MEMORANDUM

REGULAR CITY COUNCIL MEETING

January 17, 2023, at 7:00 PM

TO: City Council

FROM: Rich LaBombard, City Manager

DATE: February 30, 2023

SUBJECT: PM Environmental – Change Order #3 – PCB Remediation Workplan for Construction Debris

The Environmental Protection Agency's (EPA) Targeted Brownfield Assessment (TBA) work at 200 Blue Star Highway is now completed and the City is in possession of the final report. One of the findings of the report relates to the demolition debris stored on site which has been characterized as being below the Toxic Substance Control Act's (TSCA) waste criteria of 50 ppm for polychlorinated biphenyls. I've inserted excerpts of the TBA report for items related to the demolition debris. (See the complete report prepared by Tetra Tech on the City's website.) With the characterization of the demolition debris, the material may be removed to a Class II landfill once a risk-based disposal workplan is submitted to the EPA. Class II landfills accept construction and demolition debris. For informational purposes, material characterized as being above 50 ppm PCB's must be disposed of in an approved chemical waste storage facility. The nearest facility is located in Wayne County.

PM Environmental submitted Change Order No. 3 to prepare a risk-based disposal workplan for PCB remediation waste per TSCA rules. PM is proposing $5,000 to complete the workplan and $1,500 to meet with EPA regulators.

Funds for this activity are available in the Brownfield Redevelopment Authority Expenditures Fund for Contractual Consultants - 243-000-803.

No legal review is required for this activity.

I recommend City Council consider approval of PM Environmental' s Change Order No. 3 to prepare a risk-based disposal workplan for PCB remediation waste for construction material located at 200 Blue Star Highway for a fee of $6,500.

CHANGE ORDER

For Industrial Property Located at 200 Blue Star Highway in Douglas, Michigan

PM Environmental Project No. 01-10275-1-0003

Change Order No.: 3	Date: 1/20/2023
Property Address: Industrial Property Located at 200 Blue Star Highway in Douglas, Michigan	
Original Proposal Date: January 21, 2019	Original Proposal No.: 01013628
Scope of Work and Cost	
Original scope of work for ongoing consulting to evaluate economic incentives	$27,488.25
TSCA Work Plan to Dispose of Demolition Debris Stockpiles	
• Preparation of a Risk-Based Disposal Workplan for PCB Remediation Waste under Section 61C of TSCA	$5,000
• Meetings with EPA Regulators	$1,500
Projected Estimated Amount for Project	**$33,988.25**
All activities will be billed on a time and materials basis at PM's standard billing rates, and assume that no more than 6 total hours of meeting/correspondence time with regulators will be required. The terms and conditions of the contract between the parties remain unchanged and in full force and effect. It is understood and agreed by the parties hereto that the foregoing change(s) in the Contract Amount and change(s) in services are accepted and agreed to by the parties.	
PM Authorized Signature: 	**Client Authorized Signature:**
Signature date: January 20, 2023	**Signature date:**
NOTE: SIGN AND RETURN ORIGINAL; COPIES MAY BE RETAINED FOR YOUR FILE.	

** This is a Region 5 Targeted Brownfields Assessment Funded Project **

PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER HAWORTH PROPERTY

200 South Blue Star Highway
Douglas, Allegan County, Michigan

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5
25063 Center Ridge Road
Westlake, Ohio 44145

Prepared by

Tetra Tech, Inc.
Region 5 Superfund Technical Assessment and Response Team
1 South Wacker Drive, 37th Floor
Chicago, Illinois 60606

October 2022

Approved by: _____ Date: _____
EPA Region 5 Project Manager

Contractor Organization:	Tetra Tech, Inc.
Contract Name:	START V, Region 5-TBA Grant Program
Contract No.:	68-HE-0519-D0005
Task Order-Task Order Line-Item No.:	F0107-0001CI110
Document Tracking No.:	0905
ACRES ID No.:	251358

CONTENTS

Attachments

1.0 INTRODUCTION

Under Superfund Technical Assessment and Response Team (START) Contract No. 68-HE-0519-D0005, Task Order-Task Order Line-Item No. (TO-TOLIN) F0107-0001CI110, the U.S. Environmental Protection Agency (EPA) tasked Tetra Tech, Inc. (Tetra Tech) to conduct a Phase II environmental site assessment (ESA) at the Former Haworth Property (the Site) under the Targeted Brownfields Assessment (TBA) program. The Site consists of one 7.18-acre parcel in the Douglas, Allegan County, Michigan, including one 146,761 square foot concrete slab on the Site.

The Phase II ESA was conducted to further delineate the extent of polychlorinated biphenyl (PCB) contamination in concrete and shallow soil in the north portion of the Site and to collect waste characterization samples from the concrete and shallow soils to determine the appropriate disposal categories.

Tetra Tech conducted the Phase II ESA in accordance with the following:

- ASTM International (ASTM) Standard E1903-19, Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM 2019)
- Sampling and Analysis Plan (SAP) for the Former Haworth Property Site (Tetra Tech 2022a)
- Quality Assurance Project Plan (QAPP) for Region 5 Targeted Brownfields Assessment Projects in Indiana, Illinois, Michigan, Minnesota, Ohio, and Wisconsin (for Hazardous Substances and/or Petroleum), Revision 2 (Generic QAPP) (Tetra Tech 2019)
- QAPP Addendum for the Region 5 Targeted Brownfields Assessment Property, Former Haworth Property Site (Tetra Tech 2022b)

The Phase II ESA was completed by the following personnel:

- Carol Nissen, Tetra Tech, START TBA Program Manager
- Kelly Thomas, Tetra Tech, START Project Manager and Field Team Leader
- Todd Grossmann, Tetra Tech, Field Team Member
- Barbara Ball, Merit Laboratories, Inc. (Merit), Laboratory Quality Assurance (QA) Manager

Cabeno Environmental Field Services (Cabeno) conducted the direct-push drilling at the Site and contracted concrete coring to Diamond Concrete Sawing (Diamond). Analytical services for concrete and soil samples were provided by Merit.

This report summarizes Phase II ESA activities and presents a conceptual remedial action plan. Specifically, the report introduces the project in Section 1.0; discusses the ESA investigative methodology in Section 2.0; describes the environmental setting of the Site in Section 3.0; summarizes the Phase II ESA results in Section 4.0; presents the conceptual remedial action plan in Section 5.0; and presents conclusions in Section 6.0. All references cited in this report are in Section 7.0. Figures are presented in Appendix A. Sample analytical results summary tables are provided in Appendix B. A photographic documentation log is provided in Appendix C. Data validation reports are in Appendix D. The field logbook notes are provided in Appendix E. Laboratory analytical reports are provided in Attachment 1.

The remainder of Section 1.0 provides site background information, summarizes previous assessments conducted at the Site, and presents the objectives of this Phase II ESA.

1.1 SITE BACKGROUND

The Former Haworth Property consists of approximately 7.18 acres of land and is identified with the property identification number 50-016-070-00. The address is 200 South Blue Star Highway in the Douglas, Allegan County, Michigan. The Site previously contained an approximately 147,000-square-foot building that was used for industrial purposes, including plating, buffing, zinc die casting, metal forming, stamping, phosphatizing, and painting metal parts. The City of the Village of Douglas purchased the property in 2019. The Site has been vacant since 2014, and the building was demolished in 2021 with only the concrete slab remaining.

The geographic coordinates of the approximate center of the Site are 42.639708 north latitude and 86.211209 west longitude (**Figure 1**). **Figure 2** shows the site features and surrounding properties. Although still displayed on Figure 2, the former building has been demolished.

The Site is bordered to the north by commercial properties; to the east by Blue Star Highway, commercial properties, and hotels, followed by residential properties; to the south by commercial and residential properties; and to the west by Ferry Street and undeveloped land. According to the U.S. Geological Survey (USGS) *Douglas, Michigan* quadrangle 7.5-minute topographic map series, the Site is located at an elevation of approximately 650 feet above mean sea level.

Historical sources indicate that die casting machines were formerly utilized within three pits located in the East Room in the northern portion of the former building; die casting operations ended in 1971, and the pits were backfilled several years prior.

Subsurface investigations dating back to 1987 have been conducted at the Site. From 1998 through 2015, investigations focused on a trichloroethylene (TCE) plume originating at the southeast portion of the former building. A soil vapor extraction (SVE) system was installed onsite, and groundwater wells are continuously monitored. The extent of the TCE plume has been investigated and is delineated as extending offsite to the northwest.

On October 9, 2015, Environmental Resources Management Michigan, Inc. (ERM) performed a Phase II ESA at the Site. A subsurface structure survey identified three pits in the northern section of the former building in the East Room (former die cast area). The pits are approximately 13 to 14 feet deep and reportedly were pumped empty, cleaned by hydro-blasting, and backfilled with clean fill decades ago. Four soil samples collected from the vicinity of the pits contained PCBs at concentrations exceeding 1 milligram per kilogram (mg/kg). In addition, PCBs were detected in one boring (GP-3) at a concentration of 1,800 mg/kg at the 5-foot depth interval, which exceeds the Toxic Substances Control Act (TSCA) criteria. ERM performed additional sampling and delineated the horizontal extent of PCB contamination within the TSCA cleanup standard for low occupancy areas of 100 mg/kg; the vertical extent of PCB contamination was not delineated (ERM 2015).

In 2016 and 2017, ERM collected surficial concrete samples from the building slab in the East Room and detected PCB concentrations ranging from non-detect to 5,600 mg/kg, exceeding TSCA criteria. ERM also collected concrete samples from the West Room in the northwestern portion of the former building; no concrete surface sample results exceeded 10 mg/kg. ERM surficial concrete sample locations with PCB detections exceeding TSCA criteria are displayed on Figure 3 for the East Room and on Figure 5 for the West Room in Appendix A.

In 2017, ERM installed four temporary monitoring wells to a depth of approximately 40 feet below ground surface (bgs) north of the East Room to determine if PCBs present in the concrete and soil had migrated to groundwater. No PCBs were detected above analytical detection limits in the groundwater samples. ERM also collected three soil gas samples in the East Room for laboratory analysis of PCBs; no PCBs were identified at concentrations exceeding laboratory detection limits (GHD Services, Inc. [GHD] 2018a).

GHD developed a Remedial Alternatives Evaluation (RAE) for the Site dated May 11, 2018. The RAE reviewed previous reports, documented the extent of PCB contamination at the Site, and evaluated remedial alternatives for risks associated with the residential and nonresidential direct contact pathways (GHD 2018a).

In June 2018, GHD conducted additional investigative sampling to vertically delineate the extent of PCB contamination in the East Room. PCB concentrations were delineated vertically to a depth of 18 to 20 feet below grade. However, soil borings at some locations could not be advanced to the necessary depths due to refusal. Thus, the vertical extent of PCB contamination in soil below the East Room is not fully defined.

GHD conducted additional sampling in the East and West Room. The West Room contained PCB concentrations exceeding 1 mg/kg, but concentrations did not exceed 100 mg/kg. The extent of PCBs in the concrete in the West Room was delineated to 1 mg/kg. PCB concentrations in the concrete in the East Room were delineated to 1 mg/kg, except for samples from around the east and north walls of the building. Soil sample locations with PCB detections exceeding TSCA criteria are displayed on Figure 4 for the East Room and on Figure 5 for the West Room in Appendix A.

GHD developed a PCB Cleanup Plan and Application for Risk-Based Cleanup and Disposal Approval and a subsequent addendum in August and September 2018, respectively. The Cleanup Plan included results of GHD's additional investigations, which aimed to further delineate PCB contamination at the Site (GHD 2018b).

PM Environmental, Inc (PM) completed a Baseline Environmental Assessment (BEA) in March 2019. The BEA identified the Site as a "facility" under Michigan Natural Resources and Environmental Protection Act (NREPA) Part 201 (PM 2019).

PM completed a TSCA Cleanup Evaluation for the Site in November 2021 (PM 2021). According to this document, the structure onsite was scheduled for demolition in December 2021. The TSCA Cleanup Evaluation updated the previous PCB Cleanup Plan due to the revised end-use of the property to include high-occupancy and residential use. The City of the Village of Douglas intends to redevelop the property for mixed commercial office/retail and residential use. Thus, the redevelopment plan includes high occupancy use, as defined under TSCA regulations.

The TSCA cleanup evaluation prepared by PM includes the following proposed remedial actions:

- Demolish the building structure and maintain portions of the concrete slab in the East Room and West Room for the interim to provide a temporary cap to the underlying PCB-contaminated soil.
- Remove and properly dispose of concrete present over soil with PCB concentrations exceeding 10 mg/kg in the East Room (700 cubic yards) to facilitate excavation of PCB-contaminated soil.

- Excavate and properly dispose of soil with PCB concentrations exceeding 10 mg/kg to a depth of 4 feet in the East Room.
- Remove and properly dispose of concrete containing PCBs at concentrations exceeding 1 mg/kg in the West Room (20 cubic yards).
- Excavate and properly dispose of limited areas of soil with PCB concentrations exceeding 1 mg/kg in the East Room and West Room to a depth of 1 foot. Estimated volume in the East Room is 1,090 cubic yards and in the West Room is 22 cubic yards.
- Install a demarcation fabric and minimum 10-inch-thick compacted clay cap over unexcavated soil containing PCB concentrations exceeding 1 mg/kg in the East Room and West Room.
- Remove the remaining portions of the concrete slab where PCB concentrations did not exceed 1 mg/kg during site redevelopment.
- Areas where soil PCB concentrations exceed 25 mg/kg will be restricted to low-occupancy use, as defined under TSCA regulations.
- All excavated soil and PCB-contaminated concrete will be disposed of as TSCA or TSCA-regulated soil and debris based on the PCB concentrations.

The City of the village of Douglas requested assistance from EPA to complete additional concrete and soil sampling for PCBs to determine the appropriate disposal requirements.

1.2 OBJECTIVES OF THE PHASE II ESA

The August 2022 START Phase II ESA was conducted to evaluate the presence of PCB impacts to the concrete slab and the underlying soil at the Site. Tetra Tech START reviewed the available PCB analytical data for concrete and soil in the East and West Rooms and identified data gaps warranting additional investigation. The assessment was performed to further delineate the magnitude and extent of PCBs in concrete and soil and to determine the appropriate remediation waste disposal categories.

East Room

The previous investigations by ERM and GHD identified PCBs in the concrete in the East Room. PCB concentrations in concrete samples from the East Room ranged from below the detection limit to 5,600 mg/kg. Thus, the concrete will be disposed of as TSCA or TSCA-regulated material. Based on the previous analytical results, PCB concentrations detected in concrete samples from a depth interval of 0 to 0.5-feet ranged from below analytical detection limits to less than 50 mg/kg, except for sample locations GP-51, GP-52, GP-54, GP-55, GP-56, GP-57, GP-114, GP-117, GP-120, and GP-121, and GP-123 which contained PCBs at concentrations exceeding 50 mg/kg. Concrete samples from the depth interval of 0.5 to 0.7-foot contained PCB concentrations exceeding 50 mg/kg, except for GP-45, GP-112, GP-124, and GP-125, which contained PCBs at concentrations less than 50 mg/kg. No concrete samples were collected from a depth interval greater than 0.7 foot. Thus, START recommended additional horizontal and vertical characterization of the concrete to more closely delineate the extent of PCBs that exceed TSCA and TSCA-regulated criteria and for waste characterization purposes.

The previous investigations by ERM and GHD identified PCB concentrations in the soil in the East Room exceeding TSCA and TSCA-regulated criteria. The remedial action planned to remove soil from 0 to 4

feet bgs in most of the East Room and remove soil from 0 to 1-foot bgs in one smaller area. START recommended further horizontal and vertical characterization of the soil to identify the extent of the soil exceeding TSCA and TSCA-regulated criteria and for waste characterization purposes.

West Room

The previous investigations by ERM and GHD delineated PCB soil contamination to an area in the northeastern portion of the West Room. Four concrete samples from the West Room (GP-48, GP-64, GP-85, and GP-87) near the PCB contaminated soil area contained PCB concentrations exceeding 1 mg/kg but below 50 mg/kg. The PCB-impacted concrete samples were reportedly collected from the surface of the concrete and contained PCB concentrations ranging from 1.6 mg/kg to 9.2 mg/kg. Thus, based on the analytical results, the concrete in the West Room does not exceed TSCA criteria but exceeds TSCA-regulated criteria (PCB concentration between 1 and 50 mg/kg) in surficial locations in the West Room. The West Room concrete appears to be sufficiently characterized and is planned to be disposed of as TSCA-regulated material. The concrete overlying the PCB contaminated soil area requires removal to allow for soil remediation. Therefore, START recommended a concrete sample be collected in the PCB contaminated soil area for waste characterization purposes.

The previous investigation by ERM detected a PCB concentration of 4.6 mg/kg in the soil at soil boring location GP-50 from a depth interval of 0.75 to 1.25 feet. Soil samples collected from deeper intervals (5-5.5 feet; 10-10.5 feet; 15-15.5 feet; and 19.5 to 20 feet) at soil boring GP-50 or other shallow locations did not contain PCBs above the analytical detection limit and soil contamination was delineated to the area surrounding GP-50. Thus, the West Room soil appears to be sufficiently delineated and is planned to be disposed of as TSCA-regulated material. Therefore, START recommended a soil sample to be collected in the PCB contaminated soil area (around GP-50) for waste characterization purposes.

2.0 INVESTIGATIVE METHODOLOGY

During the August 2022 Phase II ESA field investigation, Tetra Tech conducted concrete core sampling and soil sampling. The Phase II ESA investigative methodology is described in the following sections, and the investigative locations are presented in **Figures 3, 4, and 5** in **Appendix A.**

Before sampling activities began, START contacted MISS DIG to conduct a utility clearance, and the utility locations were identified and marked. In addition, the contractor decontaminated the working end of the rig and all coring equipment and tools before and in between each boring. START used a global positioning system (GPS) device to field flag each boring location.

2.1 CONCRETE SAMPLING

On August 16 thru and 18, 2022, START personnel provided oversight for the advancement of 30 concrete core borings within the East Room and West Room of the Site. The concrete core borings were advanced by Diamond to a maximum depth of 3 feet into the concrete slab using an approximately 1-inch diameter corer. Core borings were advanced in locations as follows:

East Room

- For the delineation of PCBs in the concrete slab, a total of 26 concrete core borings (CT01 through CT26) were planned and advanced to the bottom of the concrete slab, which was a maximum depth of 3 feet. One additional coring location (CT-17B) was advanced because the concrete corer encountered refusal before 3 feet at location CT-17.

- For waste characterization, two concrete core borings (CT-27 and CT-28) were advanced to the bottom of the slab, which was a maximum depth of 12-inches.

East Room concrete core sampling locations are presented in Figure 3 in Appendix A.

West Room

- For waste characterization, one concrete core boring CT-43 was advanced to the bottom of the slab, which was a maximum depth of 6.5 inches.

West Room concrete core sampling location is presented in Figure 5 in Appendix A.

Piles of demolition debris materials associated with the former building were wrapped in poly sheeting and located in the northern portions of the East and West Rooms. Some planned concrete core sampling locations were covered by the piles and were adjusted in the field.

The core samples were inspected for indications of chemical impacts, such as staining and odors. The core samples collected from the borings were continuously screened for soil vapors using a pre-calibrated photo-ionization detector (PID) organic vapor monitor. Several concrete cores in the East Room showed visual evidence of contamination (significant staining).

Up to three discrete core samples were collected from each coring location (CT-01 through CT-26) depending on the total depth of concrete and were analyzed for PCBs. The discrete concrete core samples were collected from the 0-to-1-foot depth interval, the 1-to-2-foot depth interval, and the 2-to-3-foot depth interval, if present. A total of 78 discrete core samples were submitted for laboratory analysis of PCBs.

One discrete core sample was collected from each coring (CT-27, FHP-CT28, and FHP-CT43) from the 0-to-1-foot depth interval. Each of these core samples was analyzed for PCBs, toxicity characteristic leaching procedure (TCLP) volatile organic compounds (VOC), TCLP semi-volatile organic compounds (SVOC), and TCLP metals for waste characterization.

All core samples were placed into laboratory-prepared sample containers and stored in a secured, iced cooler at less than 6°C. Samples were hand-delivered to Merit in East Lansing, Michigan, and submitted for laboratory analysis under chain-of-custody protocol. Each core sample was pulverized at the laboratory using milling or grinding equipment to achieve a uniform consistency prior to laboratory analysis for PCBs or waste characterization parameters. The results of analyses are summarized in **Section 4.1.**

2.2 SOIL SAMPLING

On August 17 and 18, 2022, START's subcontractor Cabeno advanced 15 soil borings. The soil borings in the East Room were advanced to a maximum depth of 4 feet below the base of the concrete slab, and the West Room soil boring was advanced to 12 inches below the base of the concrete slab. Soil borings were advanced in locations as follows:

East Room

- Twelve soil borings (SS-29 through SS-40) were advanced to 4 feet below the base of the concrete slab to delineate the extent of PCBs in upper soil.
- Two soil borings (SS-41 and SS-42) were advanced to 4 feet below the base of the concrete slab to analyze the upper soils for waste characterization parameters.

East Room soil sampling locations are presented in Figure 4 in Appendix A.

West Room

- One soil boring (SS-44) was advanced to 12 inches below the base of the concrete slab to analyze the upper soils for waste characterization parameters.

The West Room soil sampling location is presented in Figure 5 in Appendix A.

Some planned soil sampling locations were covered by the debris piles and were adjusted in the field.

All soil borings were continuously sampled via direct push methods by a track-mounted Geoprobe® unit. The soil borings were advanced to a maximum depth of 4 feet below the base of the concrete slab. Groundwater was not encountered during boring advancement. Concrete was cored and/or hammered using the Geoprobe. Soil was continuously collected within 4-foot MacroCore (polyethylene) liners.

START screened each sample core for VOCs using a PID. Soil sample intervals were placed in a small sealed bag for collecting headspace readings. PID screening results were recorded for each 1-foot interval and are summarized in the field logbook (**Appendix E**).

Four discrete soil samples were collected from each soil boring (SS-29 through SS-40) from each 1-foot depth interval. A total of 48 soil samples were submitted for laboratory analysis of PCBs. Six duplicate soil samples were also collected and submitted for the same analyses.

One discrete soil sample was collected from soil borings SS-41 and SS-42 in the East Room from the 0-to 4-foot interval, and one soil sample was collected from soil boring SS-43 in the West Room from the 0-to 12-inch interval. These soil samples were submitted for laboratory analysis of PCBs, TCLP VOCs, TCLP SVOCs, and TCLP metals for waste characterization. One duplicate soil sample was collected and submitted for the same analyses.

Soil in each interval was thoroughly mixed to facilitate the collection of a representative soil sample. After the soils were blended until the texture and color of the mixture appeared uniform, samples for PCB and the waste parameter analysis were collected and placed into the appropriate containers. The QA/quality control (QC) samples were collected immediately after the respective sample.

All soil samples were placed into laboratory-prepared sample containers, uniquely identified, labeled, and stored in a secured, iced cooler at less than 6°C. Samples were hand-delivered to Merit and submitted for laboratory analysis under chain-of-custody protocol. The results of the analyses are summarized in **Section 4.2.**

2.3 SAMPLE NUMBERING SYSTEM

All concrete and soil samples collected for laboratory analysis, including QC samples, were assigned a unique sample number in accordance with the approved SAP per the following format (Tetra Tech 2022a):

FHP-MatrixXX(x-x)-mmddyy

Where:

- Site designation is "FHP," indicating that the sample is from the Former Haworth Property site.
- "Matrix" indicates the matrix as follows: "CT" for concrete samples and "SS" for soil samples.
- "XX" is the sample location number.
- (x-x) is the sample depth measured in inches
- "mmddyy" is the date the sample was collected.

Field duplicate samples were also assigned with a unique sequential duplicate sample number. Descriptions of the parent and duplicate sample relationships are provided below:

- Duplicate soil sample FHP-SS-DUP01 was collected with the parent sample FHP-SS34(0-12)
- Duplicate soil sample FHP-SS-DUP02 was collected with the parent sample FHP-SS34(12-24)
- Duplicate soil sample FHP-SS-DUP03 was collected with the parent sample FHP-SS42(0-48)
- Duplicate soil sample FHP-SS-DUP04 was collected with the parent sample FHP-SS39(0-12)
- Duplicate soil sample FHP-SS-DUP05 was collected with the parent sample FHP-SS39(12-24)
- Duplicate soil sample FHP-SS-DUP06 was collected with the parent sample FHP-SS38(0-12)
- Duplicate soil sample FHP-SS-DUP07 was collected with the parent sample FHP-SS38(12-24)

2.4 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

During field activities, the investigation-derived waste (IDW) was double-bagged and containerized for disposal. The concrete and soil cuttings were containerized in two 5-gallon buckets and sampled for waste characterization to properly dispose of the waste. The waste samples were sent to Merit for analysis, and the results for PCBs, TCLP VOC, TCLP SVOCs, and TCLP metals are represented in Table B-3 in **Appendix B.**

Buckets containing IDW were sealed and staged at the Site under a tarp with other building debris awaiting disposal.

2.5 SAMPLE HANDLING, TRACKING, AND CUSTODY PROCEDURES

This section describes sample packaging and shipping procedures and QA/QC procedures for concrete and soil samples.

2.5.1 Sample Packaging and Shipping Procedures

All samples were identified, handled, tracked, and maintained under chain-of-custody procedures in accordance with the QAPP (Tetra Tech 2019). Samples were collected in laboratory-supplied sample containers and pre-preserved containers provided by the laboratory, as applicable. Sample containers were tightly sealed and immediately packed on ice in coolers in an upright position. After each sample was collected, the laboratory chain-of-custody form was updated. Sample coolers were securely taped for delivery to prevent any tampering or loss of samples and were transported directly to the laboratory with relinquish and acceptance dates and times recorded on the chain-of-custody forms.

2.5.2 Quality Assurance and Quality Control Procedures

Field QA/QC samples were obtained and submitted for analysis for assessing the quality of the data that resulted from the field sampling program. No equipment blank samples were necessary since samples were collected using disposable sampling equipment. Field QA/QC samples included the following:

- Duplicates: Duplicate soil samples were collected in the field and submitted to the laboratory. These samples were collected at an approximate rate of 1 per every 20 samples and measured laboratory precision and matrix variability. Because of the nature of the concrete, no duplicate concrete samples were collected.
- Matrix Spike/ Matrix Spike Duplicates (MS/MSD): MS/MSD soil samples were collected in the field and submitted to the laboratory. These samples were collected at an approximate rate of 1 per every 20 samples and measured laboratory accuracy and precision and matrix variability. Because of the nature of the concrete, no MS/MSD concrete samples were collected.

2.6 FIELD MEASUREMENTS AND RECORDKEEPING

The field team and project manager monitored adherence to the SAP, QAPP, and QAPP Addendum (Tetra Tech 2022a, 2019, and 2022b). A field logbook was maintained to document the sampling activities and field screenings (**Appendix E**).

The date and start time were recorded at the beginning of each logbook entry. Measurements and samples collected were recorded in the field logbook or on field forms. Photographs documenting field activities are provided in **Appendix C**.

2.7 DECONTAMINATION PROCEDURES

The Geoprobe sampling rod and concrete corer were decontaminated before use, between each sampling location, and at the end of the field investigation. Decontamination methods for sampling equipment consisted of an Alconox detergent wash followed by potable water rinse. All disposable sampling supplies, MacroCores, and personal protective equipment (PPE) were bagged and disposed of properly.

2.8 WASTE CHARACTERIZATION AND MANAGEMENT

Disposable sampling equipment and PPE were double bagged and disposed of as solid waste.

2.9 ANALYTICAL METHODOLOGY

Merit Laboratories, Inc., a laboratory certified by the National Environmental Laboratory Accreditation Program, performed the concrete and soil analyses. Concrete and soil investigative samples were analyzed using one or more of the following analytical methods:

- TCLP VOCs – SW-846 Method 8260B
- TCLP SVOCs – EPA SW-846 Method 8270D
- TCLP RCRA Metals – EPA SW-846 Method 6020A/7471B
- PCBs – EPA SW-846 Method 8082A

As required in the QAPP, Tetra Tech conducted data validation on concrete and soil data, and all data were deemed useable for the purposes of the project, with qualifiers assigned as appropriate. The laboratory data validation report is provided in **Appendix D**. Laboratory analytical results for concrete and soil samples are summarized in tables provided in **Appendix B**. Laboratory analytical reports for the samples are provided in **Attachment 1**.

3.0 ENVIRONMENTAL SETTING

This section describes the regional physiography, regional geology and hydrogeology, and site-specific geology and hydrogeology.

3.1 REGIONAL PHYSIOGRAPHY

According to the USGS Douglas 7.5-minute topographic map series, the Site is located at an elevation of approximately 650 feet above mean sea level (USGS 1994). The Site is relatively flat.

3.2 REGIONAL GEOLOGY AND HYDROGEOLOGY

The Bedrock Geology of Michigan indicates the bedrock of the Site is the Coldwater/Sunbury/Berea Shale of the Mississippian Period (University of Michigan 2016). The Site is underlain by the Michigan Basin of the Paleozoic Era.

The U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS) identifies the dominant surficial soil component as a Chelsea loamy fine sand and Oshtemo-Chelsea complex. The soils have very high infiltration rates and are sandy with a high water table or shallow to an impervious layer.

The groundwater flow was calculated in previous investigations to the northwest toward Wicks Creek.

3.3 SITE GEOLOGY AND HYDROGEOLOGY

The general geologic profile of the Site consists of fill and debris and sandy topsoil in the 0- to 4-foot depth interval. Fine silty sand and rocks were encountered in the soil borings below a depth of 1-foot bgs.

4.0 PHASE II ESA RESULTS

The results of the Phase II ESA are described in this section. The laboratory data packages are provided as **Attachment 1**. The laboratory data validation report is provided in **Appendix D**. Laboratory analytical results for concrete and soil samples are summarized in tables provided in **Appendix B**.

4.1 CONCRETE

Concrete samples were analyzed for PCBs, TCLP VOCs, TCLP SVOCs, and TCLP metals to characterize the disposal of the concrete to be generated during site redevelopment activities. The concrete samples analyzed for PCBs were compared to TSCA criteria found in 40 CFR Part 761. The samples analyzed for TCLP parameters were compared to the 40 CFR 261.24 hazardous waste requirements for toxicity.

The analytical results for concrete are summarized in Table B-1 and the waste disposal analytical results are summarized in Table B-3 in Appendix B. PCB results are summarized for the East Room concrete in Figure 3 and for the West Room concrete in Figure 5 in Appendix A. The following is a summary of the laboratory analytical results:

- PCB Aroclor-1254 was detected in concrete samples above the TSCA-regulated criteria of 1.0 mg/kg but below the TSCA waste criteria of 50.0 mg/kg in the following East Room samples:
    - FHP-CT01(0-4)-20220817, FHP-CT02(0-12)-20220817, FHP-CT03(0-12)-20220817, FHP-CT06(0-12)-20220817, FHP-CT07(0-12)-20220817, FHP-CT08(0-12)-20220817, FHP-CT10(12-24)-20220817, FHP-CT10(24-36)-20220817, FHP-CT11(0-12)-20220817, FHP-CT12(0-9)-20220817, FHP-CT13(0-12)-20220817, FHP-CT14(0-11)-20220817, FHP-CT16(0-12)-20220818, FHP-CT17(12-24)-20220817, FHP-CT18(0-9.5)-20220817, FHP-CT19(12-19)-20220818, FHP-CT25(0-12)-20220818, FHP-CT27(0-12)-20220817, and FHP-CT28(0-12)-20220817
- PCB Aroclor-1254 was detected in concrete samples above the TSCA waste criteria of 50.0 mg/kg in the following East Room samples:
    - FHP-CT04(0-11.5)-20220817, FHP-CT05(0-12)-20220817, FHP-CT09(0-7.5)-20220817, FHP-CT17(0-12)-20220817, FHP-CT20(0-12)-20220817, FHP-CT20(12-24)-20220817, and FHP-CT20(24-36)-20220817

No PCBs were detected in the one concrete sample collected in the West Room. No analytes were detected in concrete samples above the 40 CFR 261.24 hazardous waste criteria.

4.2 SOIL

Soil samples were analyzed for PCBs, TCLP VOCs, TCLP SVOCs, and TCLP metals. The soil samples were analyzed for PCBs to determine the required disposal method of the soil. In addition, some samples were analyzed for TCLP parameters to determine if they exceeded hazardous waste criteria in 40 CFR 261.24.

The PCB analytical results for soil are summarized in Table B-2 and the waste disposal analytical results are summarized in Table B-3 in Appendix B. PCB results are summarized for the East Room soils in Figure 4 and for the West Room soils in Figure 5 in Appendix A. The following is a summary of the laboratory analytical results:

- PCB Aroclor-1254 was detected in soil samples above the TSCA-regulated criteria of 1 mg/kg but below the TSCA waste criteria of 50 mg/kg in the following East Room samples:

  - FHP-SS32(0-12)-20220817, FHP-SS39(0-12)-2022818 and its duplicate sample, FHP-SS40(0-12)-20220818, FHP-SS40(12-24)-20220818, FHP-SS41(0-48)-20220817;

- PCB Aroclor-1254 was detected in soil samples above the TSCA waste criteria of 50.0 mg/kg in the following East Room sample:
  - FHP-SS42(0-48)-20220818 and its duplicate sample

No PCB concentrations above 1 mg/kg were detected in the one concrete sample collected in the West Room. No analytes were detected in soil samples above the 40 CFR 261.24 hazardous waste criteria.

4.3 QUALITY ASSURANCE/QUALITY CONTROL

The QA/QC sample results were evaluated as part of the data review process. Tetra Tech prepared a laboratory data validation report, which is included in **Appendix D**. Method detection limits for soil and concrete were within the limits for the method approved in the QAPP Addendum. All data were deemed useable and qualified as needed.

5.0 CONCEPTUAL REMEDIAL ACTION PLAN

Based on soil and concrete analytical results from samples collected during the August 2022 Phase II ESA activities and previous investigations, PCBs were detected above the TSCA and TSCA-regulated waste disposal criteria.

East Room - Concrete

The previous investigations by ERM and GHD identified PCBs in the concrete at concentrations exceeding 50 mg/kg at sample locations GP-51, GP-52, GP-54, GP-55, GP-56, GP-57, GP-114, GP-117, GP-120, GP-121, GP-123, and GP-127. The August 2022 investigation included additional horizontal and vertical characterization of concrete to delineate the extent of PCBs more closely. PCB concentrations detected in concrete from the 0- to 1-foot depth interval ranged from below the detection limit to 8,920 mg/kg. Samples from locations CT-04, CT-05, CT-09, CT-17, and CT-20 contained PCBs at concentrations exceeding 50 mg/kg in the shallow (less than 1-foot) concrete. PCB concentrations also exceeded 50 mg/kg at CT-20 in the 1- to 2-foot depth interval (3,660 mg/kg) and the 2- to 3-foot depth interval (253 mg/kg). PCB results are summarized for the East Room concrete in Figure 3 in Appendix A.

Additional waste characterization samples were collected for TCLP parameters, and no analytes were detected above the 40 CFR 261.24 hazardous waste criteria.

Based on these analytical results, shallow concrete (less than 12 inches) at locations CT-04, CT-05, CT-09, CT-17, CT-20, GP-51, GP-52, GP-54, GP-55, GP-56, GP-57, GP-114, GP-117, GP-120, GP-121, GP-123, and GP-127 exceed the TSCA criteria and should be disposed of as TSCA waste. Concrete at deeper intervals (up to 3 feet) also exceeds TSCA criteria at CT-20 and should be disposed of as TSCA waste. The remaining concrete in the East Room that exceeds 1 mg/kg PCB concentrations should be disposed of as TSCA-regulated waste.

East Room - Soil

The previous investigations by ERM and GHD identified PCBs in the soil at concentrations exceeding the TSCA waste criteria of 50 mg/kg at locations GP-10, GP-11, GP-16, GP-17, GP-19, GP-28, GP-36, GP-37, GP-41, GP-74, BH-010, and BH-013. PCBs exceeded 1 mg/kg but were below 50 mg/kg at GP-12, GP-13, GP-18, GP-20, GP-22, GP-23, GP-26, GP-31, GP-39, GP-42, GP-45, GP-46, GP-47, GP-73, GP-75, GP-76, GP-90, GP-93, and GP-94. The August 2022 investigation included additional horizontal and vertical characterization of soil to delineate the extent of PCBs more closely. PCB concentrations detected in soil from the 0- to 1-foot depth interval ranged from below the detection limit to 13 mg/kg. Samples from locations SS-32, SS-39 (and its duplicate sample), and SS-40 contained PCBs in the 0- to 1-foot depth interval at concentrations exceeding 1 mg/kg but below 50 mg/kg. The sample from location SS-40 contained PCB concentrations in the 1- to 2-foot depth interval exceeding 1 mg/kg but below 50 mg/kg. The sample collected over the entire 0- to 4-foot depth interval at SS-41 exceeded 1 mg/kg, and the sample and duplicate collected at SS-42 contained PCB concentrations exceeding the TSCA criteria of 50 mg/kg. PCB results are summarized for the East Room soils in Figure 4 in Appendix A.

In addition, waste characterization samples were analyzed for TCLP parameters. No analytes were detected above the 40 CFR 261.24 hazardous waste criteria.

Based on these analytical results, soils with PCB concentrations exceeding 1 mg/kg should be excavated and disposed of as TSCA-regulated waste. Soil from SS-42, GP-10, GP-11, GP-16, GP-17, GP-19, GP-28, GP-36, GP-37, GP-41, GP-74, BH-010, and BH-013 should be excavated to up to 4-feet and disposed of as TSCA waste. Following excavation, areas containing PCB concentrations above 1 mg/kg should be capped in accordance with the requirements of 40 CFR 761.61(a)(7) to act as an exposure barrier above remaining PCB-impacted soil.

West Room - Concrete

Concrete in the West Room was sufficiently characterized in previous investigations and PCBs were detected in four concrete samples collected from the West Room near the PCB contaminated soil area. The PCB-impacted concrete samples were reportedly collected from the surface of the concrete and contained PCB concentrations ranging from 1.6 mg/kg to 9.2 mg/kg. In the August 2022 investigation, PCBs were not detected in concrete above the laboratory detection limit in the 0- to 12-inch interval. Thus, based on the analytical results, the concrete in the West Room does not exceed TSCA criteria but exceeds TSCA-regulated criteria (PCB concentration between 1 and 50 mg/kg) in surficial locations in the West Room, and the concrete with PCB concentrations above 1 mg/kg should be disposed of as TSCA-regulated material. Based on the analytical results for the TCLP parameters, the West Room concrete does not exceed the 40 CFR 261.24 hazardous waste criteria.

West Room - Soil

Soil in the West Room was sufficiently delineated in previous investigations to 1 mg/kg in the PCB contaminated soil area around GP-50. In the August 2022 investigation, PCBs were detected in the PCB contaminated soil area at 0.80 mg/kg in the 0- to 12-inch interval, and no analytes were detected above the 40 CFR 261.24 hazardous waste criteria. Based on the previous analytical results, the soils in the PCB contaminated area will be disposed of as TSCA-regulated waste. The West Room soil does not exceed the 40 CFR 261.24 hazardous waste criteria.

PCB results are summarized for the West Room concrete and soils in Figure 5 in Appendix A.

6.0 SUMMARY AND RECOMMENDATIONS

In August 2022, Tetra Tech conducted a Phase II ESA for the Former Haworth Property Site, which consists of one 7.18-acre parcel, including a concrete slab from a former 146,761-square-foot industrial building. The Site is located at 200 South Blue Star Highway in Douglas, Allegan County, Michigan.

The Phase II ESA was conducted at the request and authorization of EPA to further delineate the known PCB contamination within the concrete slab and underlying soils and to conduct waste characterization of the concrete and soil. The Phase II ESA was completed through the EPA's TBA program.

6.1 CONCRETE

The Phase II ESA included advancement of 30 concrete cores within the East and West Rooms of the former building. Discrete concrete core samples were collected from 1-foot intervals up to three feet in total thickness (0- to 1-foot interval, 1- to 2-foot interval, and 2- to 3-foot interval) in the East Room and from the 0- to 1-foot interval in the West Room. A total of 78 discrete core samples were submitted for laboratory analysis of PCBs. Three samples from the 0- to 1-foot depth interval were also collected and analyzed for waste characterization parameters at locations CT-27, CT-28, and CT-43.

Laboratory analytical results for the East Room and West Room core samples are summarized below. No other constituents were detected above their applicable screening levels.

East Room

- PCBs were detected above the TSCA regulated concentration of 50 mg/kg in shallow (less than 12 inches) concrete at locations CT-04, CT-05, CT-09, CT-17, CT-20, GP-51, GP-52, GP-54, GP-55, GP-56, GP-57, GP-114, GP-117, GP-120, GP-121, GP-123, and GP-127. Concrete at deeper intervals (up to 3 feet) also exceeds 50 mg/kg at CT-20. The concrete associated with these locations should be disposed of as TSCA waste.
- Concrete in the East Room with PCB concentrations above 1 mg/kg should be disposed of as TSCA-regulated waste.
- No TCLP parameters in concrete samples were detected at concentrations exceeding the applicable waste characterization screening levels.

West Room

- Based on the results of the current and previous investigations, PCBs were detected in four concrete samples in the West Room near the PCB contaminated soil area above 1 mg/kg. Therefore, concrete associated with these locations should be disposed of as TSCA-regulated waste.
- No TCLP parameters in concrete samples were detected at concentrations exceeding the applicable waste characterization screening levels.

6.2 SOIL

The Phase II ESA included the advancement of 15 soil borings within the East and West Rooms. The soil borings in the East Room were advanced to a maximum depth of 4 feet below the base of the concrete slab, and soil borings in the West Room were advanced to 12 inches below the base of the concrete slab.

East Room

- PCBs were detected exceeding TSCA criteria of 50 mg/kg at SS-42, GP-10, GP-11, GP-16, GP-17, GP-19, GP-28, GP-36, GP-37, GP-41, GP-74, BH-010, and BH-013. Soils associated with these locations should be disposed of as TSCA waste.
- Soil in the East Room with PCB concentrations above 1 mg/kg should be disposed of as TSCA-regulated waste.
- No TCLP parameters in soil samples were detected at concentrations exceeding the applicable waste characterization screening levels.

West Room

- Based on the results of the current and previous investigations, PCBs were detected at GP-50 above 1 mg/kg. Soil in the west room associated with this location should be disposed as PCB-regulated waste.
- No TCLP parameters in soil samples were detected at concentrations exceeding the applicable waste characterization screening levels.

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Former Haworth Property Site
Location: City of the Village of Douglas, Allegan County, Michigan

Prepared by: Tetra Tech, Inc.
TO-TOLIN: F0107-0001CI110
Date: August 16-18, 2022

Photograph No. 1 **Date:** August 16, 2022 **Description:** East Room with debris piles located in the northern portion of the Site **Direction:** Southwest	
Photograph No. 2 **Date:** August 16, 2022 **Description:** West Room with debris piles in the northern portion of the Site. **Direction:** Southeast	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Former Haworth Property Site
Location: City of the Village of Douglas, Allegan County, Michigan

Prepared by: Tetra Tech, Inc.
TO-TOLIN: F0107-0001CI110
Date: August 16-18, 2022

Photograph No. 13

Date: August 18, 2022

Description: Waste material buckets staged onsite awaiting disposal.

Direction: NA

1430: collected waste Characterization Samples from 2 buckets w/ low waste. Stored buckets under tarp with demolition debris.

1500: START to drill less offsite. START packaged coolers to ~~deliver~~ hand delivered to Merit Labs.

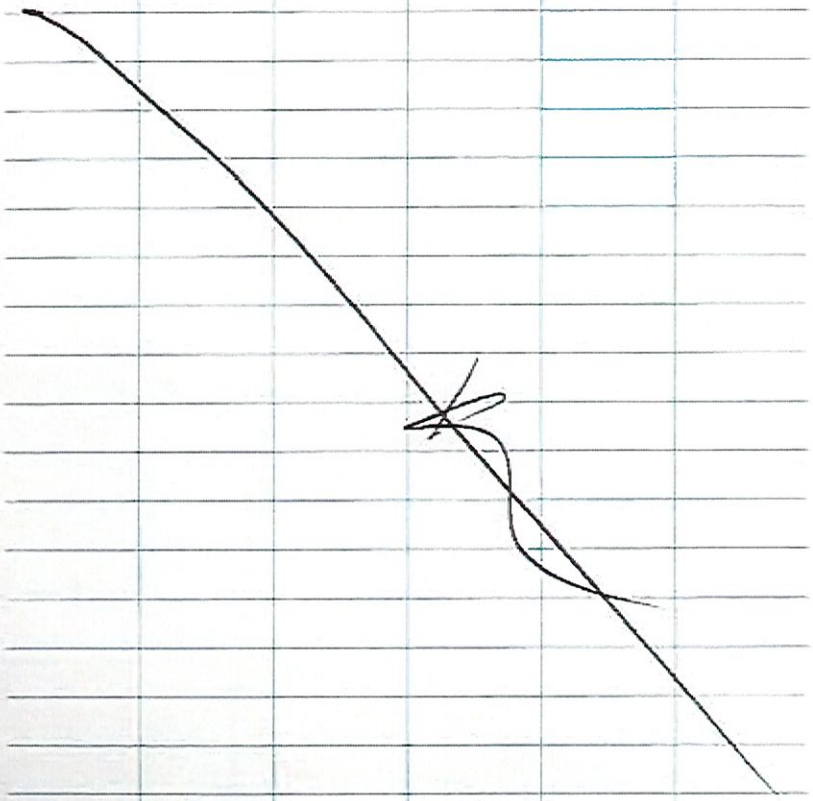

TABLE B-3

FORMER HAWORTH PROPERTY SITE - WASTE DISPOSAL RESULTS SUMMARY

			Soil				Concrete			IDW	
			East Room			West Room	East Room		West Room		
		Sample Location	SS41		SS42	SS44	CT27	CT28	CT43	SSWASTE	CTWASTE
Analyte	Disposal Criteria	Depth interval (inches)	0-48	0-48 DUP	0-48	0-12	0-12	0-12	0-6.5		
Benzene, TCLP	0.5		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Carbon tetrachloride, TCLP	0.5		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chlorobenzene, TCLP	100		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chloroform, TCLP	6		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
1,4-Dichlorobenzene, TCLP	7.5		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
1,2-Dichloroethane, TCLP	0.5		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethene, TCLP	0.7		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2-Butanone (MEK), TCLP	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene, TCLP	0.7		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Trichloroethene, TCLP	0.5		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Vinyl chloride, TCLP	0.2		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
2-Methylphenol (o-Cresol), TCLP	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
3-, 4-Methylphenol (p,m-Cresol), TCLP	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol, TCLP	100		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2,4,5-Trichlorophenol, TCLP	400		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2,4,6-Trichlorophenol, TCLP	2		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2,4-Dinitrotoluene, TCLP	0.13		0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U
Hexachlorobenzene, TCLP	0.13		0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U
Hexachlorobutadiene, TCLP	0.5		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Hexachloroethane, TCLP	3		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nitrobenzene, TCLP	2		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Pyridine, TCLP	5		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ
Arsenic, TCLP	5		0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Barium, TCLP	100		0.090	0.28	0.24	0.34	0.38	0.14	0.15	0.33	0.20
Cadmium, TCLP	1		0.0050 U	0.0050 U	0.0050 U	0.0050	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chromium, TCLP	5		0.050 U	0.050 U	0.050 U	0.050 U	0.080	0.070	0.070	0.050 U	0.080
Lead, TCLP	5		0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U
Mercury, TCLP	0.2		0.00050 U	0.00050 U	0.00050 U	0.00050 U	0.00050 U	0.00050 U	0.00050 U	0.00050 U	0.00050 U
Selenium, TCLP	1		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Silver, TCLP	5		0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U

Notes

IDW - Investigative Derived Waste

mg/L - milligrams per liter

Results and criteria are provided in mg/L

U - The result was not detected above the laboratory reporting limit

UJ - The analyte was not detected above the laboratory reporting limit, which is considered approximate due to deficiencies in the quality control criteria

Analytical Laboratory Report

Lab Sample ID: S39421.29
Sample Tag: FHP-SSWASTE-20220818
Collected Date/Time: 08/18/2022 10:45
Matrix: Soil
COC Reference: 151964

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	32oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
TCLP Zero Headspace Ext.	Completed	SW1311	08/23/22 18:45	DMP	
Metal Digestion*	Completed	SW3015A	08/24/22 09:15	CCM	
TCLP/SPLP BNA Extraction*	Completed	SW3535A	08/23/22 10:30	JW	
Mercury Digestion	Completed	SW7471B	08/26/22 12:30	CTV	

TCLP Extraction

Parameter	Result	Method	Run Date	Analyst	Flags
Initial Sample pH	10.53	SW1311	08/22/22 18:30 - 08/23/22	DMP	
pH after 3.5 ml HCl	1.84	SW1311	08/22/22 18:30 - 08/23/22	DMP	
% Solids	100	SW1311	08/22/22 18:30 - 08/23/22	DMP	
Sample Used g	100	SW1311	08/22/22 18:30 - 08/23/22	DMP	
Final Volume mL	2000	SW1311	08/22/22 18:30 - 08/23/22	DMP	
TCLP Extraction Fluid	1	SW1311	08/22/22 18:30 - 08/23/22	DMP	
Final Extract pH	5.58	SW1311	08/22/22 18:30 - 08/23/22	DMP	

Inorganics

Method: E335.4/SM4500-CN, Run Date: 08/26/22 09:10, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Cyanide, Total*	Not detected	0.08		mg/kg	40	57-12-5		

Method: SM2540B, Run Date: 08/19/22 17:02, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Total Solids*	96	1		%	1			

Method: SM4500-S2 D, Run Date: 08/26/22 10:23, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Sulfide*	Not detected	0.8		mg/kg	40	18496-25-8		500.0

Method: SW1030, Run Date: 08/22/22 17:15, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Flashpoint for Solids	Not detected	2.2		mm/sec	1			

Method: SW9045D, Run Date: 08/25/22 10:24, Analyst: SSM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
pH/ Corrosivity	11.07	0.01		STD Units	1			2-12.5

Method: SW9066, Run Date: 08/29/22 15:50, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Phenols*	0.45	0.2		mg/kg	20			

Lab Sample ID: S39421.29 (continued)
Sample Tag: FHP-SSWASTE-20220818

Method: SW9095B, Run Date: 08/22/22 15:52, Analyst: DMP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Paint Filter Test	Pass				1		1	

Metals

Method: SW6020A, Run Date: 08/24/22 10:43, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Arsenic, TCLP	Not detected	0.02		mg/L	25	7440-38-2		5.0
Barium, TCLP	0.33	0.05		mg/L	25	7440-39-3		100.0
Cadmium, TCLP	Not detected	0.005		mg/L	25	7440-43-9		1.0
Chromium, TCLP	Not detected	0.05		mg/L	25	7440-47-3		5.0
Lead, TCLP	Not detected	0.03		mg/L	25	7439-92-1		5.0
Selenium, TCLP	Not detected	0.05		mg/L	25	7782-49-2		1.0
Silver, TCLP	Not detected	0.005		mg/L	25	7440-22-4		5.0

Method: SW7471B, Run Date: 08/26/22 15:53, Analyst: CTV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Mercury, TCLP	Not detected	0.0005		mg/L	2	7439-97-6		0.2

Organics - Semi-Volatiles

TCLP Semi Volatiles, Method: SW8270D, Run Date: 08/24/22 16:59, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
2-Methylphenol (o-Cresol)	Not detected	1,000		ug/L	10	95-48-7		200,000
3-, 4-Methylphenol (p,m-Cresol)	Not detected	1,000		ug/L	10	3/4-CRESOL		200,000
Pentachlorophenol	Not detected	1,000		ug/L	10	87-86-5		100,000
2,4,5-Trichlorophenol	Not detected	1,000		ug/L	10	95-95-4		400,000
2,4,6-Trichlorophenol	Not detected	1,000		ug/L	10	88-06-2		2,000
2,4-Dinitrotoluene	Not detected	90		ug/L	10	121-14-2		130
Hexachlorobenzene	Not detected	90		ug/L	10	118-74-1		130
Hexachlorobutadiene	Not detected	100		ug/L	10	87-68-3		500
Hexachloroethane	Not detected	100		ug/L	10	67-72-1		3,000
Nitrobenzene	Not detected	100		ug/L	10	98-95-3		2,000
Pyridine	Not detected	100		ug/L	10	110-86-1		5,000

Organics - Volatiles

TCLP Volatiles, Method: SW5030C/8260C, Run Date: 08/24/22 16:16, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Benzene*	Not detected	100		ug/L	100	71-43-2		500
Carbon tetrachloride*	Not detected	100		ug/L	100	56-23-5		500
Chlorobenzene*	Not detected	100		ug/L	100	108-90-7		100,000
Chloroform*	Not detected	100		ug/L	100	67-66-3		6,000
1,4-Dichlorobenzene*	Not detected	100		ug/L	100	106-46-7		7,500
1,2-Dichloroethane*	Not detected	100		ug/L	100	107-06-2		500
1,1-Dichloroethene*	Not detected	100		ug/L	100	75-35-4		700
2-Butanone (MEK)*	Not detected	1,000		ug/L	100	78-93-3		200,000
Tetrachloroethene*	Not detected	100		ug/L	100	127-18-4		700
Trichloroethene*	Not detected	100		ug/L	100	79-01-6		500
Vinyl chloride*	Not detected	100		ug/L	100	75-01-4		200

1-Liquid does not travel through filter

FORMER HAWORTH PROPERTY SITE - ON SOIL ANALYTICAL RESULTS SUMMARY
MERIT LABORATORIES REPORT NO. S39421

Sample ID	Method	CAS No.	Analyte	Lab Result	Lab Qual	RL	Units	Val Result	Val Qual
FHP-SS-DUP04	SW8082A	11104-28-2	PCB-1221		UY	3	mg/kg	3.0	U
FHP-SS-DUP04	SW8082A	11141-16-5	PCB-1232		UY	3	mg/kg	3.0	U
FHP-SS-DUP04	SW8082A	12672-29-6	PCB-1248		UY	3	mg/kg	3.0	U
FHP-SS-DUP04	SW8082A	11097-69-1	PCB-1254	8	Y	3	mg/kg	8.0	J
FHP-SS-DUP04	SW8082A	11096-82-5	PCB-1260		UY	3	mg/kg	3.0	U
FHP-SS-DUP05	SW8082A	12674-11-2	PCB-1016		U	0.33	mg/kg	0.33	U
FHP-SS-DUP05	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-SS-DUP05	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-SS-DUP05	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-SS-DUP05	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-SS-DUP05	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	UJ
FHP-SS-DUP05	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-SS36(0-12)-20220817	SW8082A	12674-11-2	PCB-1016		U	0.33	mg/kg	0.33	U
FHP-SS36(0-12)-20220817	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-SS36(0-12)-20220817	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-SS36(0-12)-20220817	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-SS36(0-12)-20220817	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-SS36(0-12)-20220817	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	U
FHP-SS36(0-12)-20220817	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-SS36(12-24)-20220817	SW8082A	12674-11-2	PCB-1016		U	0.33	mg/kg	0.33	U
FHP-SS36(12-24)-20220817	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-SS36(12-24)-20220817	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-SS36(12-24)-20220817	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-SS36(12-24)-20220817	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-SS36(12-24)-20220817	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	U
FHP-SS36(12-24)-20220817	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-SS36(24-36)-20220817	SW8082A	12674-11-2	PCB-1016		U	0.33	mg/kg	0.33	U
FHP-SS36(24-36)-20220817	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-SS36(24-36)-20220817	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-SS36(24-36)-20220817	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-SS36(24-36)-20220817	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-SS36(24-36)-20220817	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	U
FHP-SS36(24-36)-20220817	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-SS36(36-48)-20220817	SW8082A	12674-11-2	PCB-1016		U	0.33	mg/kg	0.33	U
FHP-SS36(36-48)-20220817	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-SS36(36-48)-20220817	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-SS36(36-48)-20220817	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-SS36(36-48)-20220817	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-SS36(36-48)-20220817	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	U
FHP-SS36(36-48)-20220817	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-SS35(0-12)-20220817	SW8082A	12674-11-2	PCB-1016		U	0.33	mg/kg	0.33	U
FHP-SS35(0-12)-20220817	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-SS35(0-12)-20220817	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-SS35(0-12)-20220817	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-SS35(0-12)-20220817	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-SS35(0-12)-20220817	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	U
FHP-SS35(0-12)-20220817	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-SS35(12-24)-20220817	SW8082A	12674-11-2	PCB-1016		U	0.33	mg/kg	0.33	U
FHP-SS35(12-24)-20220817	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-SS35(12-24)-20220817	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-SS35(12-24)-20220817	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-SS35(12-24)-20220817	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-SS35(12-24)-20220817	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	U
FHP-SS35(12-24)-20220817	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-SS35(24-36)-20220817	SW8082A	12674-11-2	PCB-1016		U	0.33	mg/kg	0.33	U
FHP-SS35(24-36)-20220817	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-SS35(24-36)-20220817	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-SS35(24-36)-20220817	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-SS35(24-36)-20220817	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-SS35(24-36)-20220817	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	U
FHP-SS35(24-36)-20220817	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-SS35(36-48)-20220817	SW8082A	12674-11-2	PCB-1016		U	0.33	mg/kg	0.33	U
FHP-SS35(36-48)-20220817	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-SS35(36-48)-20220817	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-SS35(36-48)-20220817	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-SS35(36-48)-20220817	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-SS35(36-48)-20220817	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	U
FHP-SS35(36-48)-20220817	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-SSWASTE-20220818	SW5030C/8260C	71-43-2	Benzene		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW5030C/8260C	56-23-5	Carbon tetrachloride		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW5030C/8260C	108-90-7	Chlorobenzene		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW5030C/8260C	67-66-3	Chloroform		U	0.1	mg/L	0.10	U

FORMER HAWORTH PROPERTY SITE - ON SOIL ANALYTICAL RESULTS SUMMARY
MERIT LABORATORIES REPORT NO. S39421

Sample ID	Method	CAS No.	Analyte	Lab Result	Lab Qual	RL	Units	Val Result	Val Qual
FHP-SSWASTE-20220818	SW5030C/8260C	106-46-7	1,4-Dichlorobenzene		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW5030C/8260C	107-06-2	1,2-Dichloroethane		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW5030C/8260C	75-35-4	1,1-Dichloroethene		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW5030C/8260C	78-93-3	2-Butanone (MEK)		U	1	mg/L	1.0	U
FHP-SSWASTE-20220818	SW5030C/8260C	127-18-4	Tetrachloroethene		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW5030C/8260C	79-01-6	Trichloroethene		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW5030C/8260C	75-01-4	Vinyl chloride		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW8270D	95-48-7	2-Methylphenol (o-Cresol)		U	1	mg/L	1.0	U
FHP-SSWASTE-20220818	SW8270D	84989-04-08	3-, 4-Methylphenol (p,m-Cresol)		U	1	mg/L	1.0	U
FHP-SSWASTE-20220818	SW8270D	87-86-5	Pentachlorophenol		U	1	mg/L	1.0	U
FHP-SSWASTE-20220818	SW8270D	95-95-4	2,4,5-Trichlorophenol		U	1	mg/L	1.0	U
FHP-SSWASTE-20220818	SW8270D	88-06-2	2,4,6-Trichlorophenol		U	1	mg/L	1.0	U
FHP-SSWASTE-20220818	SW8270D	121-14-2	2,4-Dinitrotoluene		U	0.09	mg/L	0.090	U
FHP-SSWASTE-20220818	SW8270D	118-74-1	Hexachlorobenzene		U	0.09	mg/L	0.090	U
FHP-SSWASTE-20220818	SW8270D	87-68-3	Hexachlorobutadiene		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW8270D	67-72-1	Hexachloroethane		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW8270D	98-95-3	Nitrobenzene		U	0.1	mg/L	0.10	U
FHP-SSWASTE-20220818	SW8270D	110-86-1	Pyridine		U	0.1	mg/L	0.10	UJ
FHP-SSWASTE-20220818	SW6020A	7440-38-2	Arsenic, TCLP		U	0.02	mg/L	0.020	U
FHP-SSWASTE-20220818	SW6020A	7440-39-3	Barium, TCLP	0.33		0.05	mg/L	0.33	
FHP-SSWASTE-20220818	SW6020A	7440-43-9	Cadmium, TCLP		U	0.005	mg/L	0.0050	U
FHP-SSWASTE-20220818	SW6020A	7440-47-3	Chromium, TCLP		U	0.05	mg/L	0.050	U
FHP-SSWASTE-20220818	SW6020A	7439-92-1	Lead, TCLP		U	0.03	mg/L	0.030	U
FHP-SSWASTE-20220818	SW7471B	7439-97-6	Mercury, TCLP		U	0.0005	mg/L	0.00050	U
FHP-SSWASTE-20220818	SW6020A	7782-49-2	Selenium, TCLP		U	0.05	mg/L	0.050	U
FHP-SSWASTE-20220818	SW6020A	7440-22-4	Silver, TCLP		U	0.005	mg/L	0.0050	U
FHP-SSWASTE-20220818	E335.4/SM4500-CN	57-12-5	Cyanide, Total		U	0.08	mg/kg	0.080	U
FHP-SSWASTE-20220818	SM4500-S2 D	18496-25-8	Sulfide		U	0.8	mg/kg	0.80	U
FHP-SSWASTE-20220818	SW9066	PHENOLS	Phenols	0.45		0.2	mg/kg	0.45	
FHP-SSWASTE-20220818	SW9095B	PF	Paint Filter Test	Pass	*			Pass	
FHP-SSWASTE-20220818	SW9045D	PH	pH/ Corrosivity	11.07		0.01	STD Units	11.07	
FHP-SSWASTE-20220818	SW1030	IGNITCC	Flashpoint for Solids		U	2.2	mm/sec	2.2	U

Analytical Laboratory Report

Lab Sample ID: S39420.21
Sample Tag: FHP-CTWASTE-20220818
Collected Date/Time: 08/18/2022 10:00
Matrix: Solid
COC Reference: 151966

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Plastic Bag	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
TCLP Zero Headspace Ext.	Completed	SW1311	08/23/22 18:45	DMP	
Metal Digestion*	Completed	SW3015A	08/24/22 09:15	CCM	
TCLP/SPLP BNA Extraction*	Completed	SW3535A	08/23/22 10:30	JW	
Mercury Digestion	Completed	SW7471B	08/26/22 12:30	CTV	

TCLP Extraction

Parameter	Result	Method	Run Date	Analyst	Flags
Initial Sample pH	9.71	SW1311	08/22/22 18:30 - 08/23/22	DMP	
pH after 3.5 ml HCl	2.24	SW1311	08/22/22 18:30 - 08/23/22	DMP	
% Solids	100	SW1311	08/22/22 18:30 - 08/23/22	DMP	
Sample Used g	100	SW1311	08/22/22 18:30 - 08/23/22	DMP	
Final Volume mL	2000	SW1311	08/22/22 18:30 - 08/23/22	DMP	
TCLP Extraction Fluid	1	SW1311	08/22/22 18:30 - 08/23/22	DMP	
Final Extract pH	7.09	SW1311	08/22/22 18:30 - 08/23/22	DMP	

Inorganics

Method: E335.4/SM4500-CN, Run Date: 08/26/22 09:18, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Cyanide, Total*	Not detected	0.10		mg/kg	50	57-12-5		

Method: SM4500-S2 D, Run Date: 08/26/22 10:31, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Sulfide*	Not detected	1.0		mg/kg	48	18496-25-8		500.0

Method: SW1030, Run Date: 08/22/22 17:15, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Flashpoint for Solids	Not detected	2.2		mm/sec	1			

Method: SW9045D, Run Date: 08/25/22 13:49, Analyst: SSM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
pH/ Corrosivity	11.30	0.01		STD Units	1			2-12.5

Method: SW9066, Run Date: 08/29/22 15:46, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Phenols*	2.30	0.2		mg/kg	20			

Metals

Method: SW6020A, Run Date: 08/24/22 10:30, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Arsenic, TCLP	Not detected	0.02		mg/L	25	7440-38-2		5.0
Barium, TCLP	0.20	0.05		mg/L	25	7440-39-3		100.0
Cadmium, TCLP	Not detected	0.005		mg/L	25	7440-43-9		1.0

Lab Sample ID: S39420.21 (continued)
Sample Tag: FHP-CTWASTE-20220818

Method: SW6020A, Run Date: 08/24/22 10:30, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Chromium, TCLP	0.08	0.05		mg/L	25	7440-47-3		5.0
Lead, TCLP	Not detected	0.03		mg/L	25	7439-92-1		5.0
Selenium, TCLP	Not detected	0.05		mg/L	25	7782-49-2		1.0
Silver, TCLP	Not detected	0.005		mg/L	25	7440-22-4		5.0

Method: SW7471B, Run Date: 08/26/22 15:16, Analyst: CTV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Mercury, TCLP	Not detected	0.0005		mg/L	2	7439-97-6		0.2

Organics - Semi-Volatiles

TCLP Semi Volatiles, Method: SW8270D, Run Date: 08/24/22 13:38, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
2-Methylphenol (o-Cresol)	Not detected	1,000		ug/L	10	95-48-7		200,000
3-, 4-Methylphenol (p,m-Cresol)	Not detected	1,000		ug/L	10	3/4-CRESOL		200,000
Pentachlorophenol	Not detected	1,000		ug/L	10	87-86-5		100,000
2,4,5-Trichlorophenol	Not detected	1,000		ug/L	10	95-95-4		400,000
2,4,6-Trichlorophenol	Not detected	1,000		ug/L	10	88-06-2		2,000
2,4-Dinitrotoluene	Not detected	90		ug/L	10	121-14-2		130
Hexachlorobenzene	Not detected	90		ug/L	10	118-74-1		130
Hexachlorobutadiene	Not detected	100		ug/L	10	87-68-3		500
Hexachloroethane	Not detected	100		ug/L	10	67-72-1		3,000
Nitrobenzene	Not detected	100		ug/L	10	98-95-3		2,000
Pyridine	Not detected	100		ug/L	10	110-86-1		5,000

Organics - Volatiles

TCLP Volatiles, Method: SW5030C/8260C, Run Date: 08/24/22 16:40, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Benzene*	Not detected	100		ug/L	100	71-43-2		500
Carbon tetrachloride*	Not detected	100		ug/L	100	56-23-5		500
Chlorobenzene*	Not detected	100		ug/L	100	108-90-7		100,000
Chloroform*	Not detected	100		ug/L	100	67-66-3		6,000
1,4-Dichlorobenzene*	Not detected	100		ug/L	100	106-46-7		7,500
1,2-Dichloroethane*	Not detected	100		ug/L	100	107-06-2		500
1,1-Dichloroethene*	Not detected	100		ug/L	100	75-35-4		700
2-Butanone (MEK)*	Not detected	1,000		ug/L	100	78-93-3		200,000
Tetrachloroethene*	Not detected	100		ug/L	100	127-18-4		700
Trichloroethene*	Not detected	100		ug/L	100	79-01-6		500
Vinyl chloride*	Not detected	100		ug/L	100	75-01-4		200

FORMER HAWORTH PROPERTY SITE - ON OIL/SOLIDS ANALYTICAL RESULTS SUMMARY
MERIT LABORATORIES REPORT NO. S39420

Sample ID	Method	CAS No.	Analyte	Lab Result	Lab Qual	RL	Units	Val Result	Val Qual
FHP-CT17B(0-9)-20220818	SW8082A	53469-21-9	PCB-1242		U	0.33	mg/kg	0.33	U
FHP-CT17B(0-9)-20220818	SW8082A	11104-28-2	PCB-1221		U	0.33	mg/kg	0.33	U
FHP-CT17B(0-9)-20220818	SW8082A	11141-16-5	PCB-1232		U	0.33	mg/kg	0.33	U
FHP-CT17B(0-9)-20220818	SW8082A	12672-29-6	PCB-1248		U	0.33	mg/kg	0.33	U
FHP-CT17B(0-9)-20220818	SW8082A	11097-69-1	PCB-1254		U	0.33	mg/kg	0.33	U
FHP-CT17B(0-9)-20220818	SW8082A	11096-82-5	PCB-1260		U	0.33	mg/kg	0.33	U
FHP-CTWASTE-20220818	8260C	71-43-2	Benzene		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	8260C	56-23-5	Carbon tetrachloride		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	8260C	108-90-7	Chlorobenzene		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	8260C	67-66-3	Chloroform		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	8260C	106-46-7	1,4-Dichlorobenzene		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	8260C	107-06-2	1,2-Dichloroethane		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	8260C	75-35-4	1,1-Dichloroethene		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	8260C	78-93-3	2-Butanone (MEK)		U	1	mg/L	1.0	U
FHP-CTWASTE-20220818	8260C	127-18-4	Tetrachloroethene		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	8260C	79-01-6	Trichloroethene		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	8260C	75-01-4	Vinyl chloride		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	SW8270D	95-48-7	2-Methylphenol (o-Cresol)		U	1	mg/L	1.0	U
FHP-CTWASTE-20220818	SW8270D	84989-04-08	3-, 4-Methylphenol (p,m-Cresol)		U	1	mg/L	1.0	U
FHP-CTWASTE-20220818	SW8270D	87-86-5	Pentachlorophenol		U	1	mg/L	1.0	U
FHP-CTWASTE-20220818	SW8270D	95-95-4	2,4,5-Trichlorophenol		U	1	mg/L	1.0	U
FHP-CTWASTE-20220818	SW8270D	88-06-2	2,4,6-Trichlorophenol		U	1	mg/L	1.0	U
FHP-CTWASTE-20220818	SW8270D	121-14-2	2,4-Dinitrotoluene		U	0.09	mg/L	0.090	U
FHP-CTWASTE-20220818	SW8270D	118-74-1	Hexachlorobenzene		U	0.09	mg/L	0.090	U
FHP-CTWASTE-20220818	SW8270D	87-68-3	Hexachlorobutadiene		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	SW8270D	67-72-1	Hexachloroethane		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	SW8270D	98-95-3	Nitrobenzene		U	0.1	mg/L	0.10	U
FHP-CTWASTE-20220818	SW8270D	110-86-1	Pyridine		U	0.1	mg/L	0.10	UJ
FHP-CTWASTE-20220818	SW6020A	7440-38-2	Arsenic, TCLP		U	0.02	mg/L	0.020	U
FHP-CTWASTE-20220818	SW6020A	7440-39-3	Barium, TCLP	0.2		0.05	mg/L	0.20	
FHP-CTWASTE-20220818	SW6020A	7440-43-9	Cadmium, TCLP		U	0.005	mg/L	0.0050	U
FHP-CTWASTE-20220818	SW6020A	7440-47-3	Chromium, TCLP	0.08		0.05	mg/L	0.080	
FHP-CTWASTE-20220818	SW6020A	7439-92-1	Lead, TCLP		U	0.03	mg/L	0.030	U
FHP-CTWASTE-20220818	SW7471B	7439-97-6	Mercury, TCLP		U	0.0005	mg/L	0.00050	U
FHP-CTWASTE-20220818	SW6020A	7782-49-2	Selenium, TCLP		U	0.05	mg/L	0.050	U
FHP-CTWASTE-20220818	SW6020A	7440-22-4	Silver, TCLP		U	0.005	mg/L	0.0050	U
FHP-CTWASTE-20220818	E335.4/SM4500-CN	57-12-5	Cyanide, Total		U	0.1	mg/kg	0.10	U
FHP-CTWASTE-20220818	SM4500-S2 D	18496-25-8	Sulfide		U	1	mg/kg	1.0	U
FHP-CTWASTE-20220818	SW9066	PHENOLS	Phenols	2.3		0.2	mg/kg	2.3	
FHP-CTWASTE-20220818	SW9045D	PH	pH/ Corrosivity	11.3		0.01	STD Units	11.3	
FHP-CTWASTE-20220818	SW1030	IGNITCC	Flashpoint for Solids		U	2.2	mm/sec	2.2	U
FHP-SS44(0-12)-20220817	8260C	71-43-2	Benzene		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	8260C	56-23-5	Carbon tetrachloride		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	8260C	108-90-7	Chlorobenzene		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	8260C	67-66-3	Chloroform		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	8260C	106-46-7	1,4-Dichlorobenzene		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	8260C	107-06-2	1,2-Dichloroethane		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	8260C	75-35-4	1,1-Dichloroethene		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	8260C	78-93-3	2-Butanone (MEK)		U	1	mg/L	1.0	U
FHP-SS44(0-12)-20220817	8260C	127-18-4	Tetrachloroethene		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	8260C	79-01-6	Trichloroethene		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	8260C	75-01-4	Vinyl chloride		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	SW8270D	95-48-7	2-Methylphenol (o-Cresol)		U	1	mg/L	1.0	U
FHP-SS44(0-12)-20220817	SW8270D	84989-04-08	3-, 4-Methylphenol (p,m-Cresol)		U	1	mg/L	1.0	U
FHP-SS44(0-12)-20220817	SW8270D	87-86-5	Pentachlorophenol		U	1	mg/L	1.0	U
FHP-SS44(0-12)-20220817	SW8270D	95-95-4	2,4,5-Trichlorophenol		U	1	mg/L	1.0	U
FHP-SS44(0-12)-20220817	SW8270D	88-06-2	2,4,6-Trichlorophenol		U	1	mg/L	1.0	U
FHP-SS44(0-12)-20220817	SW8270D	121-14-2	2,4-Dinitrotoluene		U	0.09	mg/L	0.090	U
FHP-SS44(0-12)-20220817	SW8270D	118-74-1	Hexachlorobenzene		U	0.09	mg/L	0.090	U
FHP-SS44(0-12)-20220817	SW8270D	87-68-3	Hexachlorobutadiene		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	SW8270D	67-72-1	Hexachloroethane		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	SW8270D	98-95-3	Nitrobenzene		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	SW8270D	110-86-1	Pyridine		U	0.1	mg/L	0.10	U
FHP-SS44(0-12)-20220817	SW6020A	7440-38-2	Arsenic, TCLP		U	0.02	mg/L	0.020	U
FHP-SS44(0-12)-20220817	SW6020A	7440-39-3	Barium, TCLP	0.34		0.05	mg/L	0.34	
FHP-SS44(0-12)-20220817	SW6020A	7440-43-9	Cadmium, TCLP	0.005		0.005	mg/L	0.0050	
FHP-SS44(0-12)-20220817	SW6020A	7440-47-3	Chromium, TCLP		U	0.05	mg/L	0.050	U

Surrogates and labeled compounds:

Within Criteria	Exceedance/Notes
N	**PCBs:** Surrogate compound Tetrachloro-m-xylene (TCX) was below acceptance criteria for samples FHP-CT18(0-9.5)-20220818, FHP-CT22(0-12)-20220818 FHP-CT22(0-12)-20220818, FHP-CT19(12-19)-20220818, FHP-CT16(0-12)-20220818, FHP-CT16(0-12)-20220818, FHP-CT25(0-12)-20220818, FHP-CT17(0-12)-20220817, FHP-CT17(12-24)-20220817, FHP-SS44(0-12)-20220817, FHP-SS41(0-48)-20220817, FHP-SS-DUP03, FHP-SS42(0-48)-20220818, FHP-SS32(0-12)-20220817, FHP-SS-DUP01, FHP-CT02(0-12)-20220817, FHP-CT03(0-12)-20220817, FHP-CT04(0-12)-20220817, FHP-CT05(0-12)-20220817, FHP-CT06(0-12)-20220817, FHP-CT06(0-12)-20220817, FHP-CT07(0-12)-20220817, FHP-CT08(0-12)-20220817, FHP-CT09(0-7.5)-20220817, FHP-CT11(0-12)-20220817, FHP-CT12(0-12)-20220817, FHP-CT10(12-24)-20220817, FHP-CT10(24-36)-20220817, FHP-CT15(0-8)-20220817, FHP-CT20(0-12)-20220817, FHP-CT20(12-24)-20220817, FHP-CT20(24-36)-20220817, FHP-CT27(0-12)-20220817, FHP-CT28(0-12)-20220817. However, these samples were diluted greater than 10-fold; therefore, no qualifications were necessary. Surrogate compound Decachlorobiphenyl (DCBP) was recovered above acceptance criteria for samples FHP-CT22(0-12)-20220818 and FHP-SS-DUP02. However, these samples were diluted greater than 10-fold; therefore, no qualifications were necessary.

MS/MSDs:

Within Criteria	Exceedance/Notes
N	**SVOCs (FHP-CTWASTE-20220818):** Pyridine matrix spike (MS) recovery was below acceptance criteria. No MSD was analyzed. Due to this apparent matrix interference, the non-detected result for pyridine in the parent sample was qualified as estimated, possibly biased low (flagged UJ).

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Y	

Field duplicates:

Within Criteria	Exceedance/Notes
N	**PCBs:** The relative percent difference (RPD) was outside acceptance criteria (>70%) for Aroclor 1254 for field duplicate pair FHP-SS-DUP03 / FHP-SS42(0-48)-20220818. Therefore, the Aroclor 1254 result for both samples was qualified as estimated (flagged J).