst: LAC
 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	0.0020	0.00020	1
Benzene	0.0038		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	0.0033		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	0.0020		mg/kg	0.00098	0.00014	1
p/m-Xylene	0.0071		mg/kg	0.0020	0.00055	1
o-Xylene	0.013		mg/kg	0.00098	0.00028	1
Xylenes, Total	0.020		mg/kg	0.00098	0.00028	1
Isopropylbenzene	0.0060		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	0.0072		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.019		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	169	Q	70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-11
 Client ID: LS-A-H02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 11:55
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 11:33
 Analyst: MKS
 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	0.14	0.014	1
Benzene	0.032	J	mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.071	0.018	1
Toluene	0.085		mg/kg	0.071	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.046	J	mg/kg	0.071	0.010	1
p/m-Xylene	0.12	J	mg/kg	0.14	0.040	1
o-Xylene	0.073		mg/kg	0.071	0.021	1
Xylenes, Total	0.19	J	mg/kg	0.071	0.021	1
Isopropylbenzene	0.052	J	mg/kg	0.071	0.0078	1
1,3,5-Trimethylbenzene	0.024	J	mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	0.078	J	mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-11
 Client ID: LS-A-H02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 11:55
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 22:40
 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	0.0026	0.00026	1
Benzene	0.00038	J	mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	0.0012	J	mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00038	1
Ethylbenzene	0.00051	J	mg/kg	0.0013	0.00018	1
p/m-Xylene	0.0013	J	mg/kg	0.0026	0.00072	1
o-Xylene	0.0020		mg/kg	0.0013	0.00037	1
Xylenes, Total	0.0033	J	mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.0031		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.00088	J	mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	0.0044		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	120		70-130
4-Bromofluorobenzene	177	Q	70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-13
 Client ID: LS-A-H02-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:10
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 11:54
 Analyst: MKS
 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	0.10	0.010	1
Benzene	ND		mg/kg	0.026	0.0087	1
1,2-Dichloroethane	ND		mg/kg	0.052	0.014	1
Toluene	ND		mg/kg	0.052	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	ND		mg/kg	0.052	0.0074	1
p/m-Xylene	0.040	J	mg/kg	0.10	0.029	1
o-Xylene	0.097		mg/kg	0.052	0.015	1
Xylenes, Total	0.14	J	mg/kg	0.052	0.015	1
Isopropylbenzene	0.34		mg/kg	0.052	0.0057	1
1,3,5-Trimethylbenzene	0.021	J	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	103		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-13
 Client ID: LS-A-H02-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:10
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 23:01
 Analyst: LAC
 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	0.0018	0.00018	1
Benzene	0.0010		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	0.0023		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.00082	J	mg/kg	0.00088	0.00012	1
p/m-Xylene	0.019		mg/kg	0.0018	0.00049	1
o-Xylene	0.042		mg/kg	0.00088	0.00025	1
Xylenes, Total	0.061		mg/kg	0.00088	0.00025	1
Isopropylbenzene	0.37	E	mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	0.013		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.0090		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	197	Q	70-130
4-Bromofluorobenzene	1050	Q	70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-15
 Client ID: LS-A-H02-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:25
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 12:15
 Analyst: MKS
 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	ND		mg/kg	0.026	0.0085	1
1,2-Dichloroethane	ND		mg/kg	0.051	0.013	1
Toluene	ND		mg/kg	0.051	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	ND		mg/kg	0.051	0.0072	1
p/m-Xylene	0.041	J	mg/kg	0.10	0.028	1
o-Xylene	0.097		mg/kg	0.051	0.015	1
Xylenes, Total	0.14	J	mg/kg	0.051	0.015	1
Isopropylbenzene	0.33		mg/kg	0.051	0.0056	1
1,3,5-Trimethylbenzene	0.042	J	mg/kg	0.10	0.0098	1
1,2,4-Trimethylbenzene	0.023	J	mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-15
 Client ID: LS-A-H02-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:25
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 23:22
 Analyst: LAC
 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	0.0016	0.00016	1
Benzene	0.0014		mg/kg	0.00041	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00082	0.00021	1
Toluene	0.0030		mg/kg	0.00082	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00041	0.00024	1
Ethylbenzene	0.0010		mg/kg	0.00082	0.00012	1
p/m-Xylene	0.036		mg/kg	0.0016	0.00046	1
o-Xylene	0.096		mg/kg	0.00082	0.00024	1
Xylenes, Total	0.13		mg/kg	0.00082	0.00024	1
Isopropylbenzene	0.59	E	mg/kg	0.00082	0.00008	1
1,3,5-Trimethylbenzene	0.12		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	0.088		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	202	Q	70-130
4-Bromofluorobenzene	1550	Q	70-130
Dibromofluoromethane	122		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-17
 Client ID: LS-A-H02-C5-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:40
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 12:36
 Analyst: MKS
 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	0.090	0.0090	1
Benzene	ND		mg/kg	0.022	0.0074	1
1,2-Dichloroethane	ND		mg/kg	0.045	0.012	1
Toluene	ND		mg/kg	0.045	0.024	1
1,2-Dibromoethane	ND		mg/kg	0.022	0.013	1
Ethylbenzene	ND		mg/kg	0.045	0.0063	1
p/m-Xylene	0.030	J	mg/kg	0.090	0.025	1
o-Xylene	0.058		mg/kg	0.045	0.013	1
Xylenes, Total	0.088	J	mg/kg	0.045	0.013	1
Isopropylbenzene	0.21		mg/kg	0.045	0.0049	1
1,3,5-Trimethylbenzene	0.037	J	mg/kg	0.090	0.0086	1
1,2,4-Trimethylbenzene	0.055	J	mg/kg	0.090	0.015	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-17
 Client ID: LS-A-H02-C5-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:40
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/25/23 23:43
 Analyst: LAC
 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	0.0017	0.00017	1
Benzene	0.00024	J	mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	0.00087		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	0.00040	J	mg/kg	0.00087	0.00012	1
p/m-Xylene	0.0096		mg/kg	0.0017	0.00049	1
o-Xylene	0.013		mg/kg	0.00087	0.00025	1
Xylenes, Total	0.023		mg/kg	0.00087	0.00025	1
Isopropylbenzene	0.11		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	0.0089		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	0.013		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	60	Q	70-130
Toluene-d8	139	Q	70-130
4-Bromofluorobenzene	400	Q	70-130
Dibromofluoromethane	71		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/25/23 09:08
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,07,11,13,15,17 Batch: WG1783477-5					
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	95		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/25/23 09:08
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,09 Batch: WG1783892-5					
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	113		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/25/23 19:53
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,07,11,13,15,17 Batch: WG1783910-5					
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	111		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	106		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,07,11,13,15,17 Batch: WG1783477-3 WG1783477-4								
Methyl tert butyl ether	105		102		66-130	3		30
Benzene	104		104		70-130	0		30
1,2-Dichloroethane	99		97		70-130	2		30
Toluene	85		86		70-130	1		30
1,2-Dibromoethane	89		91		70-130	2		30
Ethylbenzene	88		89		70-130	1		30
p/m-Xylene	91		91		70-130	0		30
o-Xylene	90		91		70-130	1		30
Isopropylbenzene	83		86		70-130	4		30
1,3,5-Trimethylbenzene	84		86		70-130	2		30
1,2,4-Trimethylbenzene	83		85		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	108		107		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	90		92		70-130
Dibromofluoromethane	113		112		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,09 Batch: WG1783892-3 WG1783892-4								
Methyl tert butyl ether	105		102		66-130	3		30
Benzene	104		104		70-130	0		30
1,2-Dichloroethane	99		97		70-130	2		30
Toluene	85		86		70-130	1		30
1,2-Dibromoethane	89		91		70-130	2		30
Ethylbenzene	88		89		70-130	1		30
p/m-Xylene	91		91		70-130	0		30
o-Xylene	90		91		70-130	1		30
Isopropylbenzene	83		86		70-130	4		30
1,3,5-Trimethylbenzene	84		86		70-130	2		30
1,2,4-Trimethylbenzene	83		85		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		107		70-130
Toluene-d8	95		96		70-130
4-Bromofluorobenzene	90		92		70-130
Dibromofluoromethane	113		112		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,07,11,13,15,17 Batch: WG1783910-3 WG1783910-4								
Methyl tert butyl ether	112		115		66-130	3		30
Benzene	115		117		70-130	2		30
1,2-Dichloroethane	101		104		70-130	3		30
Toluene	93		95		70-130	2		30
1,2-Dibromoethane	93		98		70-130	5		30
Ethylbenzene	96		99		70-130	3		30
p/m-Xylene	99		102		70-130	3		30
o-Xylene	98		101		70-130	3		30
Isopropylbenzene	93		97		70-130	4		30
1,3,5-Trimethylbenzene	92		96		70-130	4		30
1,2,4-Trimethylbenzene	91		96		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		102		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	93		92		70-130
Dibromofluoromethane	110		111		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-02 D
 Client ID: LS-A-H07-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 09:10
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/26/23 14:58
 Analyst: CMM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.11	5
Fluorene	0.10	J	mg/kg	0.90	0.087	5
Phenanthrene	0.53	J	mg/kg	0.54	0.11	5
Anthracene	0.23	J	mg/kg	0.54	0.17	5
Pyrene	0.95		mg/kg	0.54	0.089	5
Benzo(a)anthracene	0.60		mg/kg	0.54	0.10	5
Chrysene	0.64		mg/kg	0.54	0.093	5
Benzo(b)fluoranthene	0.66		mg/kg	0.54	0.15	5
Benzo(a)pyrene	0.61	J	mg/kg	0.72	0.22	5
Benzo(ghi)perylene	0.41	J	mg/kg	0.72	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	94		30-120
4-Terphenyl-d14	90		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-04
 Client ID: LS-A-H04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:15
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/25/23 14:08
 Analyst: SLR
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.40		mg/kg	0.039	0.024	1
Fluorene	1.1		mg/kg	0.20	0.019	1
Phenanthrene	0.72		mg/kg	0.12	0.024	1
Anthracene	0.44		mg/kg	0.12	0.038	1
Pyrene	0.88		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.54		mg/kg	0.12	0.022	1
Chrysene	1.0		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.60		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.46		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.47		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	52		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-06
 Client ID: LS-A-H04-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:30
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/25/23 13:42
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.98		mg/kg	0.038	0.023	1
Fluorene	1.4		mg/kg	0.19	0.018	1
Phenanthrene	2.7		mg/kg	0.11	0.023	1
Anthracene	0.63		mg/kg	0.11	0.036	1
Pyrene	0.85		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.59		mg/kg	0.11	0.021	1
Chrysene	1.7		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.68		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.88		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	1.0		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	34		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-08
 Client ID: LS-A-H04-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:45
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/25/23 13:16
 Analyst: SLR
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.4		mg/kg	0.038	0.023	1
Fluorene	1.3		mg/kg	0.19	0.018	1
Phenanthrene	3.6		mg/kg	0.11	0.023	1
Anthracene	0.65		mg/kg	0.11	0.037	1
Pyrene	1.0		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.66		mg/kg	0.11	0.022	1
Chrysene	2.0		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.72		mg/kg	0.11	0.032	1
Benzo(a)pyrene	1.3		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	1.6		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	27		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	37		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-10
 Client ID: LS-A-H02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 11:40
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/25/23 12:51
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.35		mg/kg	0.038	0.023	1
Fluorene	0.21		mg/kg	0.19	0.018	1
Phenanthrene	0.85		mg/kg	0.11	0.023	1
Anthracene	0.28		mg/kg	0.11	0.037	1
Pyrene	0.83		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.84		mg/kg	0.11	0.021	1
Chrysene	1.1		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	1.3		mg/kg	0.11	0.032	1
Benzo(a)pyrene	1.7		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	1.4		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	50		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-12 D
 Client ID: LS-A-H02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 11:55
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/26/23 15:15
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.64		mg/kg	0.40	0.24	10
Fluorene	1.8	J	mg/kg	2.0	0.19	10
Phenanthrene	8.9		mg/kg	1.2	0.24	10
Anthracene	3.2		mg/kg	1.2	0.38	10
Pyrene	8.0		mg/kg	1.2	0.20	10
Benzo(a)anthracene	2.3		mg/kg	1.2	0.22	10
Chrysene	4.0		mg/kg	1.2	0.20	10
Benzo(b)fluoranthene	0.89	J	mg/kg	1.2	0.33	10
Benzo(a)pyrene	1.8		mg/kg	1.6	0.48	10
Benzo(ghi)perylene	1.5	J	mg/kg	1.6	0.23	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	49		23-120
2-Fluorobiphenyl	42		30-120
4-Terphenyl-d14	43		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-14 D
 Client ID: LS-A-H02-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:10
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/25/23 22:19
 Analyst: CMM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.47		mg/kg	0.18	0.11	5
Fluorene	1.1		mg/kg	0.92	0.089	5
Phenanthrene	5.5		mg/kg	0.55	0.11	5
Anthracene	2.3		mg/kg	0.55	0.18	5
Pyrene	5.9		mg/kg	0.55	0.091	5
Benzo(a)anthracene	2.1		mg/kg	0.55	0.10	5
Chrysene	2.8		mg/kg	0.55	0.095	5
Benzo(b)fluoranthene	0.64		mg/kg	0.55	0.15	5
Benzo(a)pyrene	1.2		mg/kg	0.73	0.22	5
Benzo(ghi)perylene	1.3		mg/kg	0.73	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	47		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	47		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-16 D
 Client ID: LS-A-H02-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:25
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/25/23 22:43
 Analyst: CMM
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.44		mg/kg	0.18	0.11	5
Fluorene	1.2		mg/kg	0.91	0.088	5
Phenanthrene	4.9		mg/kg	0.55	0.11	5
Anthracene	1.3		mg/kg	0.55	0.18	5
Pyrene	3.4		mg/kg	0.55	0.090	5
Benzo(a)anthracene	1.6		mg/kg	0.55	0.10	5
Chrysene	2.4		mg/kg	0.55	0.095	5
Benzo(b)fluoranthene	0.88		mg/kg	0.55	0.15	5
Benzo(a)pyrene	1.3		mg/kg	0.73	0.22	5
Benzo(ghi)perylene	1.9		mg/kg	0.73	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-18 D
 Client ID: LS-A-H02-C5-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:40
 Date Received: 05/18/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/25/23 23:07
 Analyst: CMM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.58		mg/kg	0.18	0.11	5
Fluorene	0.90		mg/kg	0.90	0.088	5
Phenanthrene	4.1		mg/kg	0.54	0.11	5
Anthracene	0.99		mg/kg	0.54	0.18	5
Pyrene	4.1		mg/kg	0.54	0.090	5
Benzo(a)anthracene	3.3		mg/kg	0.54	0.10	5
Chrysene	3.8		mg/kg	0.54	0.094	5
Benzo(b)fluoranthene	2.5		mg/kg	0.54	0.15	5
Benzo(a)pyrene	3.0		mg/kg	0.72	0.22	5
Benzo(ghi)perylene	3.0		mg/kg	0.72	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E
 Analytical Date: 05/24/23 09:37
 Analyst: IM

Extraction Method: EPA 3546
 Extraction Date: 05/23/23 14:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1782404-1					
Naphthalene	ND		mg/kg	0.033	0.020
Fluorene	ND		mg/kg	0.16	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	87		25-120
Phenol-d6	82		10-120
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	67		30-120
2,4,6-Tribromophenol	77		10-136
4-Terphenyl-d14	78		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1782404-2 WG1782404-3								
Naphthalene	72		68		40-140	6		50
Fluorene	77		71		40-140	8		50
Phenanthrene	78		71		40-140	9		50
Anthracene	80		75		40-140	6		50
Pyrene	77		72		35-142	7		50
Benzo(a)anthracene	71		66		40-140	7		50
Chrysene	75		69		40-140	8		50
Benzo(b)fluoranthene	69		65		40-140	6		50
Benzo(a)pyrene	76		72		40-140	5		50
Benzo(ghi)perylene	71		66		40-140	7		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	93		85		25-120
Phenol-d6	84		76		10-120
Nitrobenzene-d5	71		67		23-120
2-Fluorobiphenyl	64		59		30-120
2,4,6-Tribromophenol	82		73		10-136
4-Terphenyl-d14	79		70		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-02

Date Collected: 05/18/23 09:10

Client ID: LS-A-H07-C1-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	41.6		mg/kg	2.14	0.115	1	05/23/23 11:21	05/23/23 16:24	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-04

Date Collected: 05/18/23 10:15

Client ID: LS-A-H04-C1-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	54.1		mg/kg	2.30	0.123	1	05/23/23 11:21	05/23/23 17:33	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-06
 Client ID: LS-A-H04-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:30
 Date Received: 05/18/23
 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	63.9		mg/kg	2.27	0.122	1	05/23/23 11:21	05/23/23 17:38	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-08

Date Collected: 05/18/23 10:45

Client ID: LS-A-H04-C3-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	18.1		mg/kg	2.20	0.118	1	05/23/23 11:21	05/23/23 17:43	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-10
 Client ID: LS-A-H02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 11:40
 Date Received: 05/18/23
 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	157		mg/kg	2.33	0.125	1	05/23/23 11:21	05/23/23 17:47	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-12

Date Collected: 05/18/23 11:55

Client ID: LS-A-H02-C2-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	176		mg/kg	2.30	0.123	1	05/23/23 11:21	05/23/23 19:22	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-14

Date Collected: 05/18/23 12:10

Client ID: LS-A-H02-C3-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	90.2		mg/kg	2.22	0.119	1	05/23/23 11:21	05/23/23 19:27	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-16
 Client ID: LS-A-H02-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 12:25
 Date Received: 05/18/23
 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	51.0		mg/kg	2.20	0.118	1	05/23/23 11:21	05/23/23 19:32	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-18

Date Collected: 05/18/23 12:40

Client ID: LS-A-H02-C5-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	37.9		mg/kg	2.09	0.112	1	05/23/23 11:21	05/23/23 19:36	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

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): 02,04,06,08,10,12,14,16,18 Batch: WG1781041-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/23/23 11:21	05/23/23 16:00	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1781041-2 SRM Lot Number: D119-540								
Lead, Total	100		-		82-118			-



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

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): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1781041-3 QC Sample: L2327784-02 Client ID: LS-A-H07-C1-COMP												
Lead, Total	41.6	45.2	78.4	81		-	-		75-125	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2327784

Report Date: 05/26/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1781041-4 QC Sample: L2327784-02 Client ID: LS-A-H07-C1-COMP						
Lead, Total	41.6	37.8	mg/kg	10		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-01

Date Collected: 05/18/23 09:10

Client ID: LS-A-H07-C1-VOC

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-02

Date Collected: 05/18/23 09:10

Client ID: LS-A-H07-C1-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	90.6		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-03

Date Collected: 05/18/23 10:15

Client ID: LS-A-H04-C1-VOC

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	84.6		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-04

Date Collected: 05/18/23 10:15

Client ID: LS-A-H04-C1-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	84.0		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-05

Date Collected: 05/18/23 10:30

Client ID: LS-A-H04-C2-VOC

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	85.9		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-06
Client ID: LS-A-H04-C2-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:30
Date Received: 05/18/23
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	86.1		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-07
Client ID: LS-A-H04-C3-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:45
Date Received: 05/18/23
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	88.3		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-08
Client ID: LS-A-H04-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/18/23 10:45
Date Received: 05/18/23
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	86.8		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-09

Date Collected: 05/18/23 11:40

Client ID: LS-A-H02-C1-VOC

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-10

Date Collected: 05/18/23 11:40

Client ID: LS-A-H02-C1-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-11

Date Collected: 05/18/23 11:55

Client ID: LS-A-H02-C2-VOC

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	82.9		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-12

Date Collected: 05/18/23 11:55

Client ID: LS-A-H02-C2-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	82.7		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-13

Date Collected: 05/18/23 12:10

Client ID: LS-A-H02-C3-VOC

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	88.1		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-14

Date Collected: 05/18/23 12:10

Client ID: LS-A-H02-C3-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	88.3		%	0.100	NA	1	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-15

Date Collected: 05/18/23 12:25

Client ID: LS-A-H02-C4-VOC

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-16

Date Collected: 05/18/23 12:25

Client ID: LS-A-H02-C4-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

SAMPLE RESULTS

Lab ID: L2327784-17

Date Collected: 05/18/23 12:40

Client ID: LS-A-H02-C5-VOC

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	-	05/19/23 12:31	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**SAMPLE RESULTS**

Lab ID: L2327784-18

Date Collected: 05/18/23 12:40

Client ID: LS-A-H02-C5-COMP

Date Received: 05/18/23

Sample Location: PHILADELPHIA, PA

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	-	05/19/23 12:31	121,2540G	ROI



Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2327784

Report Date: 05/26/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1780921-1 QC Sample: L2327784-01 Client ID: LS-A-H07-C1-VOC						
Solids, Total	90.2	90.7	%	1		20



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Serial_No:05262317:04
Lab Number: L2327784
Report Date: 05/26/23

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(*)
L2327784-01A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2327784-01B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260HLW(14)
L2327784-01C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260HLW(14)
L2327784-01D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2327784-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2327784-02B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2327784-03A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2327784-03B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260HLW(14)
L2327784-03C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260HLW(14)
L2327784-03D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2327784-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2327784-04B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2327784-05A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2327784-05B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260HLW(14)
L2327784-05C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260HLW(14)
L2327784-05D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2327784-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2327784-06B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2327784-07A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2327784-07B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)
L2327784-07C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)
L2327784-07D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2327784-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2327784**Project Number:** 200.00135.023**Report Date:** 05/26/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2327784-08B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2327784-09A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2327784-09B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260HLW(14)
L2327784-09C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260HLW(14)
L2327784-09D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2327784-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2327784-10B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2327784-11A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2327784-11B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)
L2327784-11C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)
L2327784-11D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2327784-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2327784-12B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2327784-13A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2327784-13B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)
L2327784-13C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)
L2327784-13D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2327784-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2327784-14B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2327784-15A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2327784-15B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)
L2327784-15C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)
L2327784-15D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2327784-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2327784-16B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2327784-17A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2327784-17B	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)
L2327784-17C	Vial water preserved	A	NA		2.5	Y	Absent	19-MAY-23 08:28	PA-8260H(14),PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

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Lab Number: L2327784
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2327784-17D	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		TS(7)
L2327784-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2327784-18B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2327784
Report Date: 05/26/23

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.

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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

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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.)

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Project Name: PHILADELPHIA REFINERY

Lab Number: L2327784

Project Number: 200.00135.023

Report Date: 05/26/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

WESTBORO, 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 #: *200.00135.023*
Project Manager: *William Schmidt*
ALPHA Quote #: *18559*

Report Information - Data Deliverables

Date Rec'd in Lab: *5/19/23*

FAX EMAIL
 ADEX Add'l Deliverables

ALPHA Job #: *L2327784*

Billing Information

Same as Client info PO #:

Client Information

Client: *Ransom Consulting*
Address: *2127 Hamilton Avenue
Hamilton, NJ 08619*
Phone: *215-901-4974*
Fax:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
Date Due: Time:

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Email: *william.schmidt@ransomenv.com*

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

*Report only project specific analyte list of PA-DEP loaded/unloaded gasoline mil No. 3
4, 5 to dial with shortlet. Run naphthalene using method 8270 ONLY!
Email results to *edd@terryphase.com*, *william.schmidt@ransomenv.com*, and
*jjerry@hico-global.com**

ANALYSIS	SAMPLE HANDLING										TOTAL # BOTTLES	
	Filtration _____ <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)											
<i>VOCs (8260)</i>												
<i>SVOs (8270)</i>												
<i>Lead</i>												

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										Sample Specific Comments	TOTAL # BOTTLES	
		Date	Time			VOCs (8260)	SVOs (8270)	Lead										
<i>27784-01</i>	<i>LS-A-H07-C1-VOC</i>	<i>05/18/23</i>	<i>9:10</i>	<i>S</i>	<i>ND</i>	<i>X</i>												
<i>02</i>	<i>LS-A-H07-C1-comp</i>		<i>9:10</i>				<i>X</i>	<i>X</i>										<i>2</i>
<i>03</i>	<i>LS-A-H04-C1-VOC</i>		<i>10:15</i>			<i>X</i>												<i>4</i>
<i>04</i>	<i>LS-A-H04-C1-comp</i>		<i>10:15</i>				<i>X</i>	<i>X</i>										<i>2</i>
<i>05</i>	<i>LS-A-H04-C2-VOC</i>		<i>10:30</i>			<i>X</i>												<i>4</i>
<i>06</i>	<i>LS-A-H04-C2-comp</i>		<i>10:30</i>				<i>X</i>	<i>X</i>										<i>2</i>
<i>07</i>	<i>LS-A-H04-C3-VOC</i>		<i>10:45</i>			<i>X</i>												<i>4</i>
<i>08</i>	<i>LS-A-H04-C3-comp</i>		<i>10:45</i>				<i>X</i>	<i>X</i>										<i>2</i>
<i>09</i>	<i>LS-A-H02-C1-VOC</i>		<i>11:40</i>			<i>X</i>												<i>4</i>
<i>10</i>	<i>LS-A-H02-C1-comp</i>	<i>✓</i>	<i>11:40</i>	<i>✓</i>	<i>✓</i>		<i>X</i>	<i>X</i>										<i>2</i>

Rel. *SD* *5/19/23 0240*
5/18/23 0240

Container Type: *G G G*
Preservative: *F Y Y*

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Nicholas Dwyer</i>	<i>05/18/23 13:32</i>	<i>Paul Mascella</i>	<i>5/18/23 13:34</i>
<i>AAL</i>	<i>5/18/23 17:10</i>	<i>AAL</i>	<i>5/18/23 17:10</i>
<i>AAL</i>	<i>5/18/23</i>	<i>Paul Mascella</i>	<i>5/18/23 20:15</i>

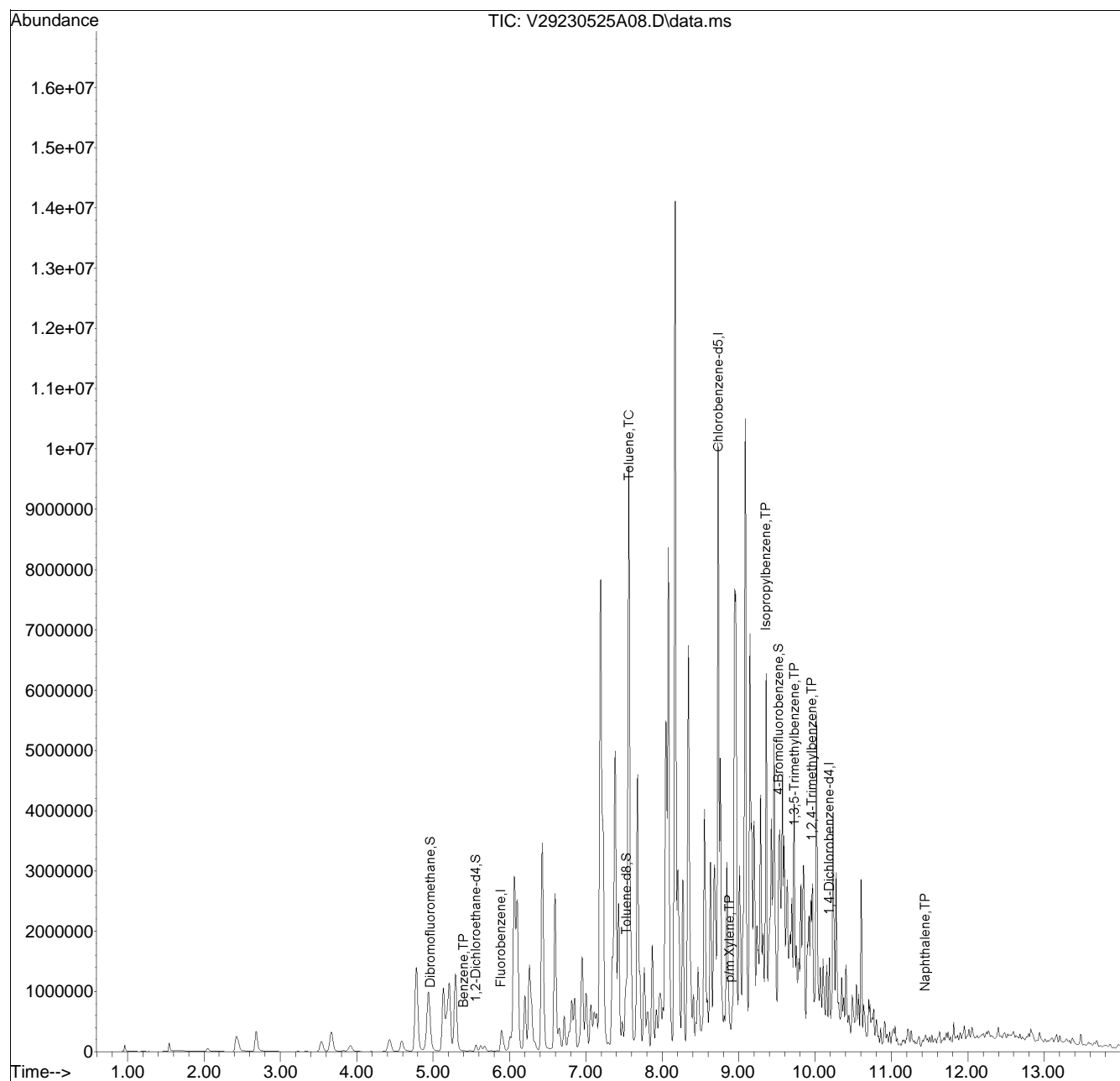
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230525A\
Data File : V29230525A08.D
Acq On : 25 May 2023 10:30 am
Operator : VOA129:MKS
Sample : L2327784-01,31H,6.46,5,0.100,,A
Misc : WG1783477,ICAL19799
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 25 12:46:17 2023
Quant Method : I:\VOLATILES\VOA129\2023\230525A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list25A\V29230525A02.D•

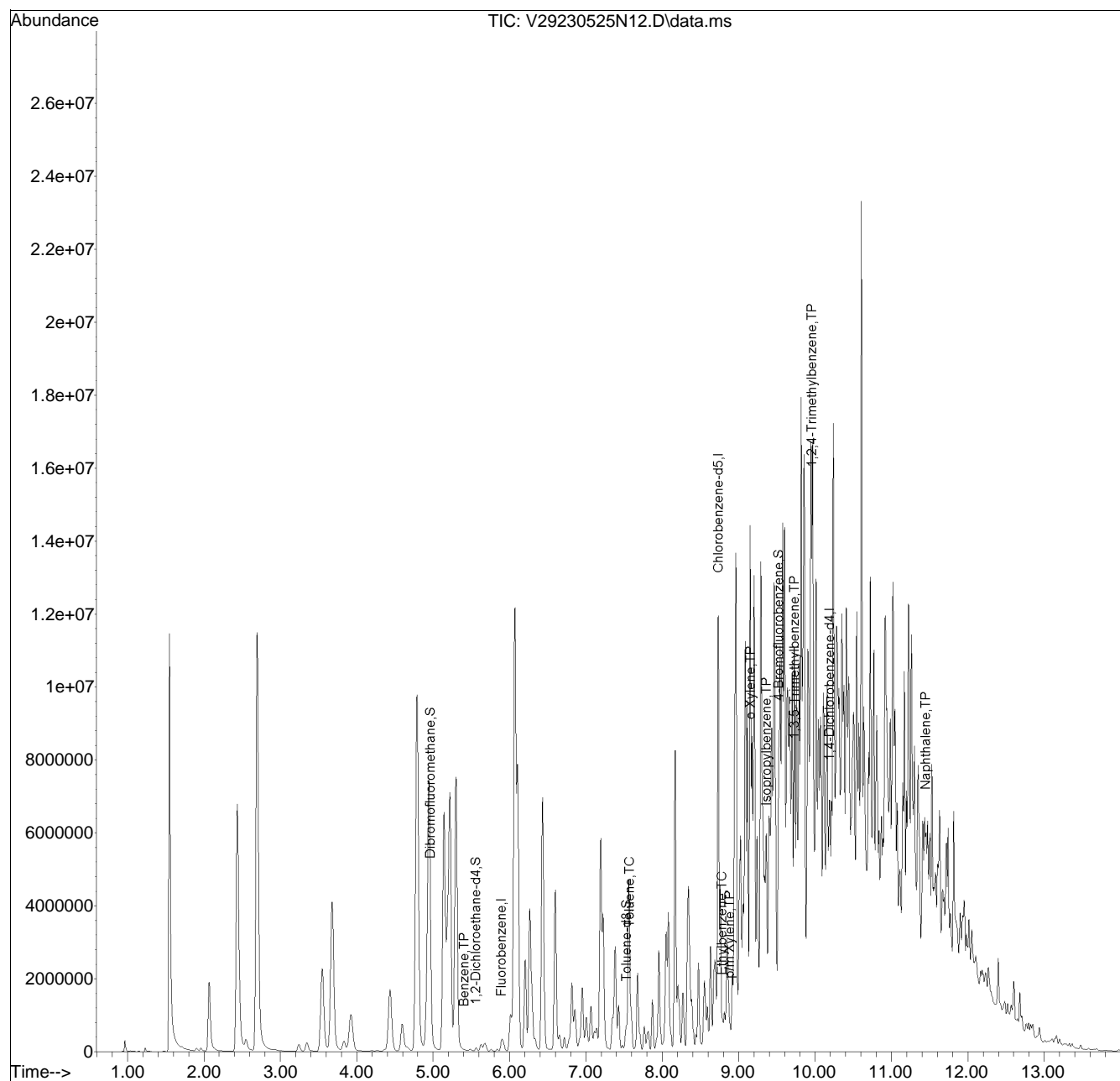


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230525N\
Data File : V29230525N12.D
Acq On : 25 May 2023 09:59 pm
Operator : VOA129:LAC
Sample : L2327784-05,31,6.64,5,,B
Misc : WG1783910,ICAL19799
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 26 12:05:29 2023
Quant Method : I:\VOLATILES\VOA129\2023\230525N\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list25N\V29230525N02.D•

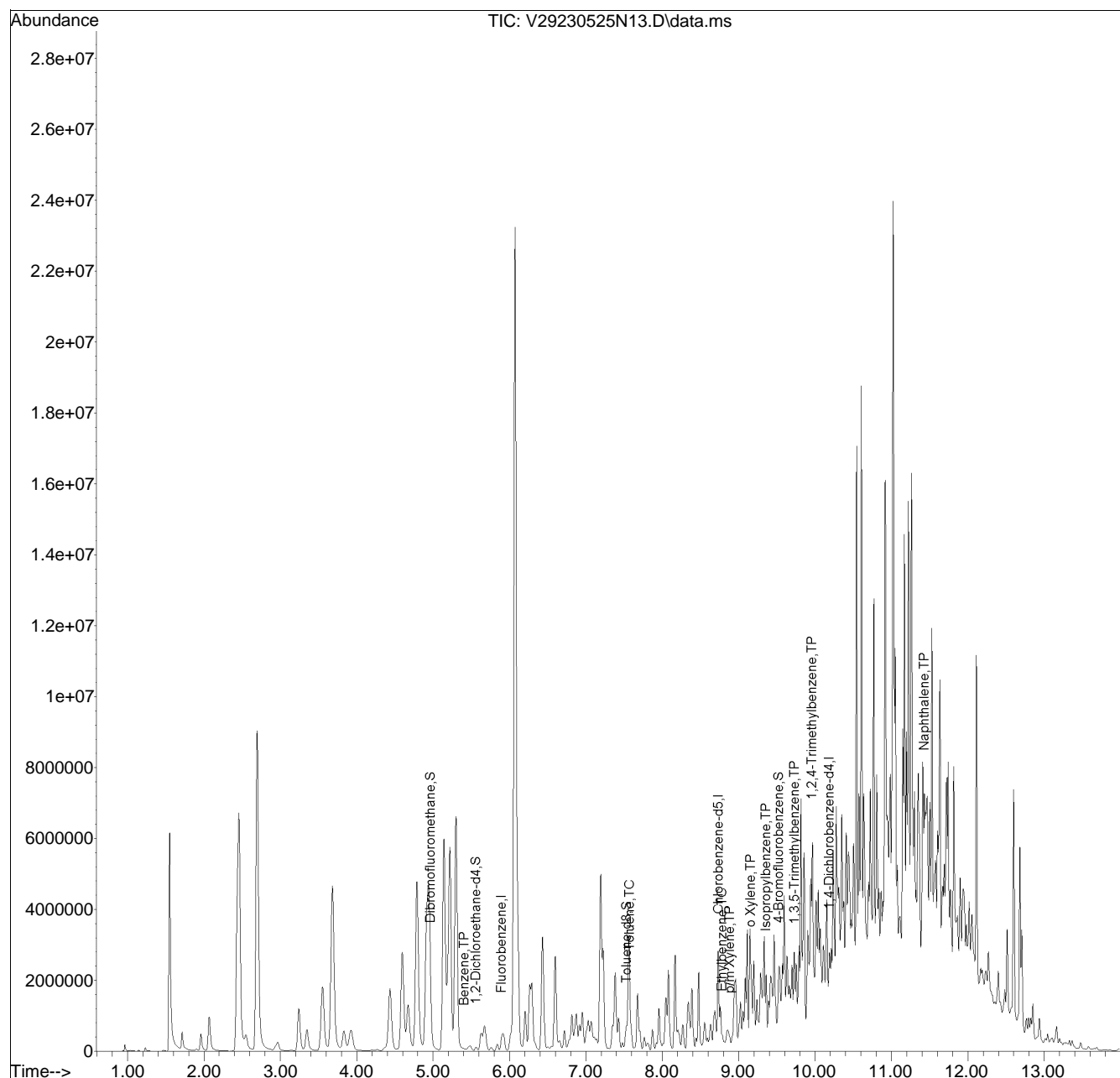


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230525N\
 Data File : V29230525N13.D
 Acq On : 25 May 2023 10:19 pm
 Operator : VOA129:LAC
 Sample : L2327784-07,31,6.97,5,,B
 Misc : WG1783910,ICAL19799
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 26 09:13:57 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230525N\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list25N\V29230525N02.D•

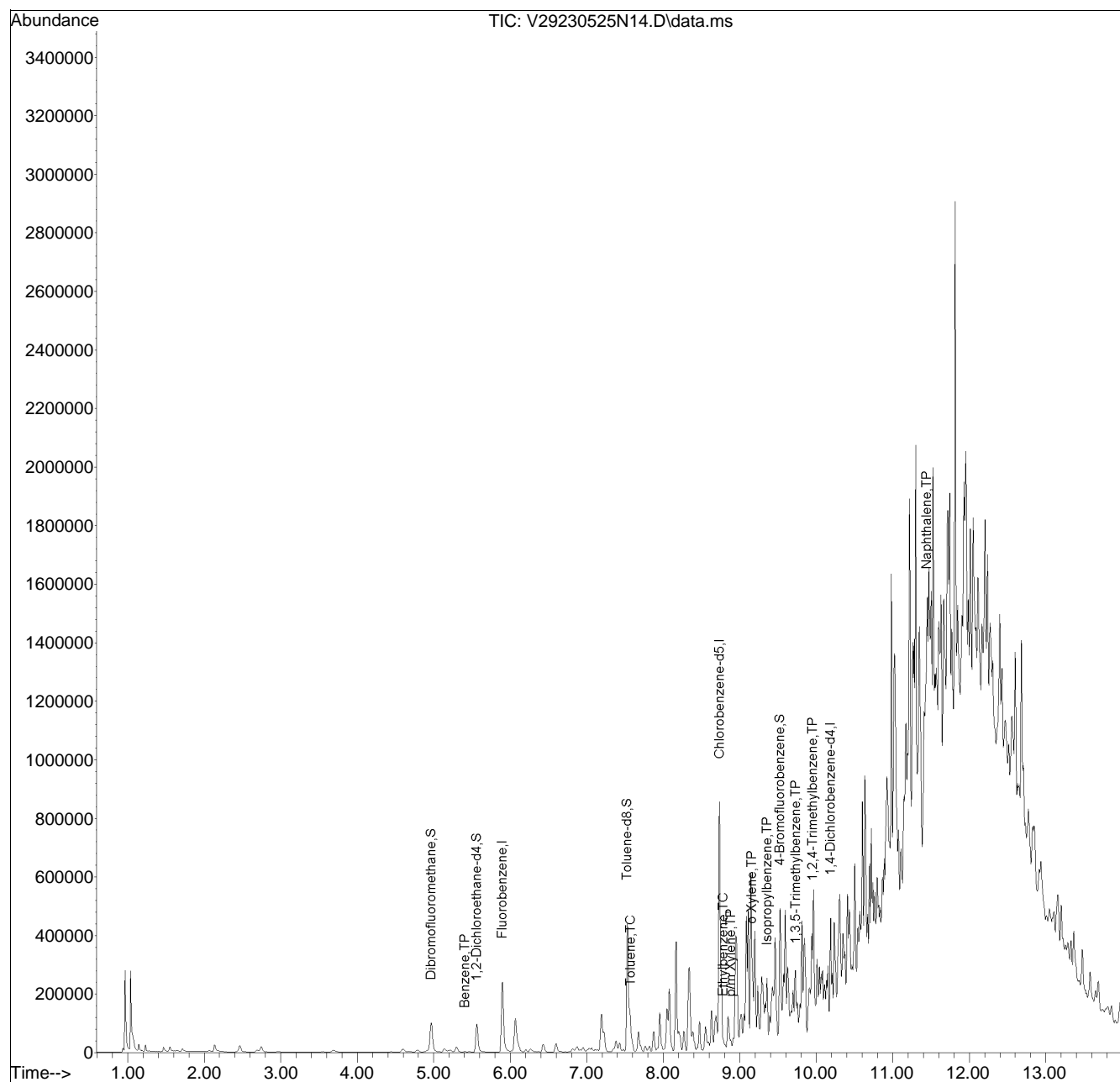


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230525N\
 Data File : V29230525N14.D
 Acq On : 25 May 2023 10:40 pm
 Operator : VOA129:LAC
 Sample : L2327784-11,31,4.71,5,,B
 Misc : WG1783910,ICAL19799
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: May 26 09:14:22 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230525N\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list25N\V29230525N02.D•

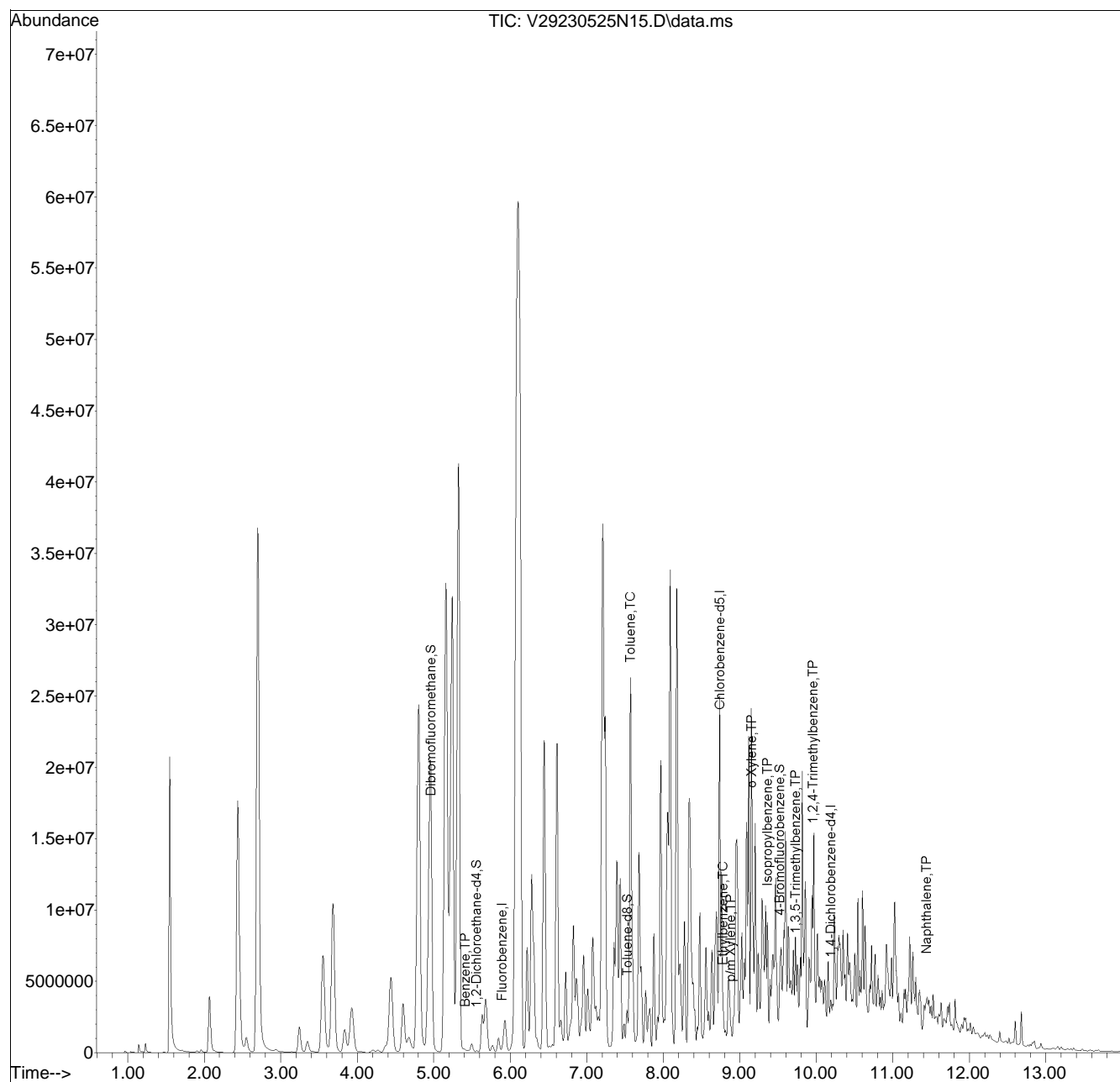


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230525N\
 Data File : V29230525N15.D
 Acq On : 25 May 2023 11:01 pm
 Operator : VOA129:LAC
 Sample : L2327784-13,31,6.48,5,,B
 Misc : WG1783910,ICAL19799
 ALS Vial : 15 Sample Multiplier: 1

Quant Time: May 26 12:14:39 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230525N\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list25N\V29230525N02.D•

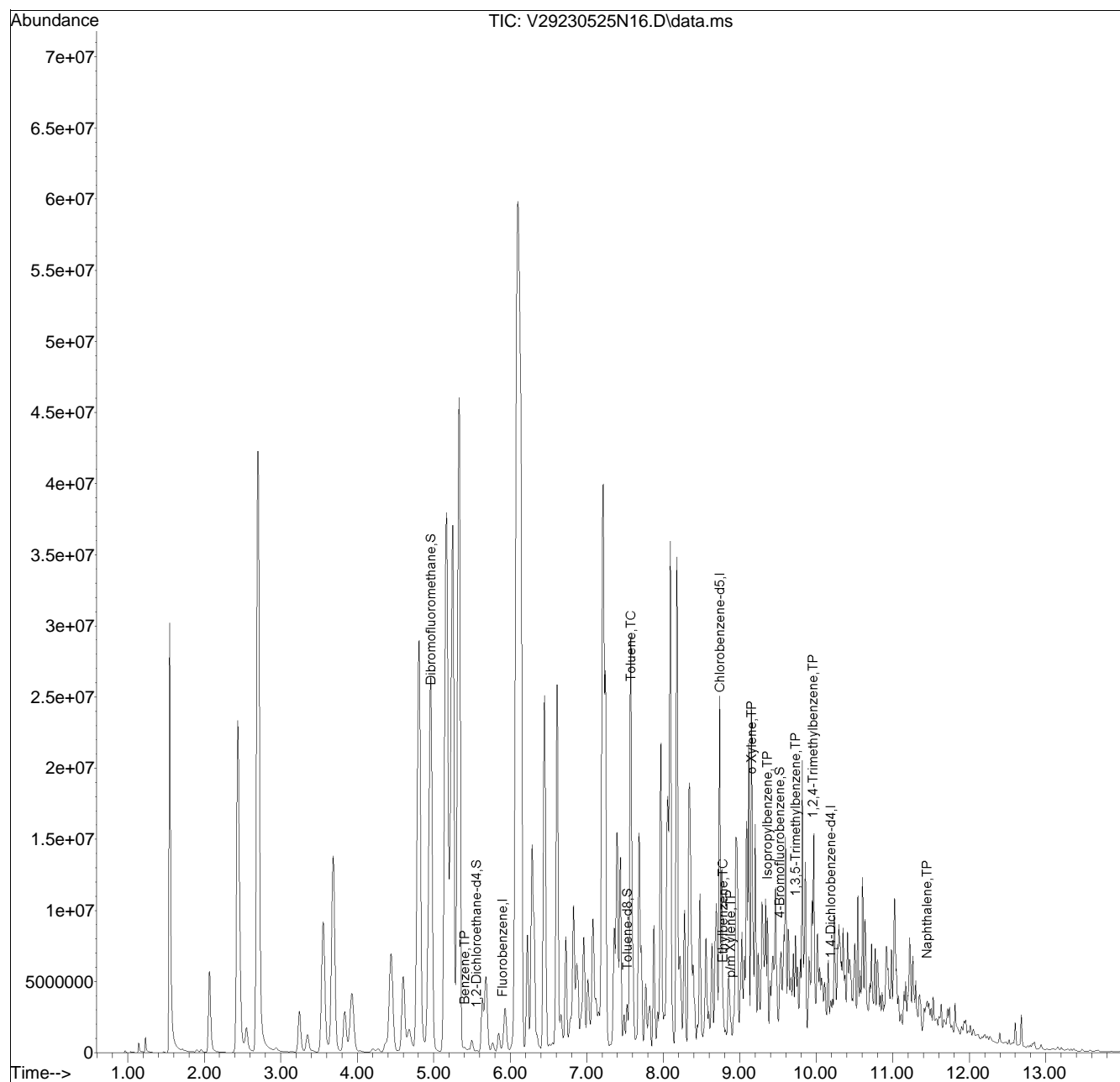


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230525N\
 Data File : V29230525N16.D
 Acq On : 25 May 2023 11:22 pm
 Operator : VOA129:LAC
 Sample : L2327784-15,31,6.79,5,,B
 Misc : WG1783910,ICAL19799
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: May 26 12:11:32 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230525N\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list25N\V29230525N02.D•

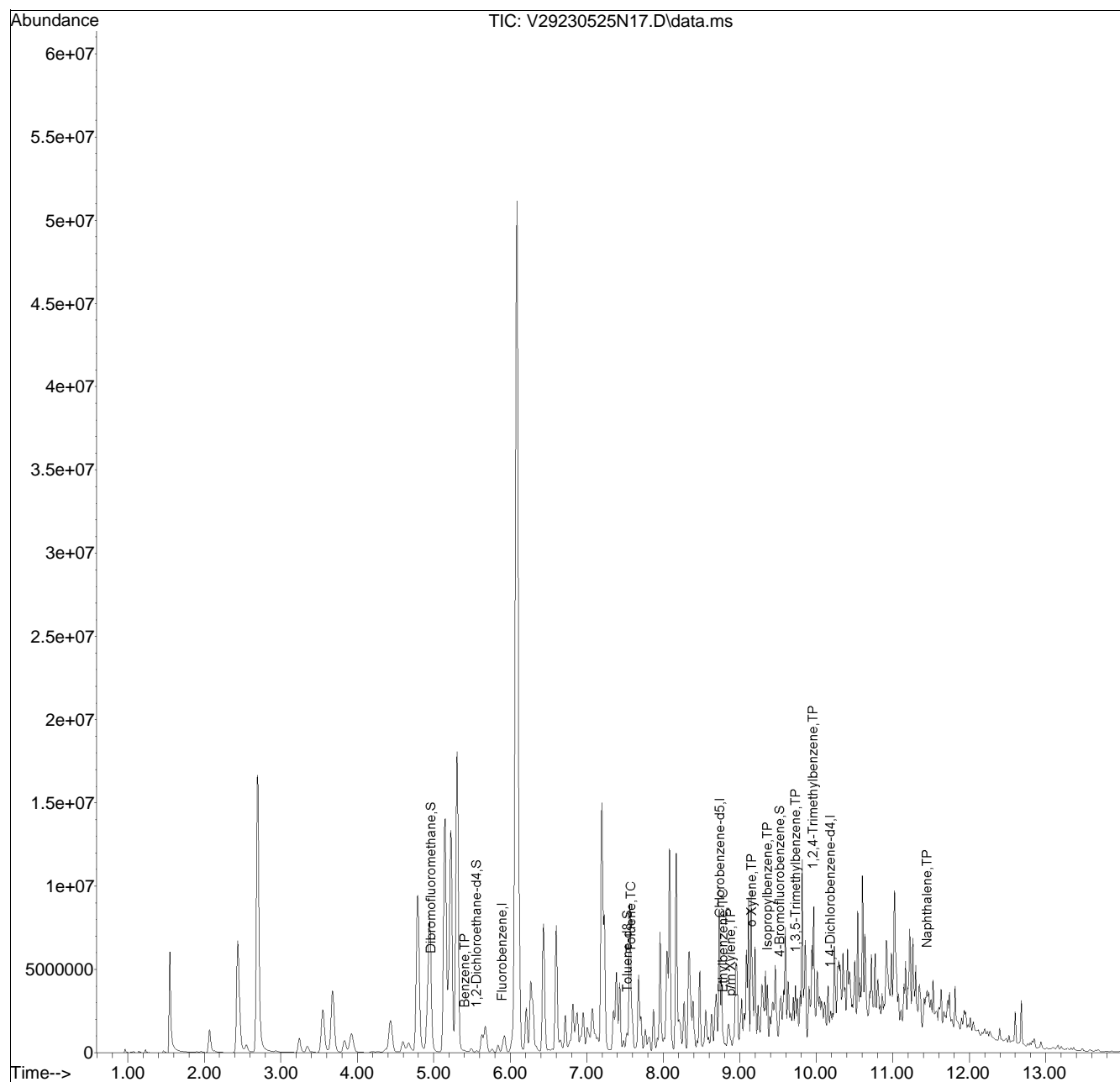


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230525N\
 Data File : V29230525N17.D
 Acq On : 25 May 2023 11:43 pm
 Operator : VOA129:LAC
 Sample : L2327784-17,31,6.40,5,,B
 Misc : WG1783910,ICAL19799
 ALS Vial : 17 Sample Multiplier: 1

Quant Time: May 26 12:16:27 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230525N\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list25N\V29230525N02.D•





ANALYTICAL REPORT

Lab Number:	L2328559
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/30/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2328559

Report Date: 05/30/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2328559-01	LS-A-G06-C1-VOC	SOIL	PHILADELPHIA, PA	05/22/23 09:45	05/22/23
L2328559-02	LS-A-G06-C1-COMP	SOIL	PHILADELPHIA, PA	05/22/23 09:45	05/22/23
L2328559-03	LS-A-G06-C2-VOC	SOIL	PHILADELPHIA, PA	05/22/23 10:10	05/22/23
L2328559-04	LS-A-G06-C2-COMP	SOIL	PHILADELPHIA, PA	05/22/23 10:10	05/22/23
L2328559-05	LS-B-G02-C1-VOC	SOIL	PHILADELPHIA, PA	05/22/23 11:15	05/22/23
L2328559-06	LS-B-G02-C1-COMP	SOIL	PHILADELPHIA, PA	05/22/23 11:15	05/22/23
L2328559-07	LS-B-G02-C2-VOC	SOIL	PHILADELPHIA, PA	05/22/23 11:30	05/22/23
L2328559-08	LS-B-G02-C2-COMP	SOIL	PHILADELPHIA, PA	05/22/23 11:30	05/22/23
L2328559-09	LS-B-G02-C3-VOC	SOIL	PHILADELPHIA, PA	05/22/23 11:45	05/22/23
L2328559-10	LS-B-G02-C3-COMP	SOIL	PHILADELPHIA, PA	05/22/23 11:45	05/22/23
L2328559-11	LS-B-G02-C4-VOC	SOIL	PHILADELPHIA, PA	05/22/23 12:00	05/22/23
L2328559-12	LS-B-G02-C4-COMP	SOIL	PHILADELPHIA, PA	05/22/23 12:00	05/22/23
L2328559-13	LS-A-G01-C1-VOC	SOIL	PHILADELPHIA, PA	05/22/23 12:40	05/22/23
L2328559-14	LS-A-G01-C1-COMP	SOIL	PHILADELPHIA, PA	05/22/23 12:40	05/22/23
L2328559-15	LS-A-G01-C2-VOC	SOIL	PHILADELPHIA, PA	05/22/23 12:55	05/22/23
L2328559-16	LS-A-G01-C2-COMP	SOIL	PHILADELPHIA, PA	05/22/23 12:55	05/22/23
L2328559-17	LS-A-G01-C3-VOC	SOIL	PHILADELPHIA, PA	05/22/23 13:10	05/22/23
L2328559-18	LS-A-G01-C3-COMP	SOIL	PHILADELPHIA, PA	05/22/23 13:10	05/22/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

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
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

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

L2328559-01: 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.

L2328559-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (227%); 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.

L2328559-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (150%); 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.

L2328559-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (136%); 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.

PAHs

L2328559-04D, -06D, -08D, and -10D: The sample has elevated detection limits due to the dilution required by the sample matrix.

Total Metals

The WG1783473-3 MS recovery for lead (316%), performed on L2328559-02, 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:

Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative

Date: 05/30/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-01
 Client ID: LS-A-G06-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 09:45
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/29/23 16:22
 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	0.14	0.014	1
Benzene	0.054		mg/kg	0.035	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.070	0.018	1
Toluene	0.038	J	mg/kg	0.070	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.035	0.020	1
Ethylbenzene	0.011	J	mg/kg	0.070	0.0098	1
p/m-Xylene	ND		mg/kg	0.14	0.039	1
o-Xylene	ND		mg/kg	0.070	0.020	1
Xylenes, Total	ND		mg/kg	0.070	0.020	1
Isopropylbenzene	0.056	J	mg/kg	0.070	0.0076	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	227	Q	70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-03
 Client ID: LS-A-G06-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 10:10
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/29/23 16:49
 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	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	0.00054	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	0.00066	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	109		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	150	Q	70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-05
 Client ID: LS-B-G02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 11:15
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/29/23 17:16
 Analyst: AJK
 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	0.0037	0.00037	1
Benzene	ND		mg/kg	0.00093	0.00031	1
1,2-Dichloroethane	ND		mg/kg	0.0019	0.00048	1
Toluene	ND		mg/kg	0.0019	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00093	0.00054	1
Ethylbenzene	ND		mg/kg	0.0019	0.00026	1
p/m-Xylene	ND		mg/kg	0.0037	0.0010	1
o-Xylene	ND		mg/kg	0.0019	0.00054	1
Xylenes, Total	ND		mg/kg	0.0019	0.00054	1
Isopropylbenzene	ND		mg/kg	0.0019	0.00020	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0037	0.00036	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0037	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	121		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-07
 Client ID: LS-B-G02-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 11:30
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/29/23 17:44
 Analyst: AJK
 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	0.0021	0.00021	1
Benzene	0.0025		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	0.0097		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	0.0013		mg/kg	0.0010	0.00015	1
p/m-Xylene	0.010		mg/kg	0.0021	0.00058	1
o-Xylene	0.0040		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.014		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00037	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.00088	J	mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.0011	J	mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	115		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-09
 Client ID: LS-B-G02-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 11:45
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/29/23 18:11
 Analyst: AJK
 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	0.0042	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	0.00062	1
Xylenes, Total	ND		mg/kg	0.0021	0.00062	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	0.00071	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	119		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-11
 Client ID: LS-B-G02-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 12:00
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/29/23 18:39
 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	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00083	0.00021	1
Toluene	ND		mg/kg	0.00083	0.00045	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00024	1
Ethylbenzene	ND		mg/kg	0.00083	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00083	0.00024	1
Xylenes, Total	ND		mg/kg	0.00083	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00083	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	119		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-13
 Client ID: LS-A-G01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 12:40
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/29/23 19:06
 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	0.0017	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00049	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	123		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-15
 Client ID: LS-A-G01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 12:55
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/29/23 19:33
 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	0.0017	0.00017	1
Benzene	0.00043		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	ND		mg/kg	0.00086	0.00047	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	121		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	136	Q	70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-17
 Client ID: LS-A-G01-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 13:10
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/29/23 20:00
 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	0.0025	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	116		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/29/23 11:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1784899-5					
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	90		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/29/23 11:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,05,07,09,11,13,15,17 Batch: WG1784900-5					
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	113		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	112		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

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: WG1784899-3 WG1784899-4								
Methyl tert butyl ether	133	Q	139	Q	66-130	4		30
Benzene	110		110		70-130	0		30
1,2-Dichloroethane	116		117		70-130	1		30
Toluene	96		95		70-130	1		30
1,2-Dibromoethane	111		110		70-130	1		30
Ethylbenzene	100		101		70-130	1		30
p/m-Xylene	103		104		70-130	1		30
o-Xylene	103		105		70-130	2		30
Isopropylbenzene	90		90		70-130	0		30
1,3,5-Trimethylbenzene	93		94		70-130	1		30
1,2,4-Trimethylbenzene	92		93		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		105		70-130
Toluene-d8	91		92		70-130
4-Bromofluorobenzene	86		83		70-130
Dibromofluoromethane	109		107		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,05,07,09,11,13,15,17 Batch: WG1784900-3 WG1784900-4								
Methyl tert butyl ether	133	Q	139	Q	66-130	4		30
Benzene	110		110		70-130	0		30
1,2-Dichloroethane	116		117		70-130	1		30
Toluene	96		95		70-130	1		30
1,2-Dibromoethane	111		110		70-130	1		30
Ethylbenzene	100		101		70-130	1		30
p/m-Xylene	103		104		70-130	1		30
o-Xylene	103		105		70-130	2		30
Isopropylbenzene	90		90		70-130	0		30
1,3,5-Trimethylbenzene	93		94		70-130	1		30
1,2,4-Trimethylbenzene	92		93		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	104		105		70-130
Toluene-d8	91		92		70-130
4-Bromofluorobenzene	86		83		70-130
Dibromofluoromethane	109		107		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-02
 Client ID: LS-A-G06-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 09:45
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/27/23 23:05
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.42		mg/kg	0.040	0.024	1
Fluorene	0.45		mg/kg	0.20	0.019	1
Phenanthrene	4.7		mg/kg	0.12	0.024	1
Anthracene	1.5		mg/kg	0.12	0.039	1
Pyrene	5.4		mg/kg	0.12	0.020	1
Benzo(a)anthracene	5.2		mg/kg	0.12	0.022	1
Chrysene	4.5		mg/kg	0.12	0.021	1
Benzo(a)pyrene	7.2		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	5.3		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	49		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-02 D
 Client ID: LS-A-G06-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 09:45
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/28/23 22:25
 Analyst: IM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	8.0		mg/kg	0.60	0.17	5

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-04 D
 Client ID: LS-A-G06-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 10:10
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/27/23 23:29
 Analyst: CMM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.75		mg/kg	0.19	0.12	5
Fluorene	0.53	J	mg/kg	0.95	0.093	5
Phenanthrene	0.84		mg/kg	0.57	0.12	5
Anthracene	0.24	J	mg/kg	0.57	0.18	5
Pyrene	1.2		mg/kg	0.57	0.095	5
Benzo(a)anthracene	0.87		mg/kg	0.57	0.11	5
Chrysene	1.3		mg/kg	0.57	0.099	5
Benzo(b)fluoranthene	2.2		mg/kg	0.57	0.16	5
Benzo(a)pyrene	1.7		mg/kg	0.76	0.23	5
Benzo(ghi)perylene	2.6		mg/kg	0.76	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	36		23-120
2-Fluorobiphenyl	49		30-120
4-Terphenyl-d14	43		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-06 D
 Client ID: LS-B-G02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 11:15
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/27/23 23:53
 Analyst: CMM
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.43		mg/kg	0.18	0.11	5
Fluorene	0.18	J	mg/kg	0.88	0.086	5
Phenanthrene	2.9		mg/kg	0.53	0.11	5
Anthracene	1.0		mg/kg	0.53	0.17	5
Pyrene	4.6		mg/kg	0.53	0.088	5
Benzo(a)anthracene	6.8		mg/kg	0.53	0.099	5
Chrysene	6.0		mg/kg	0.53	0.092	5
Benzo(b)fluoranthene	11.		mg/kg	0.53	0.15	5
Benzo(a)pyrene	9.8		mg/kg	0.71	0.22	5
Benzo(ghi)perylene	6.5		mg/kg	0.71	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-08 D
 Client ID: LS-B-G02-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 11:30
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/28/23 00:18
 Analyst: CMM
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.40		mg/kg	0.17	0.10	5
Fluorene	0.39	J	mg/kg	0.86	0.084	5
Phenanthrene	2.8		mg/kg	0.52	0.10	5
Anthracene	0.78		mg/kg	0.52	0.17	5
Pyrene	4.3		mg/kg	0.52	0.086	5
Benzo(a)anthracene	4.2		mg/kg	0.52	0.097	5
Chrysene	3.7		mg/kg	0.52	0.090	5
Benzo(b)fluoranthene	7.1		mg/kg	0.52	0.14	5
Benzo(a)pyrene	6.1		mg/kg	0.69	0.21	5
Benzo(ghi)perylene	4.3		mg/kg	0.69	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	50		23-120
2-Fluorobiphenyl	45		30-120
4-Terphenyl-d14	45		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-10 D
 Client ID: LS-B-G02-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 11:45
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/30/23 11:42
 Analyst: IM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.2		mg/kg	0.35	0.22	10
Fluorene	0.49	J	mg/kg	1.8	0.17	10
Phenanthrene	5.0		mg/kg	1.1	0.22	10
Anthracene	1.5		mg/kg	1.1	0.35	10
Pyrene	6.8		mg/kg	1.1	0.18	10
Benzo(a)anthracene	6.8		mg/kg	1.1	0.20	10
Chrysene	6.5		mg/kg	1.1	0.18	10
Benzo(b)fluoranthene	11.		mg/kg	1.1	0.30	10
Benzo(a)pyrene	8.9		mg/kg	1.4	0.43	10
Benzo(ghi)perylene	5.4		mg/kg	1.4	0.21	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	17	Q	23-120
2-Fluorobiphenyl	38		30-120
4-Terphenyl-d14	31		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-12
 Client ID: LS-B-G02-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 12:00
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/28/23 01:05
 Analyst: SZ
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.038	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.038	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.037	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.035	J	mg/kg	0.11	0.021	1
Chrysene	0.040	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	33		23-120
2-Fluorobiphenyl	41		30-120
4-Terphenyl-d14	42		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-14
 Client ID: LS-A-G01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 12:40
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/28/23 01:29
 Analyst: SZ
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.034	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	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	58		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-16
 Client ID: LS-A-G01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 12:55
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/28/23 01:53
 Analyst: SZ
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.042		mg/kg	0.034	0.021	1
Fluorene	0.030	J	mg/kg	0.17	0.017	1
Phenanthrene	0.18		mg/kg	0.10	0.021	1
Anthracene	0.067	J	mg/kg	0.10	0.034	1
Pyrene	0.27		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.20		mg/kg	0.10	0.019	1
Chrysene	0.20		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.20		mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.18		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-18
 Client ID: LS-A-G01-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 13:10
 Date Received: 05/22/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/28/23 02:17
 Analyst: SZ
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.20		mg/kg	0.034	0.021	1
Fluorene	0.17		mg/kg	0.17	0.017	1
Phenanthrene	1.0		mg/kg	0.10	0.021	1
Anthracene	0.29		mg/kg	0.10	0.033	1
Pyrene	0.88		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.58		mg/kg	0.10	0.019	1
Chrysene	0.58		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.67		mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.54		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.38		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E
 Analytical Date: 05/27/23 16:43
 Analyst: SZ

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1783638-1					
Naphthalene	ND		mg/kg	0.033	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	76		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	60		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1783638-2 WG1783638-3								
Naphthalene	67		79		40-140	16		50
Fluorene	66		80		40-140	19		50
Phenanthrene	62		76		40-140	20		50
Anthracene	64		76		40-140	17		50
Pyrene	64		73		35-142	13		50
Benzo(a)anthracene	69		84		40-140	20		50
Chrysene	68		82		40-140	19		50
Benzo(b)fluoranthene	64		77		40-140	18		50
Benzo(a)pyrene	64		83		40-140	26		50
Benzo(ghi)perylene	68		74		40-140	8		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	93		107		23-120
2-Fluorobiphenyl	61		85		30-120
4-Terphenyl-d14	58		73		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-02

Date Collected: 05/22/23 09:45

Client ID: LS-A-G06-C1-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	281		mg/kg	2.26	0.121	1	05/26/23 17:56	05/30/23 07:35	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-04

Date Collected: 05/22/23 10:10

Client ID: LS-A-G06-C2-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	386		mg/kg	2.22	0.119	1	05/26/23 17:56	05/30/23 08:27	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-06

Date Collected: 05/22/23 11:15

Client ID: LS-B-G02-C1-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	180		mg/kg	2.03	0.109	1	05/26/23 17:56	05/30/23 08:32	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-08

Date Collected: 05/22/23 11:30

Client ID: LS-B-G02-C2-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	67.7		mg/kg	2.08	0.112	1	05/26/23 17:56	05/30/23 09:41	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-10

Date Collected: 05/22/23 11:45

Client ID: LS-B-G02-C3-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	30.6		mg/kg	2.07	0.111	1	05/26/23 17:56	05/30/23 09:46	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-12

Date Collected: 05/22/23 12:00

Client ID: LS-B-G02-C4-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	11.0		mg/kg	2.24	0.120	1	05/26/23 17:56	05/30/23 09:51	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-14

Date Collected: 05/22/23 12:40

Client ID: LS-A-G01-C1-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	3.81		mg/kg	2.04	0.109	1	05/26/23 17:56	05/30/23 09:56	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-16

Date Collected: 05/22/23 12:55

Client ID: LS-A-G01-C2-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	64.0		mg/kg	2.04	0.109	1	05/26/23 17:56	05/30/23 10:01	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-18

Date Collected: 05/22/23 13:10

Client ID: LS-A-G01-C3-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	116		mg/kg	1.96	0.105	1	05/26/23 17:56	05/30/23 10:06	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

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): 02,04,06,08,10,12,14,16,18 Batch: WG1783473-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/26/23 17:56	05/30/23 07:12	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1783473-2 SRM Lot Number: D119-540								
Lead, Total	100		-		82-118			-



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

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): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1783473-3 QC Sample: L2328559-02 Client ID: LS-A-G06-C1-COMP												
Lead, Total	281	48.1	433	316	Q	-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2328559

Report Date: 05/30/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1783473-4 QC Sample: L2328559-02 Client ID: LS-A-G06-C1-COMP						
Lead, Total	281	292	mg/kg	4		20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328559**Project Number:** 200.00135.023**Report Date:** 05/30/23**SAMPLE RESULTS**

Lab ID: L2328559-01

Date Collected: 05/22/23 09:45

Client ID: LS-A-G06-C1-VOC

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	82.9		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328559**Project Number:** 200.00135.023**Report Date:** 05/30/23**SAMPLE RESULTS**

Lab ID: L2328559-02

Date Collected: 05/22/23 09:45

Client ID: LS-A-G06-C1-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-03
Client ID: LS-A-G06-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 10:10
Date Received: 05/22/23
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	86.6		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328559**Project Number:** 200.00135.023**Report Date:** 05/30/23**SAMPLE RESULTS**

Lab ID: L2328559-04

Date Collected: 05/22/23 10:10

Client ID: LS-A-G06-C2-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	86.1		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-05
Client ID: LS-B-G02-C1-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 11:15
Date Received: 05/22/23
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	93.9		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-06

Date Collected: 05/22/23 11:15

Client ID: LS-B-G02-C1-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	93.0		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-07

Date Collected: 05/22/23 11:30

Client ID: LS-B-G02-C2-VOC

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	93.9		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328559**Project Number:** 200.00135.023**Report Date:** 05/30/23**SAMPLE RESULTS**

Lab ID: L2328559-08

Date Collected: 05/22/23 11:30

Client ID: LS-B-G02-C2-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	94.1		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-09

Date Collected: 05/22/23 11:45

Client ID: LS-B-G02-C3-VOC

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	91.2		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-10
Client ID: LS-B-G02-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 11:45
Date Received: 05/22/23
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	91.2		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-11

Date Collected: 05/22/23 12:00

Client ID: LS-B-G02-C4-VOC

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	87.7		%	0.100	NA	1	-	05/23/23 09:28	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-12

Date Collected: 05/22/23 12:00

Client ID: LS-B-G02-C4-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	87.2		%	0.100	NA	1	-	05/23/23 10:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-13

Date Collected: 05/22/23 12:40

Client ID: LS-A-G01-C1-VOC

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	-	05/23/23 10:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328559**Project Number:** 200.00135.023**Report Date:** 05/30/23**SAMPLE RESULTS**

Lab ID: L2328559-14

Date Collected: 05/22/23 12:40

Client ID: LS-A-G01-C1-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	96.2		%	0.100	NA	1	-	05/23/23 10:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-15
Client ID: LS-A-G01-C2-VOC
Sample Location: PHILADELPHIA, PA

Date Collected: 05/22/23 12:55
Date Received: 05/22/23
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	96.0		%	0.100	NA	1	-	05/23/23 10:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328559**Project Number:** 200.00135.023**Report Date:** 05/30/23**SAMPLE RESULTS**

Lab ID: L2328559-16

Date Collected: 05/22/23 12:55

Client ID: LS-A-G01-C2-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	95.4		%	0.100	NA	1	-	05/23/23 10:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328559**Project Number:** 200.00135.023**Report Date:** 05/30/23**SAMPLE RESULTS**

Lab ID: L2328559-17

Date Collected: 05/22/23 13:10

Client ID: LS-A-G01-C3-VOC

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	-	05/23/23 10:01	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

SAMPLE RESULTS

Lab ID: L2328559-18

Date Collected: 05/22/23 13:10

Client ID: LS-A-G01-C3-COMP

Date Received: 05/22/23

Sample Location: PHILADELPHIA, PA

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	96.1		%	0.100	NA	1	-	05/23/23 10:01	121,2540G	ROI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2328559

Report Date: 05/30/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-11 QC Batch ID: WG1782151-1 QC Sample: L2328531-02 Client ID: DUP Sample						
Solids, Total	93.0	91.8	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 12-18 QC Batch ID: WG1782156-1 QC Sample: L2328478-03 Client ID: DUP Sample						
Solids, Total	45.4	47.2	%	4		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328559**Project Number:** 200.00135.023**Report Date:** 05/30/23**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(*)
L2328559-01A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2328559-01B	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-01C	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-01D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2328559-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2328559-02B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2328559-03A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2328559-03B	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-03C	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-03D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2328559-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2328559-04B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2328559-05A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2328559-05B	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-05C	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-05D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2328559-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2328559-06B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2328559-07A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2328559-07B	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-07C	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-07D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2328559-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328559**Project Number:** 200.00135.023**Report Date:** 05/30/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2328559-08B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2328559-09A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2328559-09B	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-09C	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-09D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2328559-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2328559-10B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2328559-11A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2328559-11B	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-11C	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-11D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2328559-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2328559-12B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2328559-13A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2328559-13B	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-13C	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-13D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2328559-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2328559-14B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2328559-15A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2328559-15B	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-15C	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-15D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2328559-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2328559-16B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2328559-17A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2328559-17B	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)
L2328559-17C	Vial water preserved	A	NA		3.6	Y	Absent	23-MAY-23 05:59	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2328559-17D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2328559-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2328559-18B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

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
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

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
Project Number: 200.00135.023

Lab Number: L2328559
Report Date: 05/30/23

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.)

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328559

Project Number: 200.00135.023

Report Date: 05/30/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

Date Rec'd in Lab: 05/23/23

ALPHA Job #: L0328559

WESTBORO, 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 #: 200-00135.023
Project Manager: William Schmidt
ALPHA Quote #: 18559

Report Information - Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #:

Client Information

Client: Ransom Consulting LLC
Address: 2129 Hamilton Avenue
Hamilton, NJ 08619
Phone: 215-901-4974
Fax:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)

Date Due: _____ Time: _____

Regulatory Requirements/Report Limits

State/Fed Program _____ Criteria _____

Email: william.schmidt@ransomenv.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only project specific analysis list of PAHED leached/unleached gasoline and No. 3, 4, 5, 6 fuel oil shortlist. Run naphthalene using method 8270 ONLY!
Email results to add@terraphase.com, william.schmidt@ransomenv.com, and jjeremy@hicksglobal.com.

ANALYSIS	VOCs (8260)	SVOCs (8270)	Lead	TOTAL # BOTTLES
	SAMPLE HANDLING			
Filtration _____				
<input type="checkbox"/> Done				
<input checked="" type="checkbox"/> Not needed				
<input type="checkbox"/> Lab to do				
Preservation				
<input type="checkbox"/> Lab to do				
(Please specify below)				
Sample Specific Comments				

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	Analysis										Sample Specific Comments	TOTAL # BOTTLES				
		Date	Time																		
08559-01	LS-A-G00-C1-VOC	05/22/23	9:45	S	ND	X															4
-02	LS-A-G00-C1-comp		9:45				X	X													2
-03	LS-A-G00-C2-VOC		10:10			X															4
-04	LS-A-G00-C2-comp		10:10				X	X													2
-05	LS-B-G02-C1-VOC		11:15			X															4
-06	LS-B-G02-C1-comp		11:15				X	X													2
-07	LS-B-G02-C2-VOC		11:30			X															4
-08	LS-B-G02-C2-comp		11:30				X	X													2
-09	LS-B-G02-C3-VOC		11:45			X															4
-10	LS-B-G02-C3-comp	✓	11:45	✓	✓		X	X													2

SR 5/23/23 0315
5/23/23 0315

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 Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time
<u>[Signature]</u>	<u>05/22/23 15:30</u>	<u>[Signature]</u>	<u>5/22/23 15:30</u>
<u>[Signature]</u>	<u>5/22/23 1806</u>	<u>[Signature]</u>	<u>5/22/23 1800</u>
<u>[Signature]</u>	<u>5/23/23 2100</u>	<u>[Signature]</u>	<u>5/22 2100</u>



CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 05/23/23

ALPHA Job #: L2328559

Project Information

Project Name: Philadelphia Refinery
 Project Location: Philadelphia, PA
 Project #: 200.00135.023
 Project Manager: William Schmidt
 ALPHA Quote #: 18559

Report Information - Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #:

Client Information

Client: Ransom Consulting LLC
 Address: 2129 Hamilton Avenue
 Hamilton, NJ 08619
 Phone: 215-901-4974
 Fax:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)

Date Due: Time:

Regulatory Requirements/Report Limits

State /Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:
 Report only project specific analyte list of PADEP loaded/unloaded gasoline and No. 2, 4, 5, & 6 fuels similar. Run naphthalene using method 8270 ONLY!
 Email results to aidi@terraphase.com, william.schmidt@ransomenv.com, and jjeray@hicoaglobal.com.

ANALYSIS

VOLs (8260)
SVOLs (8270)
Lead

SAMPLE HANDLING

Filtration _____

Done

Not needed

Lab to do Preservation

Lab to do

(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS			Sample Specific Comments	TOTAL # BOTTLES
		Date	Time			VOLs (8260)	SVOLs (8270)	Lead		
18559-11	LS-B-G02-C4-VOL	05/22/23	12:00	S	ND	X				4
-12	LS-B-G02-C4-comp		12:00				X	X		2
-13	LS-A-G01-C1-VOL		12:40			X				4
-14	LS-A-G01-C1-comp		12:40				X	X		2
-15	LS-A-G01-C2-VOL		12:55			X				4
-16	LS-A-G01-C2-comp		12:55				X	X		2
-17	LS-A-G01-C3-VOL		13:10			X				4
-18	LS-A-G01-C3-comp		13:10				X	X		2

32 5/23/23 0315
 5/23/23 0315

Container Type	G	G	G
Preservative	F	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	05/22/23 15:30	<i>[Signature]</i>	5/22/23 15:30
<i>[Signature]</i>	5/22/23 18:00	<i>[Signature]</i>	5/22/23 18:00
<i>[Signature]</i>	5/22/23 21:00	<i>[Signature]</i>	5/22 21:00

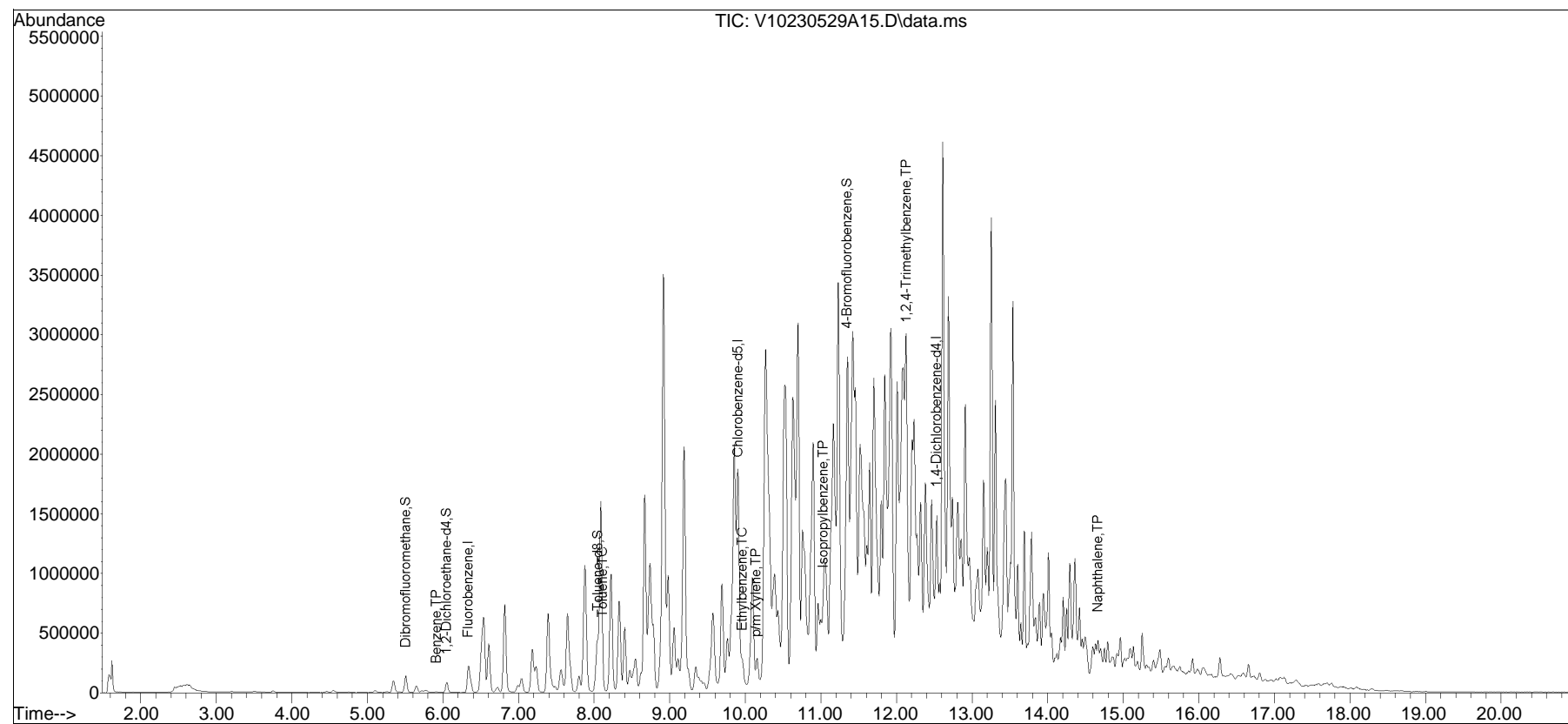
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230529A\
Data File : V10230529A15.D
Acq On : 29 May 2023 4:22 pm
Operator : VOA110:AJK
Sample : L2328559-01,31H,5.08,5,0.100,,A
Misc : WG1784899,ICAL19973
ALS Vial : 15 Sample Multiplier: 1

Quant Time: May 30 08:55:42 2023
Quant Method : I:\VOLATILES\VOA110\2023\230529A\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list29A\V10230529A01.D•

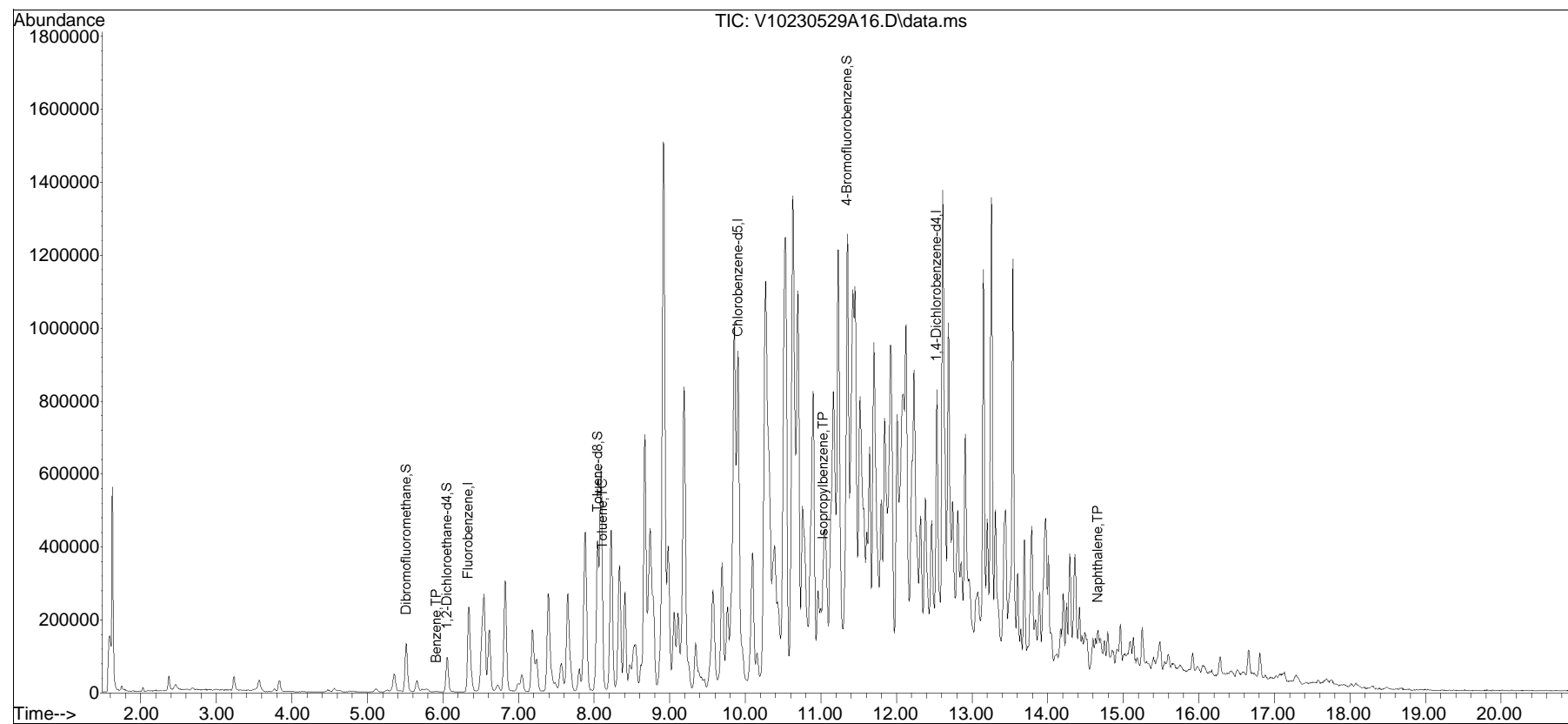


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230529A\
Data File : V10230529A16.D
Acq On : 29 May 2023 4:49 pm
Operator : VOA110:AJK
Sample : 12328559-03,31,5.77,5,,c
Misc : WG1784900,ICAL19973
ALS Vial : 16 Sample Multiplier: 1

Quant Time: May 30 08:56:09 2023
Quant Method : I:\VOLATILES\VOA110\2023\230529A\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list29A\V10230529A01.D•

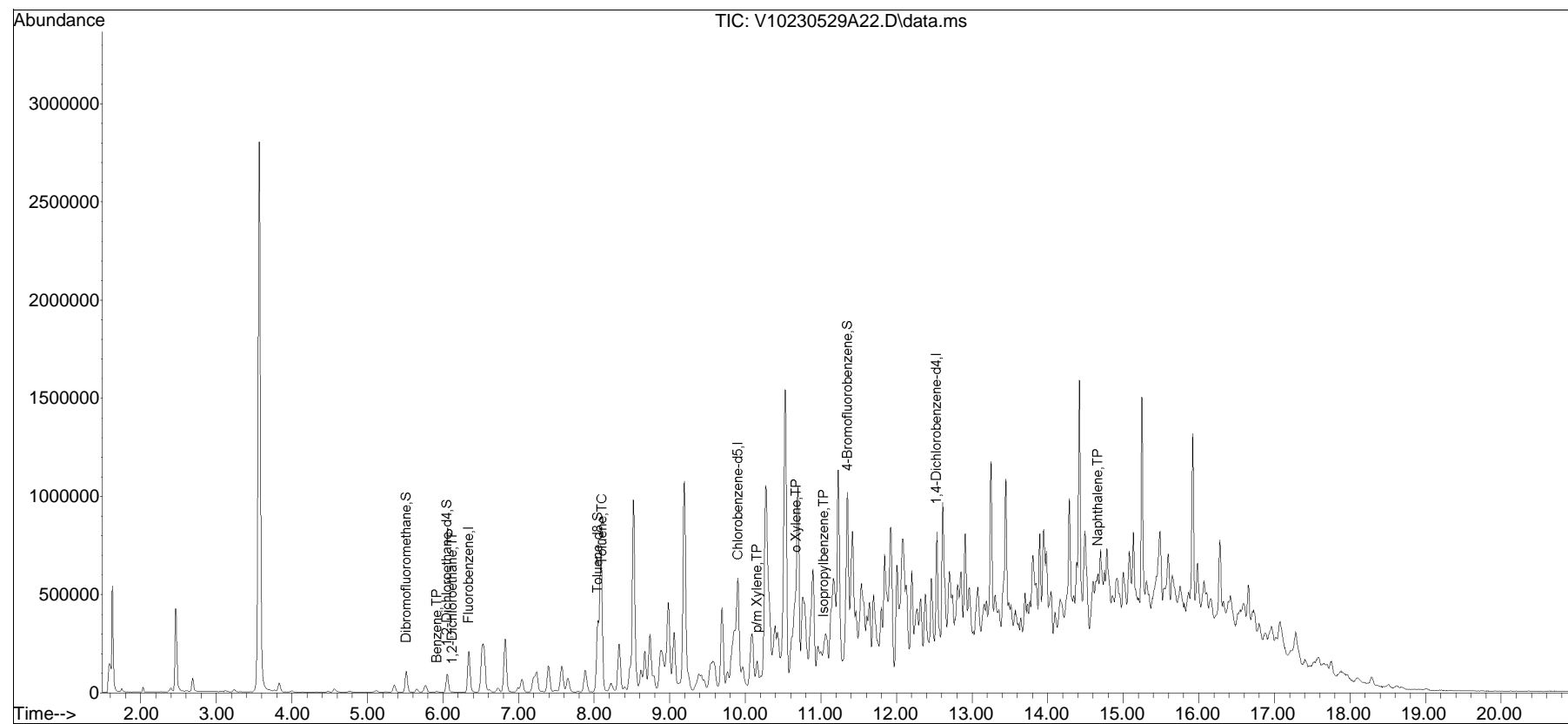


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230529A\
Data File : V10230529A22.D
Acq On : 29 May 2023 7:33 pm
Operator : VOA110:AJK
Sample : 12328559-15,31,6.06,5,,c
Misc : WG1784900,ICAL19973
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 30 07:58:50 2023
Quant Method : I:\VOLATILES\VOA110\2023\230529A\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list29A\V10230529A01.D•





ANALYTICAL REPORT

Lab Number:	L2328833
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	05/31/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2328833-01	LS-A-I01-C1-VOC	SOIL	PHILADELPHIA, PA	05/23/23 10:10	05/23/23
L2328833-02	LS-A-I01-C1-COMP	SOIL	PHILADELPHIA, PA	05/23/23 10:10	05/23/23
L2328833-03	LS-A-I02-C1-VOC	SOIL	PHILADELPHIA, PA	05/23/23 11:00	05/23/23
L2328833-04	LS-A-I02-C1-COMP	SOIL	PHILADELPHIA, PA	05/23/23 11:00	05/23/23
L2328833-05	LS-A-D01-C1-VOC	SOIL	PHILADELPHIA, PA	05/23/23 13:50	05/23/23
L2328833-06	LS-A-D01-C1-COMP	SOIL	PHILADELPHIA, PA	05/23/23 13:50	05/23/23
L2328833-07	LS-A-D01-C2-VOC	SOIL	PHILADELPHIA, PA	05/23/23 14:15	05/23/23
L2328833-08	LS-A-D01-C2-COMP	SOIL	PHILADELPHIA, PA	05/23/23 14:15	05/23/23
L2328833-09	LS-A-D01-C3-VOC	SOIL	PHILADELPHIA, PA	05/23/23 14:30	05/23/23
L2328833-10	LS-A-D01-C3-COMP	SOIL	PHILADELPHIA, PA	05/23/23 14:30	05/23/23
L2328833-11	LS-A-D01-C4-VOC	SOIL	PHILADELPHIA, PA	05/23/23 14:45	05/23/23
L2328833-12	LS-A-D01-C4-COMP	SOIL	PHILADELPHIA, PA	05/23/23 14:45	05/23/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

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
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

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.

Sample Receipt

The analyses performed were specified by the client.

Volatile Organics

L2328833-01 and -05: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2328833-01 (Low-Level): The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (178%); 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.

L2328833-05 (Low-Level): The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); 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.

L2328833-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); 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.

L2328833-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); 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.

PAHs

L2328833-02D, -06D, and -12D: The sample has elevated detection limits due to the dilution required by the

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

Case Narrative (continued)

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: *Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 05/31/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-01
 Client ID: LS-A-I01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 10:10
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/30/23 13:12
 Analyst: MKS
 Percent Solids: 87%

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	0.025	J	mg/kg	0.030	0.0099	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.015	1
Toluene	ND		mg/kg	0.060	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.017	1
Ethylbenzene	0.018	J	mg/kg	0.060	0.0084	1
p/m-Xylene	0.12		mg/kg	0.12	0.033	1
o-Xylene	0.076		mg/kg	0.060	0.017	1
Xylenes, Total	0.20		mg/kg	0.060	0.017	1
Isopropylbenzene	0.53		mg/kg	0.060	0.0065	1
1,3,5-Trimethylbenzene	1.4		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	1.8		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-01
 Client ID: LS-A-I01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 10:10
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/31/23 12:28
 Analyst: MKS
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	0.00019	J	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	0.00060	J	mg/kg	0.0019	0.00054	1
o-Xylene	0.00036	J	mg/kg	0.00097	0.00028	1
Xylenes, Total	0.00096	J	mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.0030		mg/kg	0.00097	0.00011	1
1,3,5-Trimethylbenzene	0.0061		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	0.0046		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	178	Q	70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-03
 Client ID: LS-A-I02-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 11:00
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/30/23 12:30
 Analyst: MKS
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0015	0.00015	1
Benzene	ND		mg/kg	0.00038	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00077	0.00020	1
Toluene	ND		mg/kg	0.00077	0.00042	1
1,2-Dibromoethane	ND		mg/kg	0.00038	0.00022	1
Ethylbenzene	ND		mg/kg	0.00077	0.00011	1
p/m-Xylene	ND		mg/kg	0.0015	0.00043	1
o-Xylene	ND		mg/kg	0.00077	0.00022	1
Xylenes, Total	ND		mg/kg	0.00077	0.00022	1
Isopropylbenzene	ND		mg/kg	0.00077	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0015	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0015	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	114		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-05
 Client ID: LS-A-D01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 13:50
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/30/23 13:33
 Analyst: MKS
 Percent Solids: 92%

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	0.032		mg/kg	0.025	0.0084	1
1,2-Dichloroethane	ND		mg/kg	0.050	0.013	1
Toluene	0.033	J	mg/kg	0.050	0.027	1
1,2-Dibromoethane	ND		mg/kg	0.025	0.015	1
Ethylbenzene	0.019	J	mg/kg	0.050	0.0071	1
p/m-Xylene	0.092	J	mg/kg	0.10	0.028	1
o-Xylene	0.10		mg/kg	0.050	0.015	1
Xylenes, Total	0.19	J	mg/kg	0.050	0.015	1
Isopropylbenzene	0.59		mg/kg	0.050	0.0055	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0097	1
1,2,4-Trimethylbenzene	0.034	J	mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-05
 Client ID: LS-A-D01-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 13:50
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/31/23 12:02
 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	0.0017	0.00017	1
Benzene	0.00046		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	0.0013		mg/kg	0.00086	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	0.00018	J	mg/kg	0.00086	0.00012	1
p/m-Xylene	0.0038		mg/kg	0.0017	0.00048	1
o-Xylene	0.0026		mg/kg	0.00086	0.00025	1
Xylenes, Total	0.0064		mg/kg	0.00086	0.00025	1
Isopropylbenzene	0.031		mg/kg	0.00086	0.00009	1
1,3,5-Trimethylbenzene	0.00032	J	mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	0.00097	J	mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	119		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	76		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-07
 Client ID: LS-A-D01-C2-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 14:15
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/30/23 13:53
 Analyst: MKS
 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	0.13	0.013	1
Benzene	0.89		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	0.35		mg/kg	0.065	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	1.3		mg/kg	0.065	0.0092	1
p/m-Xylene	0.56		mg/kg	0.13	0.037	1
o-Xylene	0.52		mg/kg	0.065	0.019	1
Xylenes, Total	1.1		mg/kg	0.065	0.019	1
Isopropylbenzene	1.1		mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	0.051	J	mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	2.9		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-09
 Client ID: LS-A-D01-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 14:30
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/30/23 12:51
 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	0.0019	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	0.00036	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-11
 Client ID: LS-A-D01-C4-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 14:45
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/30/23 14:14
 Analyst: MKS
 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	0.12	0.012	1
Benzene	1.4		mg/kg	0.029	0.0096	1
1,2-Dichloroethane	ND		mg/kg	0.058	0.015	1
Toluene	0.54		mg/kg	0.058	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	0.33		mg/kg	0.058	0.0082	1
p/m-Xylene	1.0		mg/kg	0.12	0.032	1
o-Xylene	1.2		mg/kg	0.058	0.017	1
Xylenes, Total	2.2		mg/kg	0.058	0.017	1
Isopropylbenzene	1.0		mg/kg	0.058	0.0063	1
1,3,5-Trimethylbenzene	0.24		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	10.		mg/kg	0.12	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/30/23 11:28
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,09 Batch: WG1785330-5					
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	110		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/30/23 11:28
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,05,07,11 Batch: WG1785331-5					
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	110		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 05/31/23 10:44
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,05 Batch: WG1785433-5					
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	97		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	97		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,09 Batch: WG1785330-3 WG1785330-4								
Methyl tert butyl ether	102		100		66-130	2		30
Benzene	101		99		70-130	2		30
1,2-Dichloroethane	94		93		70-130	1		30
Toluene	84		82		70-130	2		30
1,2-Dibromoethane	88		87		70-130	1		30
Ethylbenzene	86		85		70-130	1		30
p/m-Xylene	89		87		70-130	2		30
o-Xylene	88		88		70-130	0		30
Isopropylbenzene	83		80		70-130	4		30
1,3,5-Trimethylbenzene	82		80		70-130	2		30
1,2,4-Trimethylbenzene	82		79		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		103		70-130
Toluene-d8	94		94		70-130
4-Bromofluorobenzene	91		90		70-130
Dibromofluoromethane	111		108		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,05,07,11 Batch: WG1785331-3 WG1785331-4								
Methyl tert butyl ether	102		100		66-130	2		30
Benzene	101		99		70-130	2		30
1,2-Dichloroethane	94		93		70-130	1		30
Toluene	84		82		70-130	2		30
1,2-Dibromoethane	88		87		70-130	1		30
Ethylbenzene	86		85		70-130	1		30
p/m-Xylene	89		87		70-130	2		30
o-Xylene	88		88		70-130	0		30
Isopropylbenzene	83		80		70-130	4		30
1,3,5-Trimethylbenzene	82		80		70-130	2		30
1,2,4-Trimethylbenzene	82		79		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		103		70-130
Toluene-d8	94		94		70-130
4-Bromofluorobenzene	91		90		70-130
Dibromofluoromethane	110		108		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,05 Batch: WG1785433-3 WG1785433-4								
Methyl tert butyl ether	83		81		66-130	2		30
Benzene	86		83		70-130	4		30
1,2-Dichloroethane	85		82		70-130	4		30
Toluene	79		78		70-130	1		30
1,2-Dibromoethane	77		76		70-130	1		30
Ethylbenzene	81		79		70-130	3		30
p/m-Xylene	83		82		70-130	1		30
o-Xylene	84		83		70-130	1		30
Isopropylbenzene	78		78		70-130	0		30
1,3,5-Trimethylbenzene	78		77		70-130	1		30
1,2,4-Trimethylbenzene	78		78		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	95		95		70-130
Dibromofluoromethane	99		98		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-02 D
 Client ID: LS-A-I01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 10:10
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/31/23 14:57
 Analyst: JG
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 05/28/23 00:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.43		mg/kg	0.19	0.12	5
Fluorene	0.32	J	mg/kg	0.95	0.093	5
Phenanthrene	1.6		mg/kg	0.57	0.12	5
Anthracene	0.33	J	mg/kg	0.57	0.19	5
Pyrene	1.2		mg/kg	0.57	0.095	5
Benzo(a)anthracene	1.3		mg/kg	0.57	0.11	5
Chrysene	1.9		mg/kg	0.57	0.099	5
Benzo(b)fluoranthene	1.2		mg/kg	0.57	0.16	5
Benzo(a)pyrene	1.6		mg/kg	0.76	0.23	5
Benzo(ghi)perylene	1.9		mg/kg	0.76	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-04
 Client ID: LS-A-I02-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 11:00
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/28/23 01:23
 Analyst: CMM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.076		mg/kg	0.036	0.022	1
Fluorene	0.030	J	mg/kg	0.18	0.017	1
Phenanthrene	0.11		mg/kg	0.11	0.022	1
Anthracene	0.052	J	mg/kg	0.11	0.035	1
Pyrene	0.25		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.15		mg/kg	0.11	0.020	1
Chrysene	0.22		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.18		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.18		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.16		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-06 D
 Client ID: LS-A-D01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 13:50
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/31/23 14:34
 Analyst: JG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 05/28/23 00:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.16	J	mg/kg	0.18	0.11	5
Fluorene	1.3		mg/kg	0.90	0.088	5
Phenanthrene	4.3		mg/kg	0.54	0.11	5
Anthracene	0.60		mg/kg	0.54	0.18	5
Pyrene	0.99		mg/kg	0.54	0.090	5
Benzo(a)anthracene	0.65		mg/kg	0.54	0.10	5
Chrysene	1.0		mg/kg	0.54	0.094	5
Benzo(b)fluoranthene	0.38	J	mg/kg	0.54	0.15	5
Benzo(a)pyrene	0.48	J	mg/kg	0.72	0.22	5
Benzo(ghi)perylene	0.37	J	mg/kg	0.72	0.11	5

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

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-08
 Client ID: LS-A-D01-C2-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 14:15
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/29/23 18:55
 Analyst: LJJ
 Percent Solids: 75%

Extraction Method: EPA 3546
 Extraction Date: 05/28/23 00:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.68		mg/kg	0.044	0.027	1
Fluorene	1.6		mg/kg	0.22	0.021	1
Phenanthrene	4.2		mg/kg	0.13	0.026	1
Anthracene	0.79		mg/kg	0.13	0.043	1
Pyrene	1.3		mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.62		mg/kg	0.13	0.025	1
Chrysene	1.2		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.34		mg/kg	0.13	0.037	1
Benzo(a)pyrene	0.45		mg/kg	0.17	0.053	1
Benzo(ghi)perylene	0.35		mg/kg	0.17	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-10
 Client ID: LS-A-D01-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 14:30
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/29/23 19:19
 Analyst: LJJ
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 05/28/23 00:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.041	0.025	1
Fluorene	0.027	J	mg/kg	0.20	0.020	1
Phenanthrene	0.11	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.14		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.088	J	mg/kg	0.12	0.023	1
Chrysene	0.10	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.093	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.080	J	mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.068	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-12 D
 Client ID: LS-A-D01-C4-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 14:45
 Date Received: 05/23/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/31/23 14:11
 Analyst: JG
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 05/28/23 00:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.87		mg/kg	0.18	0.11	5
Fluorene	2.1		mg/kg	0.90	0.087	5
Phenanthrene	5.3		mg/kg	0.54	0.11	5
Anthracene	0.85		mg/kg	0.54	0.18	5
Pyrene	1.7		mg/kg	0.54	0.089	5
Benzo(a)anthracene	0.71		mg/kg	0.54	0.10	5
Chrysene	1.2		mg/kg	0.54	0.094	5
Benzo(b)fluoranthene	0.48	J	mg/kg	0.54	0.15	5
Benzo(a)pyrene	0.56	J	mg/kg	0.72	0.22	5
Benzo(ghi)perylene	0.47	J	mg/kg	0.72	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	76		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/27/23 16:43
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 05/26/23 01:18

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04 Batch: WG1783638-1					
Naphthalene	ND		mg/kg	0.033	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	76		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/29/23 16:11
Analyst: LJG

Extraction Method: EPA 3546
Extraction Date: 05/28/23 06:45

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,06,08,10,12 Batch: WG1784386-1					
Naphthalene	ND		mg/kg	0.032	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	61		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	63		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04 Batch: WG1783638-2 WG1783638-3								
Naphthalene	67		79		40-140	16		50
Fluorene	66		80		40-140	19		50
Phenanthrene	62		76		40-140	20		50
Anthracene	64		76		40-140	17		50
Pyrene	64		73		35-142	13		50
Benzo(a)anthracene	69		84		40-140	20		50
Chrysene	68		82		40-140	19		50
Benzo(b)fluoranthene	64		77		40-140	18		50
Benzo(a)pyrene	64		83		40-140	26		50
Benzo(ghi)perylene	68		74		40-140	8		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	93		107		23-120
2-Fluorobiphenyl	61		85		30-120
4-Terphenyl-d14	58		73		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,06,08,10,12 Batch: WG1784386-2 WG1784386-3								
Naphthalene	91		64		40-140	35		50
Fluorene	99		67		40-140	39		50
Phenanthrene	93		67		40-140	33		50
Anthracene	96		67		40-140	36		50
Pyrene	98		68		35-142	36		50
Benzo(a)anthracene	98		66		40-140	39		50
Chrysene	98		65		40-140	40		50
Benzo(b)fluoranthene	103		62		40-140	50		50
Benzo(a)pyrene	112		71		40-140	45		50
Benzo(ghi)perylene	101		67		40-140	40		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	89		59		23-120
2-Fluorobiphenyl	86		60		30-120
4-Terphenyl-d14	89		62		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-02

Date Collected: 05/23/23 10:10

Client ID: LS-A-I01-C1-COMP

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	579		mg/kg	2.30	0.123	1	05/31/23 01:29	05/31/23 09:31	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-04

Date Collected: 05/23/23 11:00

Client ID: LS-A-I02-C1-COMP

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	69.4		mg/kg	2.15	0.115	1	05/31/23 01:29	05/31/23 09:34	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-06
 Client ID: LS-A-D01-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 13:50
 Date Received: 05/23/23
 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	122		mg/kg	2.12	0.114	1	05/31/23 01:29	05/31/23 09:37	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-08

Date Collected: 05/23/23 14:15

Client ID: LS-A-D01-C2-COMP

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	550		mg/kg	2.54	0.136	1	05/31/23 01:29	05/31/23 09:40	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-10
 Client ID: LS-A-D01-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 14:30
 Date Received: 05/23/23
 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	98.1		mg/kg	2.43	0.130	1	05/31/23 01:29	05/31/23 09:43	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-12

Date Collected: 05/23/23 14:45

Client ID: LS-A-D01-C4-COMP

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	171		mg/kg	2.20	0.118	1	05/31/23 01:29	05/31/23 09:46	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

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): 02,04,06,08,10,12 Batch: WG1783836-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/31/23 01:29	05/31/23 08:02	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

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 Batch: WG1783836-2 SRM Lot Number: D119-540								
Lead, Total	106		-		82-118			-



Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

<u>Parameter</u>	<u>Native Sample</u>	<u>MS Added</u>	<u>MS Found</u>	<u>MS %Recovery</u>	<u>MSD Qual</u>	<u>MSD Found</u>	<u>MSD %Recovery</u>	<u>MSD Qual</u>	<u>Recovery Limits</u>	<u>RPD</u>	<u>RPD Qual</u>	<u>RPD Limits</u>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12 QC Batch ID: WG1783836-3 QC Sample: L2327058-01 Client ID: MS Sample												
Lead, Total	13.5	46	57.3	95		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2328833

Report Date: 05/31/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12 QC Batch ID: WG1783836-4 QC Sample: L2327058-01 Client ID: DUP Sample						
Lead, Total	13.5	14.2	mg/kg	5		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328833**Project Number:** 200.00135.023**Report Date:** 05/31/23**SAMPLE RESULTS**

Lab ID: L2328833-01

Date Collected: 05/23/23 10:10

Client ID: LS-A-I01-C1-VOC

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	87.4		%	0.100	NA	1	-	05/24/23 11:55	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-02

Date Collected: 05/23/23 10:10

Client ID: LS-A-I01-C1-COMP

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	86.5		%	0.100	NA	1	-	05/24/23 11:55	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-03

Date Collected: 05/23/23 11:00

Client ID: LS-A-I02-C1-VOC

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	91.8		%	0.100	NA	1	-	05/24/23 11:55	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328833**Project Number:** 200.00135.023**Report Date:** 05/31/23**SAMPLE RESULTS**

Lab ID: L2328833-04

Date Collected: 05/23/23 11:00

Client ID: LS-A-I02-C1-COMP

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	91.4		%	0.100	NA	1	-	05/24/23 11:55	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-05

Date Collected: 05/23/23 13:50

Client ID: LS-A-D01-C1-VOC

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	91.9		%	0.100	NA	1	-	05/24/23 11:55	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-06

Date Collected: 05/23/23 13:50

Client ID: LS-A-D01-C1-COMP

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	91.4		%	0.100	NA	1	-	05/24/23 12:04	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-07

Date Collected: 05/23/23 14:15

Client ID: LS-A-D01-C2-VOC

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	89.0		%	0.100	NA	1	-	05/24/23 12:04	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328833**Project Number:** 200.00135.023**Report Date:** 05/31/23**SAMPLE RESULTS**

Lab ID: L2328833-08

Date Collected: 05/23/23 14:15

Client ID: LS-A-D01-C2-COMP

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	75.4		%	0.100	NA	1	-	05/24/23 12:04	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-09

Date Collected: 05/23/23 14:30

Client ID: LS-A-D01-C3-VOC

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	-	05/24/23 12:04	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-10
Client ID: LS-A-D01-C3-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 14:30
Date Received: 05/23/23
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	81.2		%	0.100	NA	1	-	05/24/23 12:04	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-11

Date Collected: 05/23/23 14:45

Client ID: LS-A-D01-C4-VOC

Date Received: 05/23/23

Sample Location: PHILADELPHIA, PA

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	90.4		%	0.100	NA	1	-	05/24/23 12:04	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

SAMPLE RESULTS

Lab ID: L2328833-12
Client ID: LS-A-D01-C4-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/23/23 14:45
Date Received: 05/23/23
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	90.1		%	0.100	NA	1	-	05/24/23 12:04	121,2540G	ROI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2328833

Report Date: 05/31/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG1782697-1 QC Sample: L2322410-02 Client ID: DUP Sample						
Solids, Total	70.3	71.9	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 06-12 QC Batch ID: WG1782724-1 QC Sample: L2326384-04 Client ID: DUP Sample						
Solids, Total	85.2	86.0	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328833**Project Number:** 200.00135.023**Report Date:** 05/31/23**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(*)
L2328833-01A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2328833-01B	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260H(14),PA-8260HLW(14)
L2328833-01C	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260H(14),PA-8260HLW(14)
L2328833-01D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2328833-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2328833-02B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2328833-03A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2328833-03B	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260HLW(14)
L2328833-03C	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260HLW(14)
L2328833-03D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2328833-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2328833-04B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2328833-05A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2328833-05B	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260H(14),PA-8260HLW(14)
L2328833-05C	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260H(14),PA-8260HLW(14)
L2328833-05D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2328833-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2328833-06B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2328833-07A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2328833-07B	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260HLW(14)
L2328833-07C	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260HLW(14)
L2328833-07D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2328833-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2328833**Project Number:** 200.00135.023**Report Date:** 05/31/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2328833-08B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2328833-09A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2328833-09B	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260HLW(14)
L2328833-09C	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260HLW(14)
L2328833-09D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2328833-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2328833-10B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2328833-11A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2328833-11B	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260HLW(14)
L2328833-11C	Vial water preserved	A	NA		2.4	Y	Absent	24-MAY-23 07:51	PA-8260HLW(14)
L2328833-11D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2328833-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2328833-12B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2328833
Report Date: 05/31/23

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.

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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

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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.)

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Project Name: PHILADELPHIA REFINERY

Lab Number: L2328833

Project Number: 200.00135.023

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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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

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 #: 200.00135.023
Project Manager: William Schmidt
ALPHA Quote #: 18559

Turn-Around Time

Standard RUSH (only confirmed if pre-approved!)
Date Due: _____ Time: _____

Other Project Specific Requirements/Comments/Detection Limits:

Report only project specific analyte list of PADEP listed hazardous gasoline and No. 2, 4, 5, 6 fuel oils shortlist. Do not report lead using method 8270 ONLY!
Email results to ced@terraphase.com, william.schmidt@ransomenv.com, and jerry@hico-global.com

Date Rec'd in Lab: 5/24/23

ALPHA Job #: 62328833

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 _____

ANALYSIS

VOCs (8260)
SVOCs (8270)
Lead

SAMPLE HANDLING

Filtration _____
 Done
 Not needed
 Lab to do
Preservation
 Lab to do
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	Sample Specific Comments	
		Date	Time				
28833-01	LS-A-101-C1-VOC	05/23/23	10:10	S	ND		4
02	LS-A-101-C1-comp		10:10				2
03	LS-A-102-C1-VOC		11:00				4
04	LS-A-102-C1-comp		11:00				2
05	LS-A-101-C1-VOC		13:50				4
06	LS-A-101-C1-comp		13:50				2
07	LS-A-101-C2-VOC		14:15				4
08	LS-A-101-C2-comp		14:15				2
09	LS-A-101-C3-VOC		14:30				4
10	LS-A-101-C3-comp	✓	14:30	✓	✓		2

5/24/23 0315
5/24/23 0315

Container Type G G G
Preservative F H H

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.

Relinquished By:	Date/Time	Received By:	Date/Time
<u>Michael Dwyer</u>	<u>05/23/23 13:10</u>	<u>S. Torres</u>	<u>5/23/23 15:10</u>
<u>STOLAR AAL</u>	<u>5/23/23 15:10</u>	<u>STOLAR AAL</u>	<u>5/23/23 18:00</u>
<u>[Signature]</u>	<u>5/23/23 21:00</u>	<u>[Signature]</u>	<u>5/23 21:00</u>



CHAIN OF CUSTODY

PAGE 2 OF 2

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 #: 200.00135.023
Project Manager: William Schmidt
ALPHA Quote #: 18559
Turn-Around Time
 Standard RUSH (only confirmed if pre-approved)
Date Due: _____ Time: _____

Date Rec'd in Lab: 5/24/23

ALPHA Job #: L2328833

Report Information - Data Deliverables
 FAX EMAIL
 ADEX Add'l Deliverables

Billing Information
 Same as Client info PO #:

Other Project Specific Requirements/Comments/Detection Limits:
Report only project specific analyte list of PADEP leaded/unleaded gasoline and No. 2, 4, 5, 16 fuel oil analyte list. Run naphthalene using method 8220 ONLY!
Email results to add@terraphase.com, william.schmidt@ransomenv.com, and jerry@hico-global.com

Regulatory Requirements/Report Limits
State /Fed Program _____ Criteria _____

ANALYSIS	VOCs (8260)	SVOCs (8270)	Lead	TOTAL # BOTTLES
	<p>SAMPLE HANDLING Filtration _____ <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)</p>			

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	Sample Specific Comments	TOTAL # BOTTLES
		Date	Time				
28833-11	LS-1A-D01-C4-VOC	05/23/23	14:45	S	ND		4
12	LS-1A-D01-C4-comp	↓	14:45	↓	↓		2
<hr style="border: 1px solid blue; width: 100%;"/>							

SR 5/24/23 0315
5/24/23 0315

Container Type G G G
Preservative F Y Y

Relinquished By:	Date/Time	Received By:	Date/Time
<u>Michael D'Amico</u>	<u>05/23/23 15:10</u>	<u>Stevens</u>	<u>5/23/23 15:10</u>
<u>Stevens</u>	<u>5/23/23 18:00</u>	<u>Stevens</u>	<u>5/23/23 18:00</u>
<u>Stevens</u>	<u>5/23/23 21:00</u>	<u>Stevens</u>	<u>5/23/23 21:00</u>

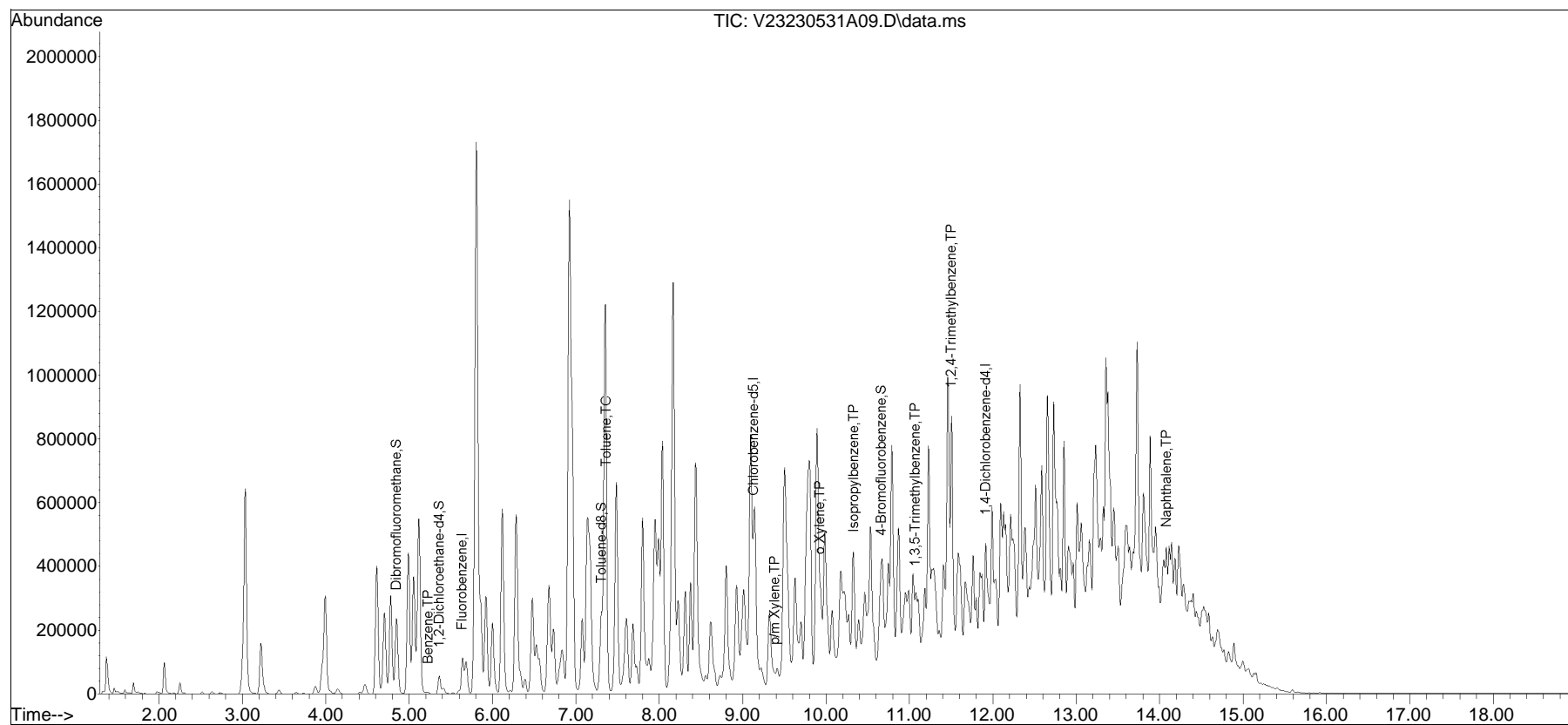
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2023\230531A\
Data File : V23230531A09.D
Acq On : 31 May 2023 12:28 pm
Operator : VOA123:MKS
Sample : 12328833-01,31,5.88,5,,b
Misc : WG1785433,ICAL20024
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 31 12:52:27 2023
Quant Method : I:\VOLATILES\VOA123\2023\230531A\V123_230518A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 23 09:22:30 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list31A\V23230531A01.D•

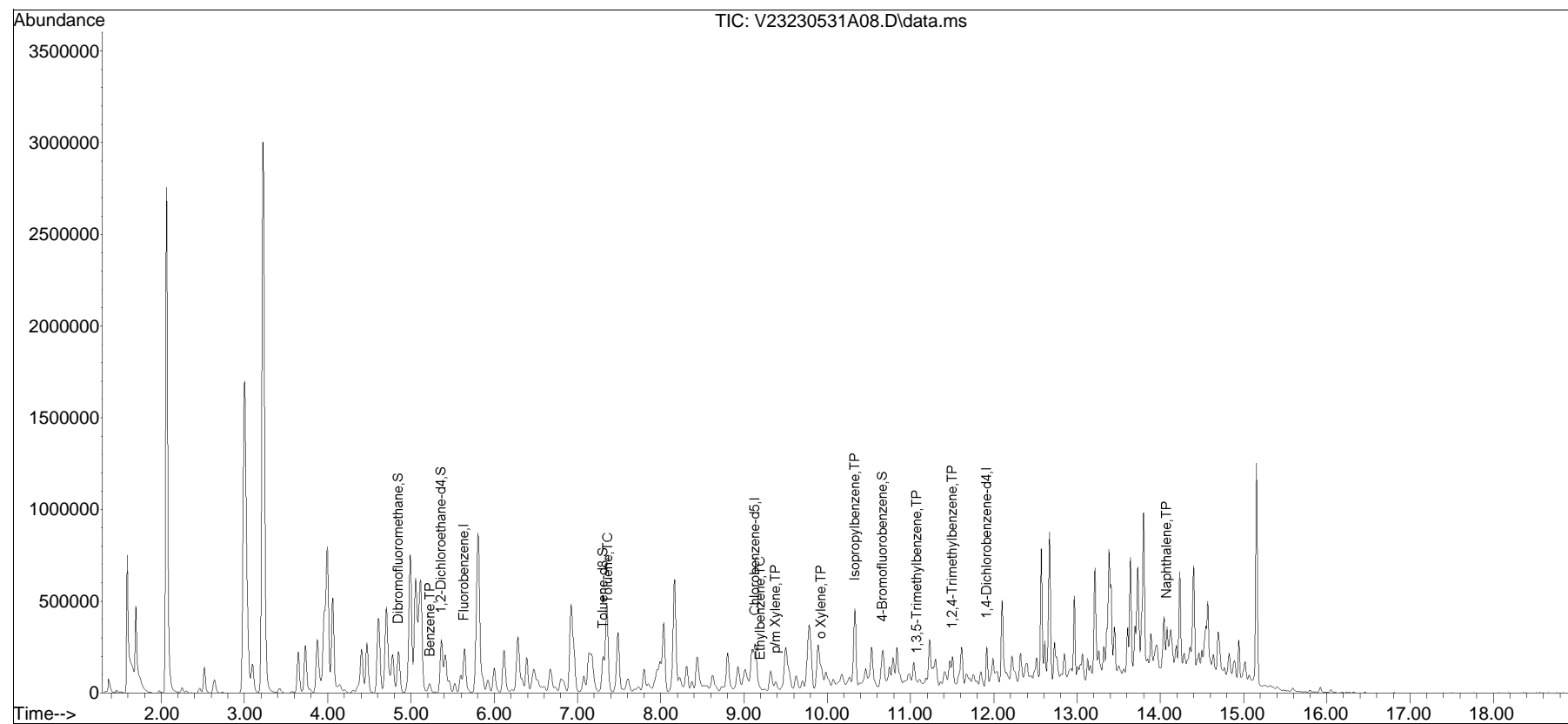


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2023\230531A\
 Data File : V23230531A08.D
 Acq On : 31 May 2023 12:02 pm
 Operator : VOA123:MKS
 Sample : L2328833-05,31,6.31,5,,C
 Misc : WG1785433,ICAL20024
 ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 31 12:51:54 2023
 Quant Method : I:\VOLATILES\VOA123\2023\230531A\V123_230518A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Tue May 23 09:22:30 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list31A\V23230531A01.D•

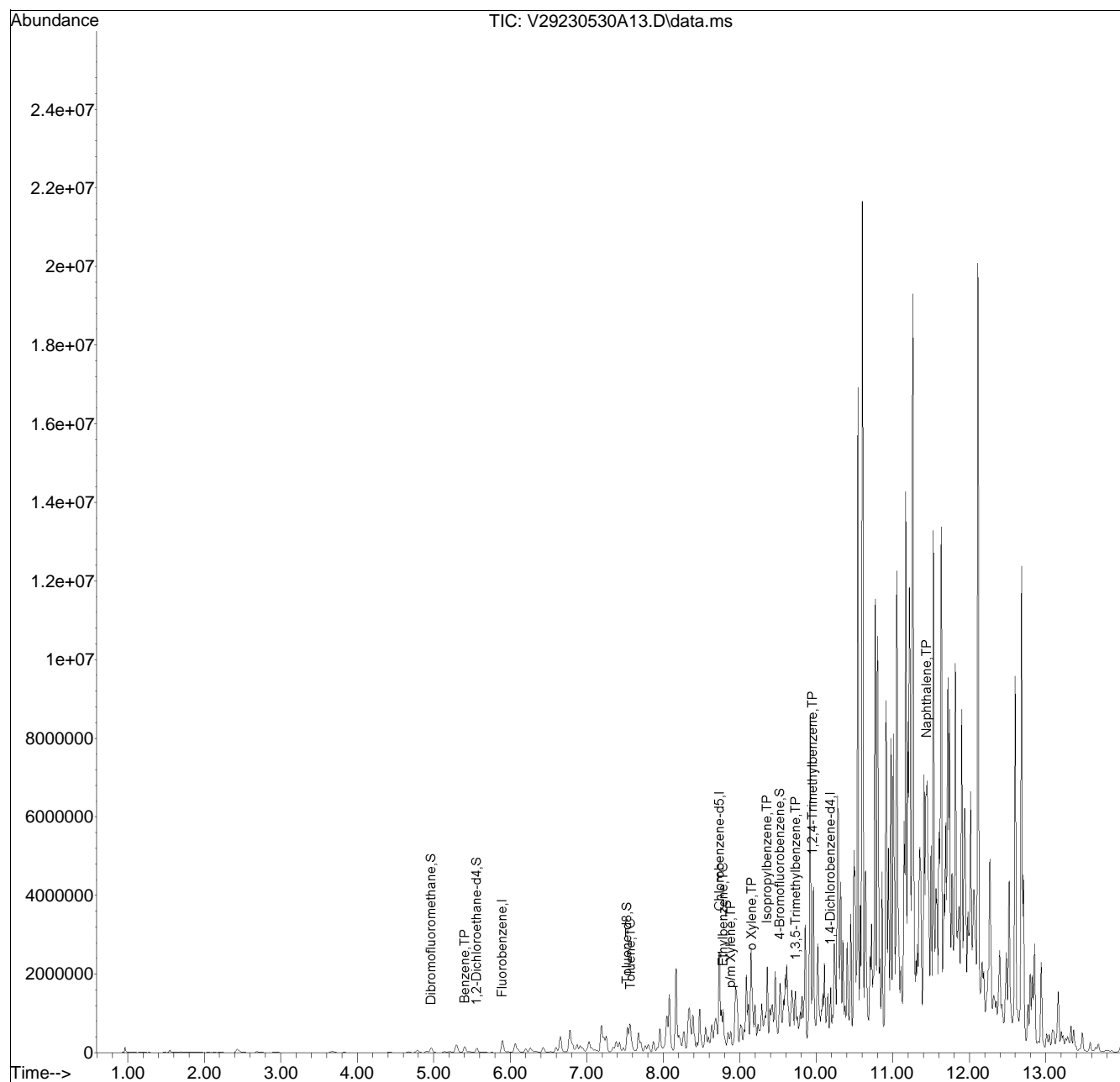


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230530A\
 Data File : V29230530A13.D
 Acq On : 30 May 2023 01:53 pm
 Operator : VOA129:MKS
 Sample : L2328833-07,31H,4.74,5,0.100,,A
 Misc : WG1785331,ICAL19799
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 31 08:27:46 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230530A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list30A\V29230530A01.D•

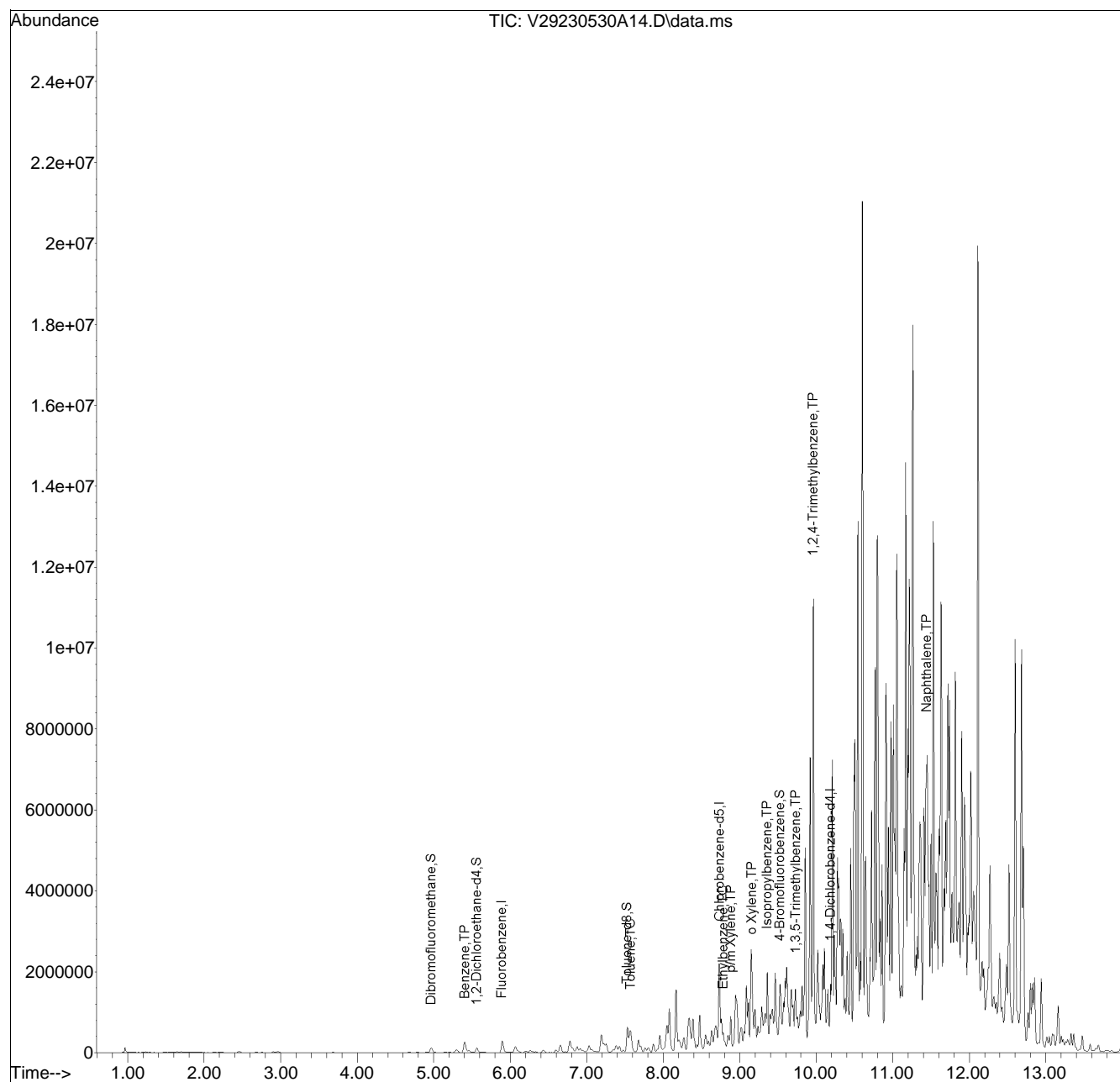


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230530A\
 Data File : V29230530A14.D
 Acq On : 30 May 2023 02:14 pm
 Operator : VOA129:MKS
 Sample : L2328833-11,31H,5.24,5,0.100,,A
 Misc : WG1785331,ICAL19799
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: May 31 08:29:10 2023
 Quant Method : I:\VOLATILES\VOA129\2023\230530A\V129_230308N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Mar 09 17:16:29 2023
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list30A\V29230530A01.D•





ANALYTICAL REPORT

Lab Number:	L2329097
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	06/05/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2329097-01	LS-B-E01-C3-VOC	SOIL	PHILADELPHIA, PA	05/24/23 09:30	05/24/23
L2329097-02	LS-B-E01-C3-COMP	SOIL	PHILADELPHIA, PA	05/24/23 09:30	05/24/23
L2329097-03	LS-A-G08-C1-VOC	SOIL	PHILADELPHIA, PA	05/24/23 11:00	05/24/23
L2329097-04	LS-A-G08-C1-COMP	SOIL	PHILADELPHIA, PA	05/24/23 11:00	05/24/23
L2329097-05	LS-A-G07-C1-VOC	SOIL	PHILADELPHIA, PA	05/24/23 11:30	05/24/23
L2329097-06	LS-A-G07-C1-COMP	SOIL	PHILADELPHIA, PA	05/24/23 11:30	05/24/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

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
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

Case Narrative (continued)

Report Revision

June 05, 2023: The Client IDs have been corrected on L2329097-03 through -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

L2329097-01: 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.

L2329097-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (153%); 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:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 06/05/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-01
 Client ID: LS-B-E01-C3-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/24/23 09:30
 Date Received: 05/24/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/30/23 15:37
 Analyst: MKS
 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	0.095	0.0096	1
Benzene	0.017	J	mg/kg	0.024	0.0079	1
1,2-Dichloroethane	ND		mg/kg	0.048	0.012	1
Toluene	ND		mg/kg	0.048	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	0.0084	J	mg/kg	0.048	0.0067	1
p/m-Xylene	ND		mg/kg	0.095	0.027	1
o-Xylene	ND		mg/kg	0.048	0.014	1
Xylenes, Total	ND		mg/kg	0.048	0.014	1
Isopropylbenzene	0.014	J	mg/kg	0.048	0.0052	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.095	0.0092	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.095	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	153	Q	70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-03
 Client ID: LS-A-G08-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/24/23 11:00
 Date Received: 05/24/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/30/23 14:56
 Analyst: MKS
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00056		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00083	0.00021	1
Toluene	ND		mg/kg	0.00083	0.00045	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00024	1
Ethylbenzene	ND		mg/kg	0.00083	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00083	0.00024	1
Xylenes, Total	ND		mg/kg	0.00083	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00083	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-05
 Client ID: LS-A-G07-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/24/23 11:30
 Date Received: 05/24/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 05/30/23 15:16
 Analyst: MKS
 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	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/30/23 11:28
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,05 Batch: WG1785330-5					
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	110		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 05/30/23 11:28
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1785331-5					
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	110		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	110		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,05 Batch: WG1785330-3 WG1785330-4								
Methyl tert butyl ether	102		100		66-130	2		30
Benzene	101		99		70-130	2		30
1,2-Dichloroethane	94		93		70-130	1		30
Toluene	84		82		70-130	2		30
1,2-Dibromoethane	88		87		70-130	1		30
Ethylbenzene	86		85		70-130	1		30
p/m-Xylene	89		87		70-130	2		30
o-Xylene	88		88		70-130	0		30
Isopropylbenzene	83		80		70-130	4		30
1,3,5-Trimethylbenzene	82		80		70-130	2		30
1,2,4-Trimethylbenzene	82		79		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		103		70-130
Toluene-d8	94		94		70-130
4-Bromofluorobenzene	91		90		70-130
Dibromofluoromethane	111		108		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01 Batch: WG1785331-3 WG1785331-4								
Methyl tert butyl ether	102		100		66-130	2		30
Benzene	101		99		70-130	2		30
1,2-Dichloroethane	94		93		70-130	1		30
Toluene	84		82		70-130	2		30
1,2-Dibromoethane	88		87		70-130	1		30
Ethylbenzene	86		85		70-130	1		30
p/m-Xylene	89		87		70-130	2		30
o-Xylene	88		88		70-130	0		30
Isopropylbenzene	83		80		70-130	4		30
1,3,5-Trimethylbenzene	82		80		70-130	2		30
1,2,4-Trimethylbenzene	82		79		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		103		70-130
Toluene-d8	94		94		70-130
4-Bromofluorobenzene	91		90		70-130
Dibromofluoromethane	110		108		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-02
 Client ID: LS-B-E01-C3-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/24/23 09:30
 Date Received: 05/24/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 06/02/23 11:52
 Analyst: IM
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 06/01/23 17:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.063		mg/kg	0.040	0.024	1
Fluorene	0.20		mg/kg	0.20	0.019	1
Phenanthrene	0.33		mg/kg	0.12	0.024	1
Anthracene	0.090	J	mg/kg	0.12	0.039	1
Pyrene	0.20		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.090	J	mg/kg	0.12	0.022	1
Chrysene	0.15		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.096	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.11	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.098	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	63		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-04
 Client ID: LS-A-G08-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/24/23 11:00
 Date Received: 05/24/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 06/02/23 12:15
 Analyst: IM
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 06/01/23 17:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.29		mg/kg	0.036	0.022	1
Fluorene	0.10	J	mg/kg	0.18	0.017	1
Phenanthrene	3.0		mg/kg	0.11	0.022	1
Anthracene	0.83		mg/kg	0.11	0.035	1
Pyrene	3.4		mg/kg	0.11	0.018	1
Benzo(a)anthracene	4.0		mg/kg	0.11	0.020	1
Chrysene	3.4		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	6.4		mg/kg	0.11	0.030	1
Benzo(a)pyrene	6.0		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	3.3		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	67		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-06
 Client ID: LS-A-G07-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/24/23 11:30
 Date Received: 05/24/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 06/02/23 14:14
 Analyst: IM
 Percent Solids: 74%

Extraction Method: EPA 3546
 Extraction Date: 06/01/23 17:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.047		mg/kg	0.045	0.027	1
Fluorene	ND		mg/kg	0.22	0.022	1
Phenanthrene	0.12	J	mg/kg	0.13	0.027	1
Anthracene	ND		mg/kg	0.13	0.044	1
Pyrene	0.15		mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.098	J	mg/kg	0.13	0.025	1
Chrysene	0.11	J	mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.14		mg/kg	0.13	0.038	1
Benzo(a)pyrene	0.11	J	mg/kg	0.18	0.055	1
Benzo(ghi)perylene	0.072	J	mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E
 Analytical Date: 06/01/23 20:43
 Analyst: IM

Extraction Method: EPA 3546
 Extraction Date: 05/31/23 19:41

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06 Batch: WG1785602-1					
Naphthalene	ND		mg/kg	0.032	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
2-Fluorophenol	72		25-120
Phenol-d6	67		10-120
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	65		30-120
2,4,6-Tribromophenol	61		10-136
4-Terphenyl-d14	64		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

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: WG1785602-2 WG1785602-3								
Naphthalene	64		65		40-140	2		50
Fluorene	62		63		40-140	2		50
Phenanthrene	62		63		40-140	2		50
Anthracene	64		66		40-140	3		50
Pyrene	64		66		35-142	3		50
Benzo(a)anthracene	68		68		40-140	0		50
Chrysene	66		67		40-140	2		50
Benzo(b)fluoranthene	70		71		40-140	1		50
Benzo(a)pyrene	78		78		40-140	0		50
Benzo(ghi)perylene	63		64		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	72		79		25-120
Phenol-d6	68		73		10-120
Nitrobenzene-d5	71		77		23-120
2-Fluorobiphenyl	63		69		30-120
2,4,6-Tribromophenol	62		70		10-136
4-Terphenyl-d14	57		65		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-02

Date Collected: 05/24/23 09:30

Client ID: LS-B-E01-C3-COMP

Date Received: 05/24/23

Sample Location: PHILADELPHIA, PA

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	115		mg/kg	2.43	0.130	1	05/31/23 00:33	05/31/23 19:35	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-04

Date Collected: 05/24/23 11:00

Client ID: LS-A-G08-C1-COMP

Date Received: 05/24/23

Sample Location: PHILADELPHIA, PA

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	94.1		mg/kg	2.20	0.118	1	05/31/23 00:33	05/31/23 19:39	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-06

Date Collected: 05/24/23 11:30

Client ID: LS-A-G07-C1-COMP

Date Received: 05/24/23

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	165		mg/kg	2.60	0.140	1	05/31/23 00:33	05/31/23 19:42	EPA 3050B	1,6010D	AMW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

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: WG1783874-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/31/23 00:33	05/31/23 16:05	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 Batch: WG1783874-2 SRM Lot Number: D119-540								
Lead, Total	98		-		82-118	-		



Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 QC Batch ID: WG1783874-3 QC Sample: L2325798-01 Client ID: MS Sample											
Lead, Total	47.2	44.4	94.8	107	-	-	-	-	75-125	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2329097

Report Date: 06/05/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 QC Batch ID: WG1783874-4 QC Sample: L2325798-01 Client ID: DUP Sample						
Lead, Total	47.2	57.5	mg/kg	20		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-01

Date Collected: 05/24/23 09:30

Client ID: LS-B-E01-C3-VOC

Date Received: 05/24/23

Sample Location: PHILADELPHIA, PA

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	-	05/25/23 13:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2329097**Project Number:** 200.00135.023**Report Date:** 06/05/23**SAMPLE RESULTS**

Lab ID: L2329097-02

Date Collected: 05/24/23 09:30

Client ID: LS-B-E01-C3-COMP

Date Received: 05/24/23

Sample Location: PHILADELPHIA, PA

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	-	05/25/23 13:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-03

Date Collected: 05/24/23 11:00

Client ID: LS-A-G08-C1-VOC

Date Received: 05/24/23

Sample Location: PHILADELPHIA, PA

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	89.7		%	0.100	NA	1	-	05/25/23 13:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-04
Client ID: LS-A-G08-C1-COMP
Sample Location: PHILADELPHIA, PA

Date Collected: 05/24/23 11:00
Date Received: 05/24/23
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	90.0		%	0.100	NA	1	-	05/25/23 13:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-05

Date Collected: 05/24/23 11:30

Client ID: LS-A-G07-C1-VOC

Date Received: 05/24/23

Sample Location: PHILADELPHIA, PA

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	90.1		%	0.100	NA	1	-	05/25/23 13:35	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

SAMPLE RESULTS

Lab ID: L2329097-06

Date Collected: 05/24/23 11:30

Client ID: LS-A-G07-C1-COMP

Date Received: 05/24/23

Sample Location: PHILADELPHIA, PA

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	73.8		%	0.100	NA	1	-	05/25/23 13:35	121,2540G	ROI



Lab Duplicate Analysis
*Batch Quality Control***Project Name:** PHILADELPHIA REFINERY**Project Number:** 200.00135.023**Lab Number:** L2329097**Report Date:** 06/05/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1783389-1 QC Sample: L2329236-02 Client ID: DUP Sample						
Solids, Total	84.9	84.4	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2329097**Project Number:** 200.00135.023**Report Date:** 06/05/23**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(*)
L2329097-01A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2329097-01B	Vial water preserved	A	NA		2.9	Y	Absent	25-MAY-23 10:29	PA-8260HLW(14)
L2329097-01C	Vial water preserved	A	NA		2.9	Y	Absent	25-MAY-23 10:29	PA-8260HLW(14)
L2329097-01D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2329097-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2329097-02B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2329097-03A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2329097-03B	Vial water preserved	A	NA		2.9	Y	Absent	25-MAY-23 10:29	PA-8260HLW(14)
L2329097-03C	Vial water preserved	A	NA		2.9	Y	Absent	25-MAY-23 10:29	PA-8260HLW(14)
L2329097-03D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2329097-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2329097-04B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2329097-05A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2329097-05B	Vial water preserved	A	NA		2.9	Y	Absent	25-MAY-23 10:29	PA-8260HLW(14)
L2329097-05C	Vial water preserved	A	NA		2.9	Y	Absent	25-MAY-23 10:29	PA-8260HLW(14)
L2329097-05D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2329097-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2329097-06B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

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
Project Number: 200.00135.023

Lab Number: L2329097
Report Date: 06/05/23

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
Project Number: 200.00135.023

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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: L2329097

Project Number: 200.00135.023

Report Date: 06/05/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

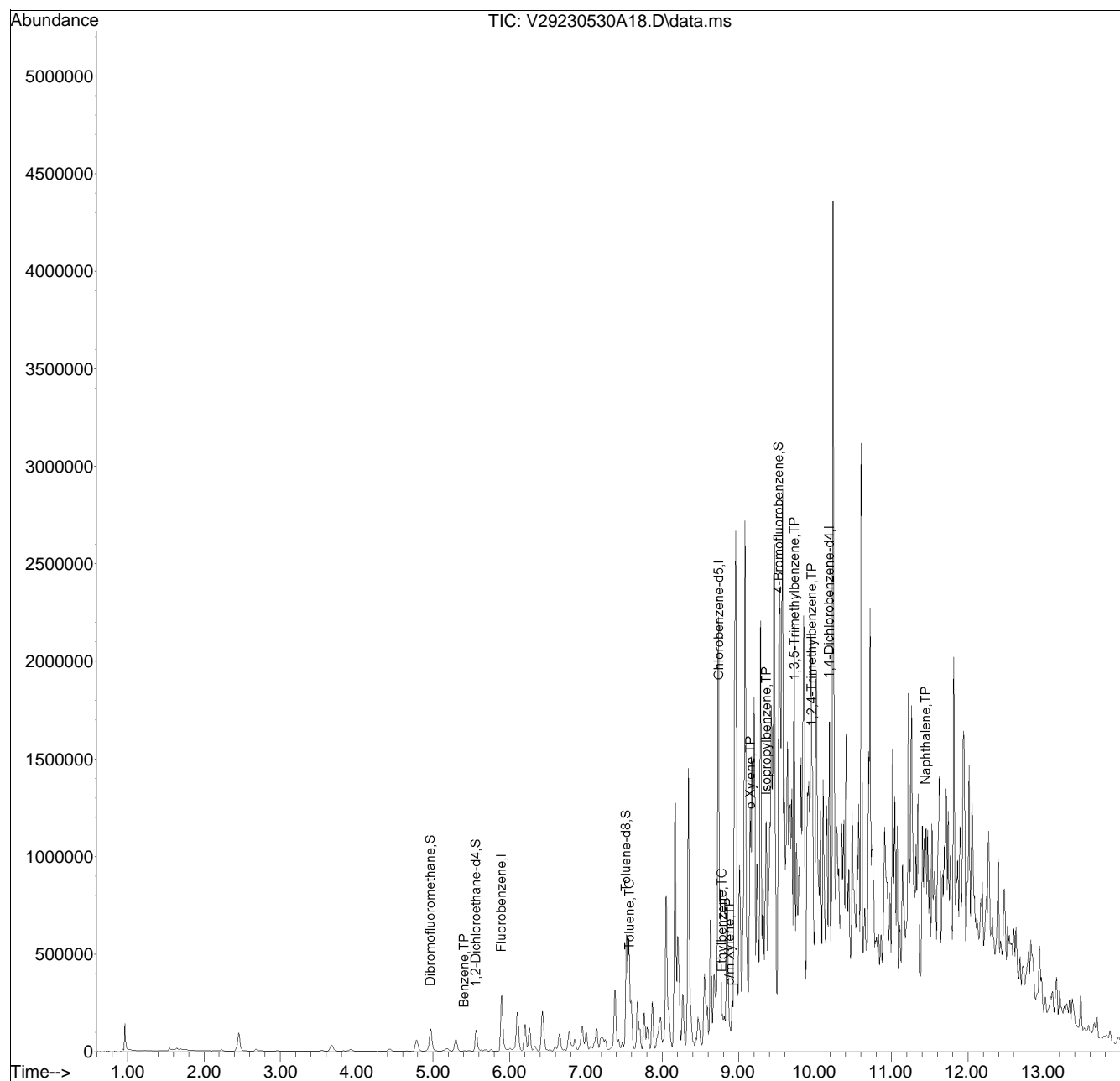
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2023\230530A\
Data File : V29230530A18.D
Acq On : 30 May 2023 03:37 pm
Operator : VOA129:MKS
Sample : L2329097-01,31H,6.75,5,0.100,,A
Misc : WG1785331,ICAL19799
ALS Vial : 18 Sample Multiplier: 1

Quant Time: May 31 08:32:08 2023
Quant Method : I:\VOLATILES\VOA129\2023\230530A\V129_230308N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Mar 09 17:16:29 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list30A\V29230530A01.D•





ANALYTICAL REPORT

Lab Number:	L2329558
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.023
Report Date:	06/02/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2329558-01	LS-A-F04-C1-VOC	SOIL	PHILADELPHIA, PA	05/25/23 12:40	05/25/23
L2329558-02	LS-A-F04-C1-COMP	SOIL	PHILADELPHIA, PA	05/25/23 12:40	05/25/23
L2329558-03	LS-A-F05-C1-VOC	SOIL	PHILADELPHIA, PA	05/25/23 15:50	05/25/23
L2329558-04	LS-A-F05-C1-COMP	SOIL	PHILADELPHIA, PA	05/25/23 15:50	05/25/23

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

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
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

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

L2329558-01: 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.

L2329558-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (193%); 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: 06/02/23

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

SAMPLE RESULTS

Lab ID: L2329558-01
 Client ID: LS-A-F04-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/25/23 12:40
 Date Received: 05/25/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 06/02/23 10:19
 Analyst: MKS
 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	0.11	0.011	1
Benzene	0.015	J	mg/kg	0.027	0.0088	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	0.031	J	mg/kg	0.053	0.0075	1
p/m-Xylene	ND		mg/kg	0.11	0.030	1
o-Xylene	0.020	J	mg/kg	0.053	0.016	1
Xylenes, Total	0.020	J	mg/kg	0.053	0.016	1
Isopropylbenzene	0.72		mg/kg	0.053	0.0058	1
1,3,5-Trimethylbenzene	0.011	J	mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	0.025	J	mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	193	Q	70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

SAMPLE RESULTS

Lab ID: L2329558-03
 Client ID: LS-A-F05-C1-VOC
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/25/23 15:50
 Date Received: 05/25/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 06/02/23 10:46
 Analyst: LAC
 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	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00078	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00081	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 06/02/23 09:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1786503-5					
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	126		70-130
Toluene-d8	87		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	121		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 06/02/23 09:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1786506-5					
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	87		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	121		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01 Batch: WG1786503-3 WG1786503-4								
Methyl tert butyl ether	114		126		66-130	10		30
Benzene	121		118		70-130	3		30
1,2-Dichloroethane	134	Q	132	Q	70-130	2		30
Toluene	97		93		70-130	4		30
1,2-Dibromoethane	106		105		70-130	1		30
Ethylbenzene	99		96		70-130	3		30
p/m-Xylene	103		101		70-130	2		30
o-Xylene	100		101		70-130	1		30
Isopropylbenzene	83		82		70-130	1		30
1,3,5-Trimethylbenzene	89		88		70-130	1		30
1,2,4-Trimethylbenzene	89		87		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	120		116		70-130
Toluene-d8	90		91		70-130
4-Bromofluorobenzene	83		83		70-130
Dibromofluoromethane	113		110		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1786506-3 WG1786506-4								
Methyl tert butyl ether	114		126		66-130	10		30
Benzene	121		118		70-130	3		30
1,2-Dichloroethane	134	Q	132	Q	70-130	2		30
Toluene	97		93		70-130	4		30
1,2-Dibromoethane	106		105		70-130	1		30
Ethylbenzene	99		96		70-130	3		30
p/m-Xylene	103		101		70-130	2		30
o-Xylene	100		101		70-130	1		30
Isopropylbenzene	83		82		70-130	1		30
1,3,5-Trimethylbenzene	89		88		70-130	1		30
1,2,4-Trimethylbenzene	89		87		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	120		116		70-130
Toluene-d8	90		91		70-130
4-Bromofluorobenzene	83		83		70-130
Dibromofluoromethane	113		110		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

SAMPLE RESULTS

Lab ID: L2329558-02
 Client ID: LS-A-F04-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/25/23 12:40
 Date Received: 05/25/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/30/23 19:40
 Analyst: ALS
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 05/29/23 18:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.22		mg/kg	0.037	0.022	1
Fluorene	0.29		mg/kg	0.18	0.018	1
Phenanthrene	0.84		mg/kg	0.11	0.022	1
Anthracene	0.30		mg/kg	0.11	0.036	1
Pyrene	1.4		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.88		mg/kg	0.11	0.021	1
Chrysene	1.4		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	1.2		mg/kg	0.11	0.031	1
Benzo(a)pyrene	1.5		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	1.1		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

SAMPLE RESULTS

Lab ID: L2329558-04
 Client ID: LS-A-F05-C1-COMP
 Sample Location: PHILADELPHIA, PA

Date Collected: 05/25/23 15:50
 Date Received: 05/25/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 05/30/23 19:57
 Analyst: ALS
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 05/29/23 18:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.14		mg/kg	0.037	0.023	1
Fluorene	0.073	J	mg/kg	0.19	0.018	1
Phenanthrene	1.1		mg/kg	0.11	0.023	1
Anthracene	0.28		mg/kg	0.11	0.036	1
Pyrene	1.9		mg/kg	0.11	0.018	1
Benzo(a)anthracene	1.2		mg/kg	0.11	0.021	1
Chrysene	1.1		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	1.5		mg/kg	0.11	0.031	1
Benzo(a)pyrene	1.3		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.84		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 05/30/23 12:59
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 05/29/23 18:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04 Batch: WG1784625-1					
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
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	71		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

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: WG1784625-2 WG1784625-3								
Naphthalene	68		71		40-140	4		50
Fluorene	76		71		40-140	7		50
Phenanthrene	77		70		40-140	10		50
Anthracene	79		73		40-140	8		50
Pyrene	77		70		35-142	10		50
Benzo(a)anthracene	83		77		40-140	8		50
Chrysene	80		74		40-140	8		50
Benzo(b)fluoranthene	82		73		40-140	12		50
Benzo(a)pyrene	88		80		40-140	10		50
Benzo(ghi)perylene	79		72		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	62		68		23-120
2-Fluorobiphenyl	75		73		30-120
4-Terphenyl-d14	75		68		18-120



METALS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

SAMPLE RESULTS

Lab ID: L2329558-02

Date Collected: 05/25/23 12:40

Client ID: LS-A-F04-C1-COMP

Date Received: 05/25/23

Sample Location: PHILADELPHIA, PA

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	252		mg/kg	2.19	0.117	1	05/31/23 23:00	06/02/23 12:30	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

SAMPLE RESULTS

Lab ID: L2329558-04

Date Collected: 05/25/23 15:50

Client ID: LS-A-F05-C1-COMP

Date Received: 05/25/23

Sample Location: PHILADELPHIA, PA

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	649		mg/kg	2.21	0.119	1	05/31/23 23:00	06/02/23 12:33	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

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: WG1785388-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	05/31/23 23:00	06/02/23 10:45	1,6010D	MRC

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04 Batch: WG1785388-2 SRM Lot Number: D119-540								
Lead, Total	98		-		82-118	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

<u>Parameter</u>	<u>Native Sample</u>	<u>MS Added</u>	<u>MS Found</u>	<u>MS %Recovery</u>	<u>Qual</u>	<u>MSD Found</u>	<u>MSD %Recovery</u>	<u>Qual</u>	<u>Recovery Limits</u>	<u>RPD</u>	<u>Qual</u>	<u>RPD Limits</u>
Total Metals - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1785388-3 QC Sample: L2330015-01 Client ID: MS Sample												
Lead, Total	5.44	49.5	57.2	105		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2329558

Report Date: 06/02/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1785388-4 QC Sample: L2330015-01 Client ID: DUP Sample						
Lead, Total	5.44	8.16	mg/kg	40	Q	20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

SAMPLE RESULTS

Lab ID: L2329558-01

Date Collected: 05/25/23 12:40

Client ID: LS-A-F04-C1-VOC

Date Received: 05/25/23

Sample Location: PHILADELPHIA, PA

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	-	05/26/23 13:13	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

SAMPLE RESULTS

Lab ID: L2329558-02

Date Collected: 05/25/23 12:40

Client ID: LS-A-F04-C1-COMP

Date Received: 05/25/23

Sample Location: PHILADELPHIA, PA

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	-	05/26/23 13:13	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

SAMPLE RESULTS

Lab ID: L2329558-03

Date Collected: 05/25/23 15:50

Client ID: LS-A-F05-C1-VOC

Date Received: 05/25/23

Sample Location: PHILADELPHIA, PA

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	-	05/26/23 13:13	121,2540G	ROI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2329558**Project Number:** 200.00135.023**Report Date:** 06/02/23**SAMPLE RESULTS**

Lab ID: L2329558-04

Date Collected: 05/25/23 15:50

Client ID: LS-A-F05-C1-COMP

Date Received: 05/25/23

Sample Location: PHILADELPHIA, PA

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	88.4		%	0.100	NA	1	-	05/26/23 13:13	121,2540G	ROI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.023

Lab Number: L2329558

Report Date: 06/02/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG1783953-1 QC Sample: L2329387-01 Client ID: DUP Sample						
Solids, Total	90.9	91.6	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2329558**Project Number:** 200.00135.023**Report Date:** 06/02/23**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(*)
L2329558-01A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2329558-01B	Vial water preserved	A	NA		3.0	Y	Absent	26-MAY-23 11:42	PA-8260HLW(14)
L2329558-01C	Vial water preserved	A	NA		3.0	Y	Absent	26-MAY-23 11:42	PA-8260HLW(14)
L2329558-01D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2329558-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2329558-02B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)
L2329558-03A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2329558-03B	Vial water preserved	A	NA		3.0	Y	Absent	26-MAY-23 11:42	PA-8260HLW(14)
L2329558-03C	Vial water preserved	A	NA		3.0	Y	Absent	26-MAY-23 11:42	PA-8260HLW(14)
L2329558-03D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2329558-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2329558-04B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

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
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

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
Project Number: 200.00135.023

Lab Number: L2329558
Report Date: 06/02/23

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.)

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY

Lab Number: L2329558

Project Number: 200.00135.023

Report Date: 06/02/23

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-Terpeneol

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-Terpeneol; 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, SM4500CI-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, **LCHAT 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

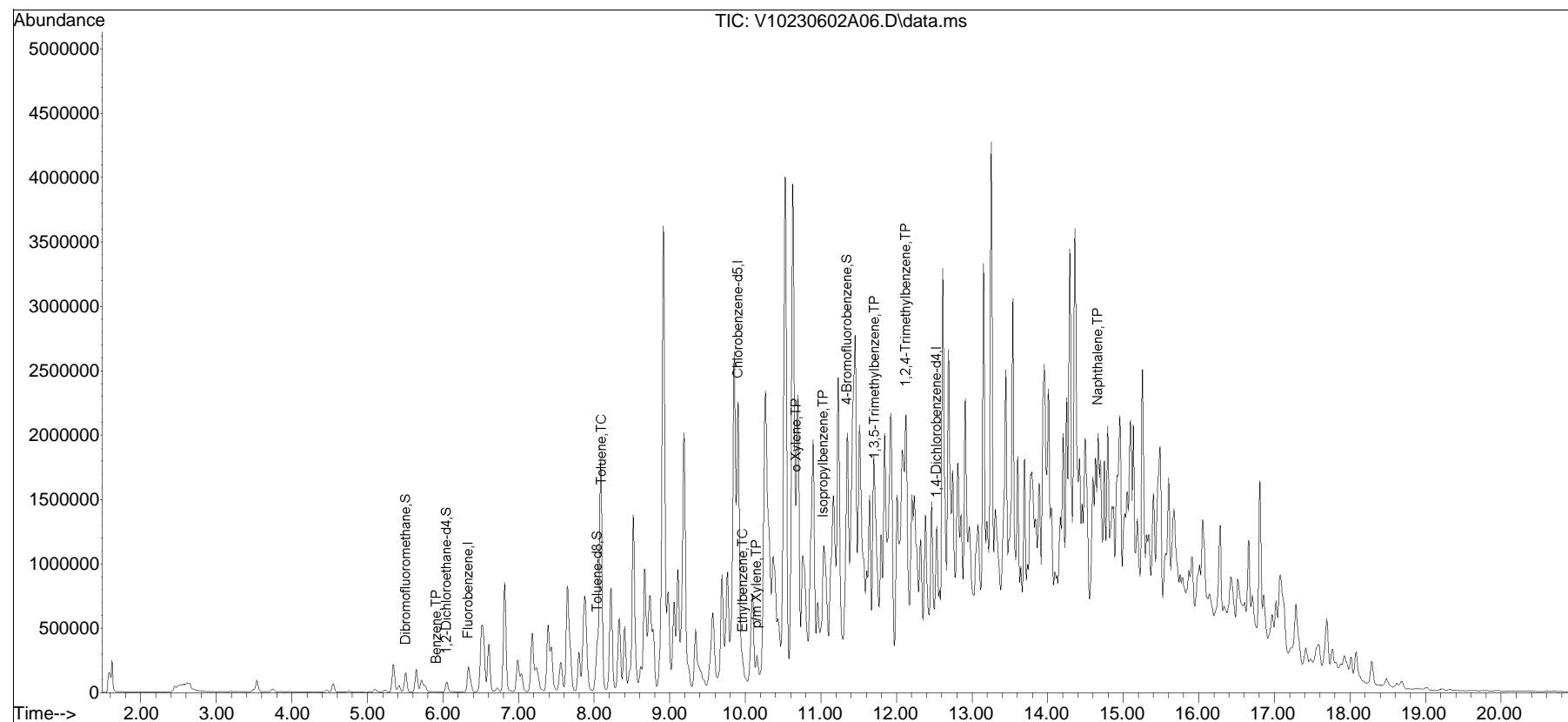
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230602A\
Data File : V10230602A06.D
Acq On : 2 Jun 2023 10:19 am
Operator : VOA110:MKS
Sample : 12329558-01,31h,5.88,5,0.100,,a
Misc : WG1786503,ICAL19973
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jun 02 10:57:38 2023
Quant Method : I:\VOLATILES\VOA110\2023\230602A\V110_230501A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 02 12:02:28 2023
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list02A\V10230602A01.D•



Appendix B

Historical Soil Sampling Results



File: N:\GIS\Prj\P044.001_PESRM-PES\WXDS\SMP\Addendum No 5\20230620\Figure 1 - Evergreen with Exceedances.mxd 6/20/2023 Created by:JD Checked by:Initial Coordinate System: NAD_1983_2011_StatePlane_Pennsylvania_South_FIPS_3702_Ft_US



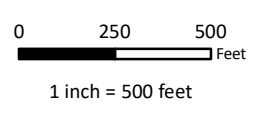
Legend

- 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



SAFETY FIRST

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
 PROJECT: Soil Management Plan Addendum No. 5
 PROJECT NUMBER: P044.001.001

Evergreen Locations with Exceedances

FIGURE 1

File: N:\GIS\Prj\044_001_PESRM-PES\WXDS\SMP\Addendum No 5\20230620\Figure 2 - AST and RCRA Areas with Exceedances.mxd 6/20/2023 Created by: JD Checked by: Initial Coordinate System: NAD_1983_2011_StatePlane_Pennsylvania_South_FIPS_3702_Ft_US



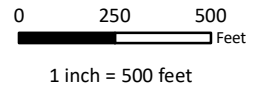
Legend

- Sampling Cell Boundaries
- Tank Group 01 Boundary

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



SAFETY FIRST

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum No. 5
PROJECT NUMBER:	P044.001.001

Aboveground Storage Tank and RCRA Locations with Exceedances

FIGURE 2

Appendix C

Data Usability Summary



Table 1
Quality Control Checklist
Former Philadelphia Refinery, Philadelphia, PA

SDG	Keyfile-Related							EDD-Related							Check for Concerning Qualifiers	Comments
	Check Lab Login	Check Keyfile	Check COC/Field Notes	Check Sample IDs and Prepping	Check Analyte List Reported	Review EDD for Issues	Check Dates, Matrix and Sample Type	Multiple Results								
								Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other	Resolved			
L2323561	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2323561-05 (LS-A-A01-C3-VOC): VOCs reported for two runs. The IS response(s) for fluorobenzene (41%), chlorobenzene-d5 (19%), and 1,4-dichlorobenzene-d4 (7%) and the surrogate recoveries for 1,2-dichloroethane-d4 (143%), toluene-d8 (192%) and 4-bromofluorobenzene (172%) were outside the acceptance criteria; however, re-analysis achieved the following results: chlorobenzene-d5 (33%), and 1,4-dichlorobenzene-d4 (14%) and toluene-d8 (157%) and 4-bromofluorobenzene (133%). The results of both analyses are reported; however, since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias. 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. The second run with fewer surrogate recoveries outside of acceptance criteria is selected as reportable. L2323561-09 (LS-A-A02-C2-VOC): VOCs reported for two runs. The IS response(s) for chlorobenzene-d5 (44%), and 1,4-dichlorobenzene-d4 (21%) and the surrogate recoveries for toluene-d8 (146%) and 4-bromofluorobenzene (153%) were outside the acceptance criteria; however, re-analysis achieved the following results: chlorobenzene-d5 (35%), and 1,4-dichlorobenzene-d4 (16%) and toluene-d8 (151%) and 4-bromofluorobenzene (135%). The results of both analyses are reported; however, since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias. 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.	
L2323969	Pass	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2324304	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2324304-01 (LS-A-C05-C1-VOC)P VOCs reported for two runs. The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies. 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.	
L2324723	Pass	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2325026	Pass	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2325350	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2325350-13 (LS-A-E08-C3-VOC): VOCs reported for two runs. The surrogate recovery is outside the acceptance criteria for toluene-d8 (146%) and 4-bromofluorobenzene (394%); however, the sample was not re-analyzed due to coelution with an obvious interference. The surrogate recovery is outside the method acceptance criteria for dibromofluoromethane (66%) due to interference with the Internal Standard for the low run. 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.	
L2325590	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2325590-11 (LS-B-D01-C2-VOC): VOCs reported for two runs. The IS response for fluorobenzene (220%) and the surrogate recoveries for 1,2-dichloroethane-d4 (36%) and dibromofluoromethane (42%) and 4-bromofluorobenzene (142%) were outside the acceptance criteria due to obvious interferences. The sample was re-analyzed on a larger dilution. 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 original run (analyzed 5/13/2023) is reported and the second run is not reportable.	
L2325992	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2325992-13 (LS-A-G05-C3-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. Differences were noted between the results of the analyses which have been attributed to vial discrepancies. The surrogate recovery for the low run is outside the acceptance criteria for 4-bromofluorobenzene (261%); however, the sample was not re-analyzed due to coelution with an obvious interference. 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.	
L2326354	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2326354-03 (LS-A-G04-C2-VOC): VOCs reported for two runs. The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (23%) and the surrogate recovery for 4-bromofluorobenzene (2700%) were outside the acceptance criteria due to obvious interferences. 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 below method criteria, all associated compounds are considered to have a potentially high 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.	
L2326619	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2325590-09 (LS-B-D01-C1-VOC): VOCs reported for two runs. The IS response for fluorobenzene (367%) and the surrogate recovery for 1,2-dichloroethane-d4 (22%) and dibromofluoromethane (26%) and 4-bromofluorobenzene (192%) were outside the acceptance criteria due to obvious interferences. 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. L2326619-07 (LS-A-H05-C1-VOC)L VOCs reported for two runs. The IS response(s) for 1,4-dichlorobenzene-d4 (30%) and the surrogate recoveries for toluene-d8 (131%) and 4-bromofluorobenzene (656%) were outside the acceptance criteria due to obvious interferences. Since the IS response was below method criteria, all associated compounds are considered to have a potentially high bias. A high-level analysis was performed, and those results are also reported. 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.	
L2327408	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2327408-09 (LS-A-I04-C1-VOC): VOCs reported for two runs. The IS responses for chlorobenzene-d5 (41%), and 1,4-dichlorobenzene-d4 (10%) and the surrogate recoveries for 1,2-dichloroethane-d4 (131%), toluene-d8 (167%) and 4-bromofluorobenzene (1575%) were outside the acceptance criteria due to obvious interferences. 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 1
Quality Control Checklist
Former Philadelphia Refinery, Philadelphia, PA

SDG	Keyfile-Related							EDD-Related							Check for Concerning Qualifiers	Comments
	Check Lab Login	Check Keyfile	Check COC/Field Notes	Check Sample IDs and Prepping	Check Analyte List Reported	Review EDD for Issues	Check Dates, Matrix and Sample Type	Multiple Results					Resolved			
								Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other				
L2327784	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2327784-03 (LS-A-H04-C1-VOC): VOCs reported for two runs. The IS response(s) for 1,4-dichlorobenzene-d4 (26%) and the surrogate recovery for 4-bromofluorobenzene (1320%) were outside the acceptance criteria; however, re-analysis achieved the following results: 1,4-dichlorobenzene-d4 (47%) and toluene-d8 (176%) and 4-bromofluorobenzene (607%). The run with more surrogates recovers outside acceptance criteria is not reported and the run with fewer surrogate recoveries outside of acceptance criteria is selected as reportable. Both were low runs. L2327784-07 (LS-A-H04-C3-VOC): VOCs reported for two runs. The IS response(s) for 1,4-dichlorobenzene-d4 (44%) and the surrogate recoveries for toluene-d8 (147%) and 4-bromofluorobenzene (312%) were outside the acceptance criteria due to obvious interferences. L2327784-09 (LS-A-H02-C1-VOC): VOCs reported for two runs. The IS response(s) for 1,4-dichlorobenzene-d4 (24%) and the surrogate recovery for 4-bromofluorobenzene (220%) were outside the acceptance criteria; however, re-analysis achieved the following results: 1,4-dichlorobenzene-d4 (37%) and 4-bromofluorobenzene (169%). The results of both analyses are reported; however, since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias. The run with surrogate recoveries within acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable. 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. L2327784-11 (LS-A-H02-C2-VOC): VOCs reported for two runs. The IS response(s) for 1,4-dichlorobenzene-d4 (29%) and the surrogate recovery for 4-bromofluorobenzene (177%) were outside the acceptance criteria due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable. L2327784-13 (LS-A-H02-C3-VOC): VOCs reported for two runs. The IS response(s) for 1,4-dichlorobenzene-d4 (21%) and the surrogate recoveries for toluene-d8 (197%) and 4-bromofluorobenzene (1050%) were outside the acceptance criteria due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable. L2327784-15 (LS-A-H02-C4-VOC): VOCs reported for two runs. The internal standard (IS) response(s) for chlorobenzene-d5 (43%), and 1,4-dichlorobenzene-d4 (14%) and the surrogate recoveries for toluene-d8 (202%) and 4-bromofluorobenzene (1550%) were outside the acceptance criteria due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable. L2327784-17 (LS-A-H02-C5-VOC): VOCs reported for two runs. The IS response(s) for chlorobenzene-d5 (34%) and the surrogate recoveries for 1,2-dichloroethane-d4 (60%), toluene-d8 (139%) and 4-bromofluorobenzene (400%) were outside the acceptance criteria due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable.	
L2328559	Pass	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2328833	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2328833-01 (LS-A-I01-C1-VOC): VOCs reported for two runs. The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (178%); however, the sample was not re-analyzed due to coelution with an obvious interference. The run with surrogate recoveries within acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable. L2328833-05 (LS-A-D01-C1-VOC): VOCs reported for two runs. The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); however, the sample was not re-analyzed due to coelution with an obvious interference. The run with surrogate recoveries within acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable.	
L2329097	Pass	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2329558	Pass	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		

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 criteria 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 criteria 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 Notification 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.