



## Soil and Groundwater Testing

WisDOT Project ID: 9995-00-65  
Ludington Street, Marinette, WI  
Hall Avenue to Stanton Street

Prepared for:  
City of Marinette

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Ludington Street, Marinette, WI  
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# 1.0 Introduction

The City of Marinette retained Ayres to perform soil and groundwater testing for the proposed Ludington Street reconstruction project in Marinette, Wisconsin. The project includes the complete replacement of Ludington Street between Hall Avenue and Stanton Street (project limits) and new storm sewer, sanitary sewer, and water main. The limit of construction disturbance and utility locations are shown on the Site Plan (Figure 2).

Ayres conducted a Phase I Hazardous Materials Assessment (Phase I HMA) in October 2021, which identified eight sites adjoining the project limits with potential or documented contamination from manufactured gas plant (MGP) operations, leaking underground storage tanks (LUST), buried solid waste (refuse), and solvent spills. Additionally, environmental investigations on two adjoining sites documented the presence of per- and polyfluoroalkyl substances (PFAS) and arsenic in groundwater above regulatory standards.

Ayres performed soil and groundwater testing within the project limits for the following objectives:

- Develop knowledge of the presence, extent, and degree of contamination, specifically within the right-of-way adjoining remediation sites and where previous subsurface explorations encountered refuse.
- Evaluate the need for special management practices and permits for dewatering excavations that intersect PFAS- and arsenic-contaminated groundwater or other contaminants from adjoining remediation sites. The data collected will assist with estimating influent concentrations for dewatering and treatment processes.
- Gather information needed to prepare remediation plans or construction special provisions for management and disposal of contaminated material within the construction zone and submitting a materials handling plan to the Wisconsin Department of Natural Resources (WDNR) for approval.

To meet these objectives, Ayres gathered information through sampling and chemical testing. There were no significant limitations or conditions that affected the ability of the assessment to achieve its objectives. The objectives and scope of work were defined in an agreement between Ayres and the City of Marinette, dated October 7, 2021.

## 2.0 Background

The City of Marinette intends to reconstruct Ludington Street between Hall Avenue and Stanton Street. Ludington Street is in Section 6, Township 30 North, Range 24 East, in the City of Marinette, Marinette County, Wisconsin (Figure 1).

### Project Description

The proposed project includes the reconstruction of the Ludington Street roadway and installing new water main, sanitary sewer, and storm sewer. Soil and groundwater disturbance activities within the zone of construction are expected to include:

- Grading for Ludington Street and sidewalks extending up to 2 ½ feet beneath the existing pavement surface.
- Water main and sanitary sewer excavations between Hall Avenue and Mann Street (including Wells Street) extending from 8 ½ to 11 feet below the existing grade.
- Storm sewer excavations between Hall Avenue and Mann Street and between Ely and Stanton Street. The proposed storm sewer excavations extend up to 7 ½ feet below the existing grade.

We anticipate subsurface utilities will be installed using open trench construction methods. Furthermore, we expect the pavement section will include concrete or asphalt pavement, and the vertical alignment of the roadway will approximately match the existing grade (less than a 2-foot change).

### Physical Setting

Elevations within the project limits range from 596 to 588 feet above mean sea level, with topography gently dipping northeast toward the Menominee River. Earlier geotechnical and test pit investigations in the Ludington Street right-of-way encountered four distinct stratigraphic units: fill material, glacial outwash, alluvium, and glacial till. These investigations did not intersect the underlying Ordovician dolomite bedrock, which is estimated to be less than 50 feet below the surface (ECS Midwest, LLC, 2021).

Fill materials consist of varying amounts of silt, sand, organic sediments, and refuse. Between Hall Avenue and Mann Street, the fill is primarily brown and comprised of less than two feet of sand with silt. From Mann Street, the fill layer thickens to the east, reaching a maximum of 14 feet near Ely Street, where geotechnical borings intersected a buried layer of black organic sediments mixed with wood debris. The fill composition changes between Ely and Stanton Street to include a mix of silt, sand, organics, and general refuse.

Glacial outwash characterized by deposits of poorly graded fine sand underlies the fill throughout most of the project limits. The sand is brown with occasional alluvial deposits of silty sand. These sandy deposits of glacial outwash and alluvium extend more than 20 feet below the surface in some areas but were generally found atop a very stiff to hard layer of clayey glacial till. The clay is typically brown and presumably extends to bedrock.

Groundwater first occurs within the fill and glacial outwash at depths between 4 to 12 feet below the surface. The general groundwater flow direction is toward the Menominee River, which is 400 to 1,900 feet to the northeast. During previous environmental investigations on adjacent properties, the hydraulic conductivities of shallow soils and fill were measured between  $1 \times 10^{-4}$  and  $7 \times 10^{-4}$  feet per minute (ft/min). Estimated flow velocities ranged from 0.04 and 29 feet per year (Natural Resource Technology, 2015).

## Site History and Land Use

Sanborn fire insurance maps from 1884 to 1935 show Ludington Street between Hall Avenue and Mann Street with adjacent properties developed for residential and commercial use. Ludington Street from Mann to Stanton Street was not yet constructed. However, the area was developed for industrial use by the North Ludington Company Sawmill and Lumberyard, Marinette & Menominee Light & Traction Company Gas Works, Marinette Ironworks, Hamilton & Merryman Company Shingle and Lumber Mill, and Malmstadt Coal Yard.

Between 1884 and 1935, the existing Ludington Street right-of-way between Ely and Stanton Street was occupied by an artificial waterway identified on historical maps as the "Log Run or Log Boom." This waterway transported logs from the Menomonee River to sawmills and lumberyards north of the project limits. The shape of the log run changed several times but generally intersected the existing right-of-way from 300 feet west of Ely Street to about 300 feet west of Stanton Street. A portion of the log run was filled in 1935, and the remainder is believed to have been filled by 1938.

Around 1910, Marinette & Menominee Light & Traction Company Gas Works began operating an MGP north of the project limits between Mann and Ely Street. By 1935, the MGP site expanded into the existing Ludington Street right-of-way. Structures within the right-of-way included scales, a meter room, a pump house, and a 300,000 cubic foot above ground holding tank. These structures were between 100 and 300 feet east of Mann Street. The Marinette Wastewater Treatment Plant (WWTP) currently occupies the former MGP site.

Marinette Ironworks adjoined the south side of the project limits between Ely and Stanton Street from at least 1884 to 1921. A rail spur serviced the ironworks from the east and was surrounded by various buildings, including an automotive repair shop, coal shed, machine shop, a lime and cement warehouse, the Malmstadt coal yard, an icehouse, a filling station with three gasoline underground storage tanks (USTs), and three USTs (contents unidentified) along the rail spur. The ironworks building was demolished by 1935, but the surrounding structures and USTs remained. Scaling on the 1935 Sanborn map indicates the USTs were between 80 and 215 feet south of the existing Ludington Street right-of-way.

## Adjacent Contaminated Sites

The Phase 1 HMA revealed eight sites with documented or suspected contamination adjoining the project limits. These sites are shown in Figure 2.

### **Rydahls 76 Site 1 and 2 – 432 Bridge Street**

*BRRTS No:* 03-38-002191 and 03-38-098693

*Responsible Party:* Herman Potratz, 55 Hosmer Street, Marinette, WI 54143

*Regulatory Status:* Closed LUST

*Continuing Obligations:* Groundwater use at this site is restricted due to the presence of benzene and xylene contamination exceeding NR 140 groundwater quality enforcement standards. No well can be constructed on the property without obtaining WDNR approval. Similarly, if construction activities on this property require dewatering or groundwater is to be otherwise extracted, it must first be sampled and analyzed for contaminants that were previously detected on the property.

*Site Description:* Rydahls was a gas station on the north side of Ludington Street at the intersection of Hall Avenue and Bridge Street. This site was investigated and remediated in the mid- to late-1990s following the discovery of petroleum contamination during the removal of USTs. WDNR granted regulatory closure to the site in 1999 with residual groundwater contamination above groundwater quality standards.

### **Farmers & Merchants Bank & Trust – 1644 Ludington Street**

*DATCP Facility ID:* 456252

*Owner:* Farmers & Merchants Bank & Trust, 1644 Ludington Street, Marinette, WI 54143

*Storage Tanks:* three 8,000-gal fuel oil USTs (Tank IDs 29336, 40293, and 40303)

*Regulatory Status:* Located on the north side of Ludington Street between Hall Avenue and Wells Street, this site has three registered USTs that were closed-in-place. All three tanks contained fuel oil, tank 29336 was abandoned-in-place with product, and tanks 40293 and 40303 were closed-in-place by filling them with inert material. Ayres was unable to locate information indicating that site assessments or sampling were performed during the closure of these tanks.

### **Marinette Marine Building 34 – 1600 Ely Street**

*BRRTS No:* 02-38-587281

*Responsible Party:* Fincantieri Marinette Marine, 1600 Ely Street, Marinette, WI 54143

*Regulatory Status:* Open ERP

*Continuing Obligations:* Continuing obligations refer to actions that responsible parties must follow after an environmental cleanup is complete. As indicated by its open regulatory status, the cleanup at this site is not complete—however, an *Approval to Manage Contaminated Soil under Wis. Admin. Code NR 718.12 on Site* dated March 19, 2021, restricts soil disturbance, and identifies a barrier cap requirement. Ayres could not locate WDNR correspondence documenting groundwater use restrictions for this property. However, activity details listed in BRRTS on the Web indicate WDNR approval is required to construct a well on the property.

*Site Description:* This site is located on the north side of Ludington Street between Ely and Stanton Street. Substances of concern include polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), arsenic, lead, and PFAS.

### **Wisconsin Public Service Marinette MGP – 1603 Ely Street**

*BRRTS No:* 02-38-000047

*Responsible Party:* Wisconsin Public Service Corp, 333 W Everett Street, Milwaukee, WI 53203

*Regulatory Status:* Open ERP

*Continuing Obligations:* Although the cleanup at this site is not complete, institutional, and engineering controls for contaminated soil and groundwater are identified in the Superfund Record of Decision document signed by the EPA on November 9, 2017. These include contaminated soil removal, capping, and signage.

*Site Description:* Currently occupied by the City of Marinette WWTP, an MGP previously occupied this property. Substances of concern at this site include petroleum products (PAHs), VOCs, and metals. Per the report dated February 2, 2015, by Natural Resource Technology Environmental Consultants, contamination in the Ludington Street right-of-way is possible.

### **Village Pump II – 1368 Main Street**

*BRRTS No:* 03-38-177834

*Responsible Party:* Jon Isakson, Cookeville, TN 38502

*Regulatory Status:* Closed LUST

*Continuing Obligations:* This site has residual petroleum contamination above NR 720 soil standards. If disturbed, the contaminated soil must be managed or disposed of following applicable state and federal regulations.

*Site Description:* Located south of Ludington Street between Ely and Stanton Street, this LUST site received regulatory closure with residual soil contamination. According to the closure files, the soil was contaminated with leaded and unleaded gasoline.

**MACBI-TYCO Redevelopment Site – 1310 to 1330 Main Street**

*BRRTS No:* 02-38-564236

*Responsible Party:* Tyco Fire Protection Products, 1 Stanton Street, Marinette, WI 54143

*Regulatory Status:* Open ERP

*Continuing Obligations:* Cleanup activities at this site are not complete, but it has documented contamination above NR 720 soil standards and NR 140 groundwater quality standards. If contaminated soil is disturbed, it must be managed or disposed of following applicable state and federal regulations.

*Site Description:* Located on the south side of Ludington Street between Ely and Stanton Street, the substances of concern at this site include petroleum products (PAHs), VOCs, arsenic, and lead. Soil and groundwater contamination from this site is known to extend into the Ludington Street right-of-way.

**Goodwill Industries – 1428 Main Street**

*BRRTS No:* 02-38-557492

*Responsible Party:* Goodwill Industries, 1428 Main Street, Marinette, WI 54143

*Regulatory Status:* Closed ERP

*Continuing Obligations:* This site has residual soil and groundwater contamination above regulatory standards. Residual soil contamination must be appropriately managed if excavated or removed. Pavement, an engineered cover, or soil barrier must be maintained over the contaminated soil, and the WDNR must approve any changes to the barrier.

*Site Description:* Substances identified at this site include petroleum products (PAHs), cyanide, arsenic, and lead. Soil contamination associated with this site is known to extend within the Ludington Street right-of-way.

## 3.0 Assessment Activities

A Phase I HMA completed by Ayres in October 2021 found eight sites with potential or documented residual contamination from past MGP operations, petroleum releases from storage tanks, fill containing refuse, and solvent spills. Regulatory file reviews identified potential contaminants of concern included PAHs, VOCs, polychlorinated biphenyls (PCBs), arsenic, lead, cyanide, asbestos, and PFAS.

The assessment aimed to determine the extent and degree of contamination within the proposed construction zone and evaluate its impacts on the project. Ayres used a combination of preliminary construction designs, information from environmental investigations on adjoining properties, and historical sources to guide the selection of sample locations and support data collection.

### Scope of Assessment

The scope of this assessment included:

- Ten direct-push soil probes to collect soil and groundwater samples from the proposed grading and excavation depths.
- Continuous field screening with a photoionization detector (PID) for organic vapors and for visual or olfactory indicators of contamination.
- Analysis of 17 soil samples and four groundwater samples at a Wisconsin-certified laboratory.

### Exploration, Sampling, and Test Screening Methods

On October 13, 2021, Ayres oversaw the advancement of 10 direct-push soil probes (GP-1 through GP-10) by environmental drilling contractor Geiss Soil & Samples, LLC. Probes were placed where excavations or grading could intersect contamination from adjoining properties and where previous geotechnical borings intersected buried refuse within the Ludington Street right-of-way. The probes were advanced to planned grading and excavation depths for subsurface utilities, ranging from 2 ½ to 12 feet below the existing surface.

Ayres collected continuous soil cores from each probe and logged the cores using the Unified Soils Classification System (USCS). The soil was field screened for organic vapors using a PID equipped with an 11.7 eV lamp calibrated to 100 parts per million (ppm) isobutylene gas. Ayres submitted one soil sample within the proposed grading zone from each probe, and where applicable, an additional soil sample from proposed utility excavations for chemical testing. Grading zone samples were acquired beneath the aggregate road base, and the selected depth interval was partially dependent on the available sample volume. Samples acquired from the proposed utility excavations were selected for the chemical testing using the following priority: highest PID response (if above background), visual or olfactory evidence of contamination, anticipated depth of contamination, or bottom of the proposed excavation zone. Soil descriptions, probe locations, and sample depths were recorded on the soil boring logs in Appendix B and are summarized in Table 1. PID responses and the corresponding sample depths were recorded on the soil boring logs in Appendix B.

Five probes were converted to temporary groundwater sampling points by inserting a 1-in diameter PVC casing with a 5-foot factory slotted screen that intersected groundwater. Annual space between the screen and probe walls was filled with a coarse silica-sand filter pack. Ayres purged groundwater from the sampling points with a peristaltic pump until the water was relatively sediment-free. Groundwater samples were acquired using a peristaltic pump with dedicated disposable high-density polyethylene (HDPE) tubing. Samples collected for metals analysis were field filtered using disposable 0.45-micron in-line filters. Only four of the five probes produced enough groundwater for sample collection. Groundwater

sample locations, boring depths, and water level measurements are summarized in Table 2 and on the boring logs in Appendix B.

Following sample collection, all ten probes were abandoned per the Wis. Admin Code NR141 using 3/8-in diameter bentonite chips. The abandonment procedures were documented on the borehole abandonment forms in Appendix B.

## Chemical Testing Plan and Rationale

Ayres submitted 17 soil samples and four groundwater samples to Pace Analytical in Green Bay for chemical testing. The samples were collected in pre-preserved laboratory-supplied containers, placed on ice, and delivered to the laboratory under chain-of-custody procedures.

Soil samples were analyzed as follows:

Area of Investigation	Suspected Sources/ Known Contamination	Probe ID	Sample Depth	Soil Analyses						
				As, Pb (6010)	Cyanide (9012)	PFAS (isotope)	VOCs (8260)	PAHs (8270)	PCBs (8082)	Asbestos (PLM)
Hall Avenue to Wells Street	Rydahls 76 petroleum LUST site and closed-in-place USTs at Farmers & Merchants Bank & Trust	GP-1	2 to 4 ft	1			1			
			9 to 11 ft	1			1			
		GP-2	2 to 4 ft	1			1			
			9 to 11 ft	1			1			
Wells Street to Mann Street	None	GP-3	1.5 to 2.5 ft	1						
			8 to 10 ft	1						
		GP-4	1.5 to 2.5 ft	1						
			8 to 10 ft	1						
Mann Street to Ely Street	WPS Marinette MGP site and Goodwill Industries site	GP-5	1.5 to 2.5 ft	1	1		1	1	1	
		GP-6	2 to 4 ft	1	1		1	1	1	
		GP-7	2 to 4 ft	1	1		1	1	1	
Ely Street to Stanton Street	Village Pump II petroleum LUST, Marinette Marine Building 34, and MACBI-Tyco sites, and buried refuse	GP-8	2 to 4 ft	1			1	1		1
			7 to 8 ft	1		1	1	1		1
		GP-9	1.5 to 3.5 ft	1		1	1	1		1
			5.5 to 7.5 ft	1		1	1	1		1
		GP-10	1.5 to 2.5 ft	1			1	1		1
			6.5 to 7.5 ft	1		1	1	1		1

Groundwater samples were analyzed as follows:

Area of Investigation	Suspected Sources/ Known Contamination	Probe ID	Groundwater Analyses			
			Diss As, Pb (6010)	PFAS (isotope)	VOCs (8260)	PAHs (8270)
Hall Avenue to Wells Street	Rydahls 76 petroleum LUST site and closed-in-place USTs at Farmers & Merchants Bank & Trust	GP-1	1	1	1	
Wells Street to Mann Street	None	GP-3		1		
Ely Street to Stanton Street	Village Pump II petroleum LUST, Marinette Marine Building 34, and MACBI-Tyco site, and buried refuse	GP-8	1	1	1	1
		GP-10	1	1	1	1

## Quality Assurance and Quality Control

Ayres followed internal quality assurance/quality control (QA/QC) procedures to ensure the samples were representative of the media tested and that the integrity of the samples was not compromised. The plan required appropriate sample handling before delivery to the laboratory, ensuring that samples were preserved correctly (e.g., refrigerated or combined with appropriate preservative chemicals), available for testing within required holding times, and that chain of custody was documented before being relinquished to the laboratory. Ayres also requested the analytical laboratory report any non-routine events during sample analysis and flag testing results that did not meet the laboratory's quality control standards.



## 4.0 Presentation and Evaluation of Results

### Subsurface Conditions

Subsurface materials encountered beneath the western portion of Ludington Street (Hall Avenue to Mann Street) consisted of 0 to 5 ½ feet of sandy fill followed by glacial outwash deposits of poorly graded sand over a layer of hard silty glacial till. The fill in this section of the site was brown and contained trace amounts of cinders.

The central portion of Ludington Street (Mann to Ely Street) resides on over three feet of fill. The fill was primarily sand but contained trace amounts of cinders and exhibited black staining with naphtha- or petroleum-like odors. The depth of exploration in this area was four feet because the planned soil disturbance activities between Mann and Ely Street are limited to grading and shallow storm sewer excavations.

The eastern section of Ludington Street overlies more than 6 ½ to 14 feet of fill from Ely to Stanton Street. Fill in this section is primarily dark gray to brown silty sand with black staining and contains varying amounts of general refuse, including styrofoam, paper, plastic, wood, glass, brick fragments, and cinders. The fill emitted a petroleum-like odor near the groundwater table. Figures 2 and 3 show the sample locations in plain view and cross-section.

Groundwater first occurs four to 12 feet below the existing surface within the fill and outwash sands underlying Ludington Street. Measurements from GP-1, GP-3, GP-8, and GP10 indicate groundwater flow is to the northeast, toward the Menomonee River. The flow direction likely varies slightly throughout the project limits, and minor seasonal changes in groundwater levels are anticipated. Table 2 presents a summary of water level measurements.

### Field Screening Results

Soil field screening measurements collected with the PID ranged between 0 and 4 ppm. Although these measurements do not indicate elevated levels of organic vapors, black staining coupled with naphtha- and petroleum-like odors were present at depths less than four feet below the surface in GP-5 through GP-7 (Mann to Ely Street) and up to eight feet below the surface in GP-8 through GP-10 (Ely to Stanton Street). Field screening measurements and observations were recorded on the boring logs in Appendix B.

### Soil Analytical Results

Chemical testing results were compared to Wis. Admin Code Ch. NR 720 residual contaminant levels (RCLs) for the direct-contact pathway, protection of groundwater RCLs, and background threshold values (BTVs). A full copy of the laboratory analytical results is available in Appendix C.

Soil contaminated with substances that attain or exceed direct-contact RCLs could pose a risk to future site workers or pedestrians if exposed at the surface or in subsurface excavations. Similarly, substances that exceed the protection of groundwater RCLs are considered a potential threat for contaminant mobilization to groundwater in soils exposed to infiltration from precipitation or in direct contact with groundwater. Contaminated soil and other solid waste containing substances at levels above direct-contact or protection of groundwater RCLs are subject to special disposal and management practices in Wis. Admin Codes Ch. NR 718 and NR 500.

The WDNR has published BTVs for several metals that occur naturally in Wisconsin soils. Metal concentrations that exceed BTVs are generally considered to be elevated above natural levels. There are several metals, specifically arsenic and lead, with BTVs greater than direct-contact RCLs or protection of groundwater values. In these cases, the BTV serves as the applicable standard. Table 3 summarizes the

substances found in the soil above the laboratory limit of detection. Detections that exceeded the relevant screening criteria are noted in the table.

### **Arsenic and Lead**

Ayres collected 17 soil samples for arsenic and lead analysis. The samples were distributed throughout the project limits and acquired from fill and native soil. Arsenic exceeded the soil screening standards in two samples and lead exceeded standards in six samples.

Arsenic levels in the project limits ranged from <1.4 to 287 milligrams per kilogram (mg/Kg), with samples from GP-8 and GP-10 exceeding the direct-contact RCL, protection of groundwater RCL, and naturally occurring background level of 8 mg/Kg. These exceedances occurred between Ely and Stanton Street in samples containing refuse.

Lead concentrations ranged from 0.64 to 353 mg/Kg, with levels at GP-5, GP-8, GP-9, and GP-10 exceeding the protection of groundwater RCL and the BTV of 52 mg/Kg. These exceedances occurred in fill material between Mann and Stanton Street. Although above naturally occurring levels and a potential threat to groundwater, the detected lead concentrations are not considered a direct-contact risk.

Contaminated soil and other solid wastes containing lead or arsenic concentrations greater than 100 mg/Kg should be tested using the toxicity characteristic leaching procedure (TCLP) to determine if it is considered characteristically hazardous waste for disposal. The concentrations of arsenic and lead found in samples from GP-8 and GP-10 were sufficiently elevated that TCLP analysis was warranted. At the request of Ayres, Pace Analytical tested the remaining sample volume from GP-8 (7-8'), which had the highest arsenic (287 mg/Kg) and lead (353 mg/Kg) concentrations, using the TCLP method. Arsenic and lead results from the TCLP analysis were 0.12 milligrams per liter (mg/L) and 3.3 mg/L, respectively. Both results were below the 5 mg/L toxicity characteristic threshold for hazardous waste. Based on the TCLP results, the levels of arsenic and lead are considered non-hazardous for disposal purposes. The laboratory report for TCLP analysis is included in Appendix C.

### **Polycyclic Aromatic Hydrocarbons**

A total of nine samples were analyzed for PAHs. The samples were collected between Mann and Stanton Street at locations intersected by the former Marinette MGP site, Goodwill Industries site, and buried refuse.

PAHs exceeded direct-contact and protection of groundwater RCLs in seven samples. Compounds that surpassed direct-contact RCLs included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene. Compounds that exceeded protection of groundwater RCLs included benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, fluorene, and naphthalene.

### **Volatile Organic Compounds**

Ayres submitted 13 samples for VOC analysis. The samples were collected adjacent to sites with potential or documented residual contamination from past MGP operations, petroleum releases from storage tanks, fill containing refuse, and solvent spills. VOCs were found in six samples. Of the compounds detected, only naphthalene and benzene exceeded RCLs.

Naphthalene (analyzed by EPA methods 8270 and 8260) was detected at concentrations of 0.0019 to 34.1 mg/Kg. This compound exceeded the protection of groundwater standard in four samples between Mann and Stanton Street and the direct-contact RCL in two samples between Ely and Stanton Street. Additionally, naphthalene concentrations between Ely and Stanton Street exceeded the 5 mg/Kg threshold that is considered an indicator of non-aqueous phase liquid (NAPL) in the WDNR guidance for addressing vapor intrusion at remediation and redevelopment sites (RR-800). Subsurface utilities that intersect NAPL are potential pathways for vapor migration.

Benzene was found in four samples between Mann and Stanton Street at concentrations from 0.0149 to 0.0683 mg/Kg, with concentrations at GP-5, GP-6, and GP-8 exceeding the protection of groundwater RCL. Although these concentrations pose a potential threat to groundwater, they are not considered a direct-contact risk. Utilities that transect soil contaminated with benzene could provide a preferential pathway for vapor migration.

### **Cyanide**

Three samples were submitted for cyanide analysis. The samples were collected from the proposed grading zone adjacent to the Marinette MGP and Goodwill Industries sites between Mann and Ely Street. Two soil samples contained detectable levels of cyanide with concentrations ranging from 7 to 9.4 mg/Kg. These levels exceed the protection of groundwater RCL but are not considered a direct-contact threat.

### **Polychlorinated Biphenyls**

Ayres collected three PCB samples between Mann and Ely Street at locations adjoining the former Marinette MGP and Goodwill Industries sites. No PCBs were detected.

### **Asbestos**

Six soil samples containing buried refuse from Ely and Stanton Street were submitted for asbestos analysis via polarized light microscopy (PLM). Asbestos was not detected.

### **Per- and polyfluoroalkyl substances**

Four soil samples were submitted for PFAS analysis. The samples were collected from the area containing buried refuse between Ely and Stanton Street. All four samples contained low levels of several PFAS compounds, including perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). The WDNR has established direct-contact RCLs for PFOA and PFOS, but there is no pre-determined protection of groundwater RCL for these compounds. Neither PFOA nor PFOS exceeded direct contact RCLs. Although other PFAS compounds were detected, the WDNR has not yet established regulatory standards for comparison.

## **Groundwater Analytical Results**

Chemical testing results were compared to Ch. NR 140, Wis. Admin. Code groundwater quality enforcement standards and preventive action limits (PALs). Volatile organic compound results were also compared to vapor risk screening levels (VRSLs) calculated per WDNR guidance document RR-800. Where applicable, analytes were compared to specific pollutant limits listed in City of Marinette Ordinance Chapter 7.02113 for discharge to the sanitary sewer. A full copy of the laboratory analytical results is provided in Appendix C.

Groundwater quality enforcement standards are the levels at which substances in groundwater become regulated. The exceedance of an enforcement standard is likely to require remedial action or the application of institutional or engineering controls. Preventive action limits are typically the levels regulators use to determine if action is needed to prevent levels from reaching or exceeding the enforcement standard. The attainment of PALs can indicate the need for additional groundwater assessment or monitoring. Similarly, VRSLs are used to determine if VOCs are present in groundwater at sufficient concentrations to create a potential vapor intrusion concern. The exceedance of VRSLs indicates the need to evaluate the vapor intrusion pathway. Table 4 summarizes the compounds found in groundwater above the laboratory method detection limit. Table 5 provides a summary of VOCs in groundwater compared to VRSLs. Detections that exceeded the applicable screening criteria are denoted in the tables.

### **Dissolved Arsenic and Lead**

Ayres attempted to collect samples from five locations distributed across the project limits. However, only three probes produced sufficient water for dissolved arsenic and lead analysis. Dissolved concentrations

of arsenic exceeded NR 140 groundwater quality standards at two locations and lead exceeded standards in two locations.

Dissolved arsenic concentrations in the project limits ranged from <8.3 to 78.1 micrograms per liter ( $\mu\text{g/L}$ ), with samples from GP-1 and GP-10 exceeding the enforcement standard. These exceedances occurred on opposite ends of Ludington Street. Although these concentrations were greater than groundwater quality standards, they are below the specific pollutant limitation of 100  $\mu\text{g/L}$  listed in City of Marinette Ordinance Chapter 7.02113 for discharge to the sanitary sewer.

Concentrations of dissolved lead in groundwater ranged from <6.4 to 50  $\mu\text{g/L}$ , with levels exceeding the PAL at GP-1 and the enforcement standard at GP-8. Like arsenic, the detected lead concentrations are below the specific pollutant limitation of 2,020  $\mu\text{g/L}$  for discharge to the sanitary sewer.

### **Polycyclic Aromatic Hydrocarbons**

Two samples were submitted for PAH analysis. The samples were collected where planned storm sewer excavations intersect groundwater between Ely and Stanton Street. This area contains buried refuse and adjoins the Marinette Marine and MACBI-Tyco redevelopment sites.

PAHs were found in both groundwater samples, but only one compound (chrysene) exceeded its PAL. The exceedance occurred in sample GP-8 in a lens of buried refuse that exhibited black staining and a petroleum-like odor. The acceptance of petroleum-contaminated groundwater discharges to the sanitary sewer, such as PAHs, is evaluated by the WWTP on a case-by-case basis.

### **Volatile Organic Compounds**

Ayres submitted three samples for VOC analysis. The samples were collected adjacent to the Rydahls 76 LUST site and from buried refuse between Ely and Stanton Street. VOCs were found in one sample, but the compounds detected, 1,2,4-trimethylbenzene and chlorobenzene, did not exceed NR 140 groundwater quality standards. The specific pollutant discharge limitations for discharging petroleum-contaminated groundwater to the sanitary sewer require that total benzene, toluene, ethylbenzene, xylene (BTEX) concentrations are below 150  $\mu\text{g/L}$ . The VOC testing results from all three samples indicate that BTEX concentrations are within the acceptance criteria.

### **Per- and polyfluoroalkyl substances**

Ayres collected four groundwater samples for PFAS analysis. The samples were distributed throughout the project limits to evaluate the need to treat dewatering discharges from excavations that intersect PFAS-contaminated groundwater.

State groundwater quality standards have not been established for PFAS compounds. The WDNR requested that the Wisconsin Department of Health Services (DHS) recommend a groundwater health standard for two PFAS compounds, PFOA and PFOS. Wisconsin DHS recommended that an enforcement standard of 20 nanograms per liter (ng/L) and a PAL of 2 ng/L be used for PFOA and PFOS individually and combined. Similarly, the Marinette WWTP evaluates the acceptance of PFAS discharges to the sanitary sewer on a case-by-case basis. Initial discussions with WWTP staff indicated that contaminated groundwater may require treatment before discharge to the sanitary sewer.

PFOA concentrations in the project limits ranged from 3.2 to 350 ng/L. Samples collected between Hall Avenue and Mann Street (GP-1 and GP-3) attained the proposed PAL, and samples acquired between Ely and Stanton Street (GP-8 and GP-10) exceeded the proposed enforcement standard. Although PFOA concentrations exceeded the proposed groundwater quality standards throughout the project limits, these levels were potentially acceptable for discharge to the sanitary sewer.

PFOS concentrations ranged from 4.5 to 31 ng/L, with levels at GP-1, GP-3, and GP-8 exceeding the proposed PAL and the concentration at GP-10 exceeding the proposed enforcement standard. PFOS

concentrations throughout the project limits exceeded the proposed groundwater quality standards and would likely require treatment to meet before discharge to the sanitary sewer.

## Data Validation

Ayres evaluated the laboratory results to determine whether the quality of the analytical testing data was satisfactory. The data quality was determined to be acceptable to interpret the assessment results and for comparison to applicable regulatory standards, with the following considerations.

Naphthalene and PFOS were identified in laboratory method blanks for groundwater analysis. Naphthalene was detected in the blank at 0.038 µg/L, and PFOS was detected at 1.7 ng/L. Although the reported groundwater concentrations for PFOS and naphthalene may be partially attributable to laboratory-induced contamination, the sample concentrations were several times the levels found in the corresponding method blanks, indicating the detections were primarily attributable to substances at the site rather than sampling handling or testing artifacts.

The reported absence of detectable analytes from samples was evaluated against the detection limits and surrogate recoveries achieved in the analyses. The laboratory was unable to evaluate surrogate recoveries for PCBs in soil sample GP-6 (2-4') and PAHs in soil samples GP-9 (1.5-3.5') and GP-10 (2-4') because the samples were diluted for analysis due to high levels of non-target analytes or other matrix interference. Although the dilution of samples significantly increased the method detection limits, the reported concentrations of PAHs were several times the applicable regulatory standards. Thus, lower detection limits were not required to determine that regulatory standards were exceeded. Alternatively, PCBs were not detected in soil sample GP-6 (2-4'), but the elevated detection limits were not comparable to regulatory standards. As a result, this assessment could not verify that PCBs are not present above regulatory standards in sample GP-6 (2-4').

## 5.0 Interpretations and Conclusions

### Degree and Extent of Contaminants

A layer of fill covering the project limits from Mann to Stanton Street contains concentrations of lead above the protection of groundwater RCL. The fill is mainly comprised of brown silty sand and exhibits black staining with naphtha- and petroleum-like odors. In general, the fill depth increases to the east, from less than four feet near Mann Street to 14 feet in the former log run near Ely Street. Additionally, the fill between Ely and Stanton is mixed with varying amounts of refuse, including styrofoam, paper, plastic, wood, glass, brick fragments, and cinders. Levels of arsenic in the refuse and fill between Ely and Stanton exceed the direct-contact RCL. Groundwater near the east and west extent of the project limits contained dissolved concentrations of arsenic and lead above groundwater enforcement standards. Although probes GP-3 and GP-4 didn't produce enough water to collect samples for metals analysis, levels of dissolved arsenic and lead throughout the project limits likely exceed groundwater quality standards.

Polycyclic aromatic hydrocarbons exceed direct contact and protection of groundwater RCLs within four feet of the surface where the project limits intersect the former Marinette MGP site and within fill containing refuse (1 ½ to 8 feet) between Ely and Stanton Street. The compounds found above direct contact RCLs included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene. Compounds that exceed protection of groundwater standards include benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, fluorene, and naphthalene. Groundwater in contact with the buried refuse contained PAHs, but chrysene was the only compound that attained a PAL.

Volatile organic compounds are present above direct-contact and protection of groundwater RCLs in fill that is 1 ½ to 8 feet beneath the surface between Mann and Stanton Street. Specifically, naphthalene exceeds the direct-contact RCL, and benzene exceeds the protection of groundwater RCL. Levels of naphthalene above 5 mg/Kg, coupled with black staining and odors, indicate NAPL is potentially present within the fill and refuse between Ely and Stanton Street. Although NAPL indicators were present, groundwater is not significantly impacted by VOCs. Only two compounds, 1,2,4-trimethylbenzene and chlorobenzene, were detected, and neither exceeded groundwater quality standards.

Cyanide is present in the fill between Mann and Ely Street (GP-5 and GP-6) at levels above the protection of groundwater RCL but below the direct-contact RCL. Groundwater was not assessed for cyanide. However, planned grading and excavation activities do not intersect groundwater in this area.

Several PFAS compounds, including PFOA and PFOS, were detected in the fill and refuse between Ely and Stanton Street. However, these detections were well below direct-contact RCLs. Currently, there is no pre-determined protection of groundwater RCL for these compounds. Although the fill does not appear to be a significant source of PFAS, both PFOS and PFOA exceeded the proposed groundwater quality standards throughout the project limits.

### Conclusions

Contamination detected beneath Ludington Street is consistent with past industrial operations within and adjoining the project limits. Fill and soil containing contamination above direct contact RCLs was confirmed in samples collected adjacent to the Marinette MGP and Goodwill Industry sites (GP-5 and GP-6) and within fill containing refuse adjacent to the MACBI-Tyco and Marinette Marine redevelopment sites (GP-8, GP-9, and GP-10). Groundwater contamination exceeding enforcement standards was found beneath Ludington Street throughout the project limits.

Contaminated soil and fill containing refuse within the project limits are considered solid waste and must be managed following a WDNR-approved material handling plan. Solid waste that is removed from the

site should be disposed of at a licensed solid waste landfill. Based on testing results, including TCLP analysis for lead and arsenic, the contaminant concentrations are considered non-hazardous for disposal purposes. Currently, PFAS-contaminated soil is considered solid waste but not hazardous waste. However, it is up to the receiving landfill to determine whether to accept the waste.

Groundwater contamination exceeding enforcement standards exists throughout the project limits, including where planned excavations intersect groundwater. Due to the levels of contamination present, groundwater encountered in excavations at the site must either be dewatered to the sanitary sewer with permission from the Marinette WWTP or to the surface (i.e., storm sewer or surface water) with WDNR approval under a Wisconsin Pollutant Discharge Elimination System (WPDES) individual permit. Based on the testing results, it's likely that both options will require treatment before discharge. However, because surface discharges from within the project limits will be received by surface waters in the Great Lakes system, the effluent limitations set by WDNR under an individual permit will be more restrictive than sanitary sewer acceptance limits. Specifically, WDNR staff indicated that effluent limits for arsenic under an individual permit would be 0.2 µg/L, while the acceptance criteria for sanitary discharge is 100 µg/L. Additionally, the treatment criteria for PFOA and PFOS would likely be lower than levels required for discharge to the sanitary sewer.

Subsurface utilities that intersect NAPL or benzene contaminated fill potentially provide preferential pathways for vapor migration to nearby buildings. Benzene contamination was found in fill between Mann and Stanton Street, and NAPL indicators were observed in fill and refuse between Ely and Stanton Street.

## 6.0 Recommendations

Based on the assessment results and the proposed project design, Ayres recommends the following:

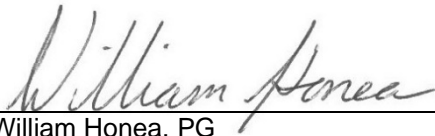
- Notify the WDNR that arsenic, lead, PFAS, PAHs, cyanide, and VOCs were found in soil and/or groundwater above regulatory standards. Hazardous substance discharges identified through analytical testing, as in this case, can be reported through WDNR's online Submittal Portal by submitting a *Notification for Hazardous Substance Discharge Form – Non-Emergency Only* (Form 4400-225).
- Submit this report to the WisDOT Environmental Coordinator and project design team. The proposed road grading and utility excavations intersect contaminated soil, buried refuse, and groundwater between Mann Street and Stanton Street. WDNR must review and approve a material handling plan and construction special provisions for the beneficial reuse or removal of contaminated materials before work can begin.
- Submit a *Permit Application for Wastewater Discharge to City of Marinette Sanitary Sewer System* to the pretreatment coordinator at the Marinette WWTP. Contaminated groundwater meeting the specific pollutant limitations listed in City of Marinette Ordinance Chapter 7.02113 can be dewatered to the sanitary sewer with approval from the WWTP. The approval of PFAS discharges is evaluated on a case-by-case basis. Initial conversations between Ayres and WWTP staff indicated that the levels of PFOS found in groundwater would require treatment before discharge to the sanitary sewer.
- The City can apply for an individual WPDES permit to discharge to the storm sewer or surface water as an alternative to dewatering excavations to the sanitary sewer. The WDNR reviews and approves individual permits on a case-by-case basis. Dewatering discharges from within the project limits will be received by surface waters in the Great Lakes system, which is subject to restrictive water quality criteria. Initial discussions with WDNR staff, coupled with sampling results, indicate that dewatering discharges would require treatment to meet effluent limitations set under an individual permit. The discussed individual permit effluent limitation for arsenic was 0.2 µg/L, which is significantly lower than the sanitary sewer acceptance limit of 100 µg/L. Attaining individual permit effluent limitations would likely require a higher level of treatment than needed to meet sanitary sewer discharge criteria.
- Develop construction special provisions for dewatering excavations and project specifications for a system to treat PFAS-contaminated groundwater to levels that meet acceptance criteria for discharge method selected (sanitary sewer or WPDES individual permit).
- Contact licensed solid waste landfills in the surrounding area to determine if they are willing to accept contaminated soil and solid waste from the project. Planned grading and storm sewer excavations between Ely and Stanton Street intersect contaminated fill containing refuse that is impacted with levels of PFAS below direct-contact RCLs. The physical properties of the fill and refuse are likely unsuitable for beneficial reuse as backfill, and the excavated material will require disposal at a licensed solid waste landfill. Although the testing results indicate the waste is considered non-hazardous for disposal purposes, it is up to the receiving landfill to decide if it will accept the waste. Currently, landfills make this determination for PFAS-contaminated materials on a case-by-case basis.
- Consider incorporating trench seals into the storm sewer design between Ely and Stanton Street. Cement bentonite collars extending into the surrounding subgrade inhibit vapor and contaminated groundwater migration through pipe bedding and trench backfill material.



## 7.0 Signature

Ayres performed this testing in conformance with accepted industry practices. The objectives of this assessment and scope of work were defined and completed under the agreement between Ayres and the City of Marinette, dated October 7, 2021.

"I, William Honea, hereby certify that I am a scientist as that term is defined in s. NR 712.03 (3), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct that the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."



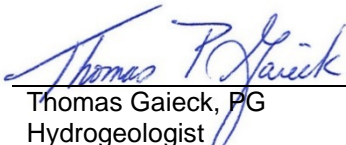
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William Honea, PG  
Geologist  
[HoneaW@AyresAssociates.com](mailto:HoneaW@AyresAssociates.com)  
920.327.7815

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January 6, 2022  
Date

"I, Thomas Gaieck, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."



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Thomas Gaieck, PG  
Hydrogeologist  
[GaieckT@AyresAssociates.com](mailto:GaieckT@AyresAssociates.com)  
608.443.1292

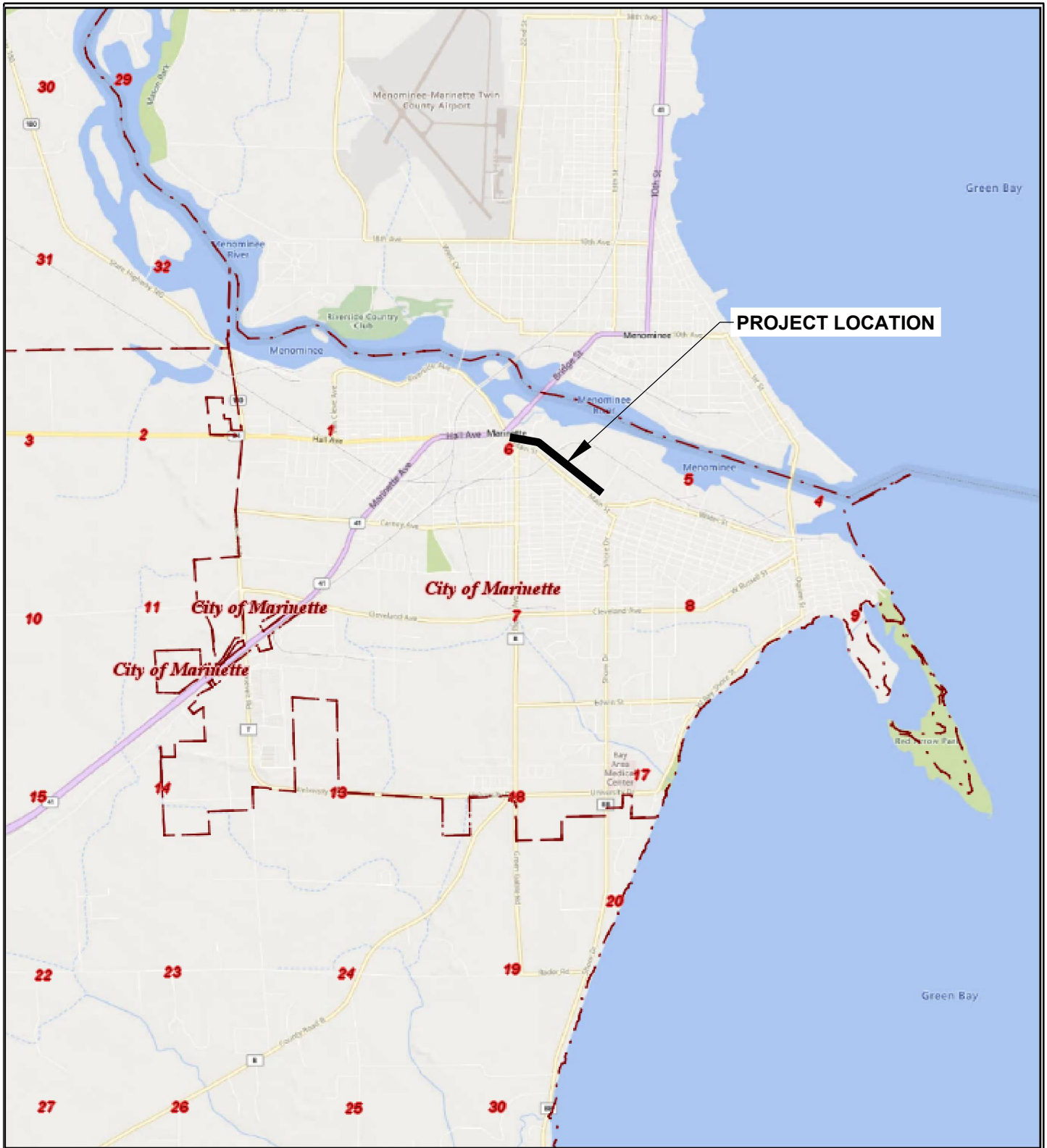
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January 6, 2022  
Date

## 8.0 References and Sources

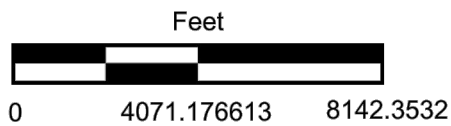
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**Figure 1: Location Map**



<https://mcgis.marinetcounty.com>

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DR.BY	T. Shupert
CHK.BY	B. Honea
DATE	DEC. 2021

SOIL AND GROUNDWATER TESTING  
LUDINGTON ROAD  
MARINETTE, WISCONSIN



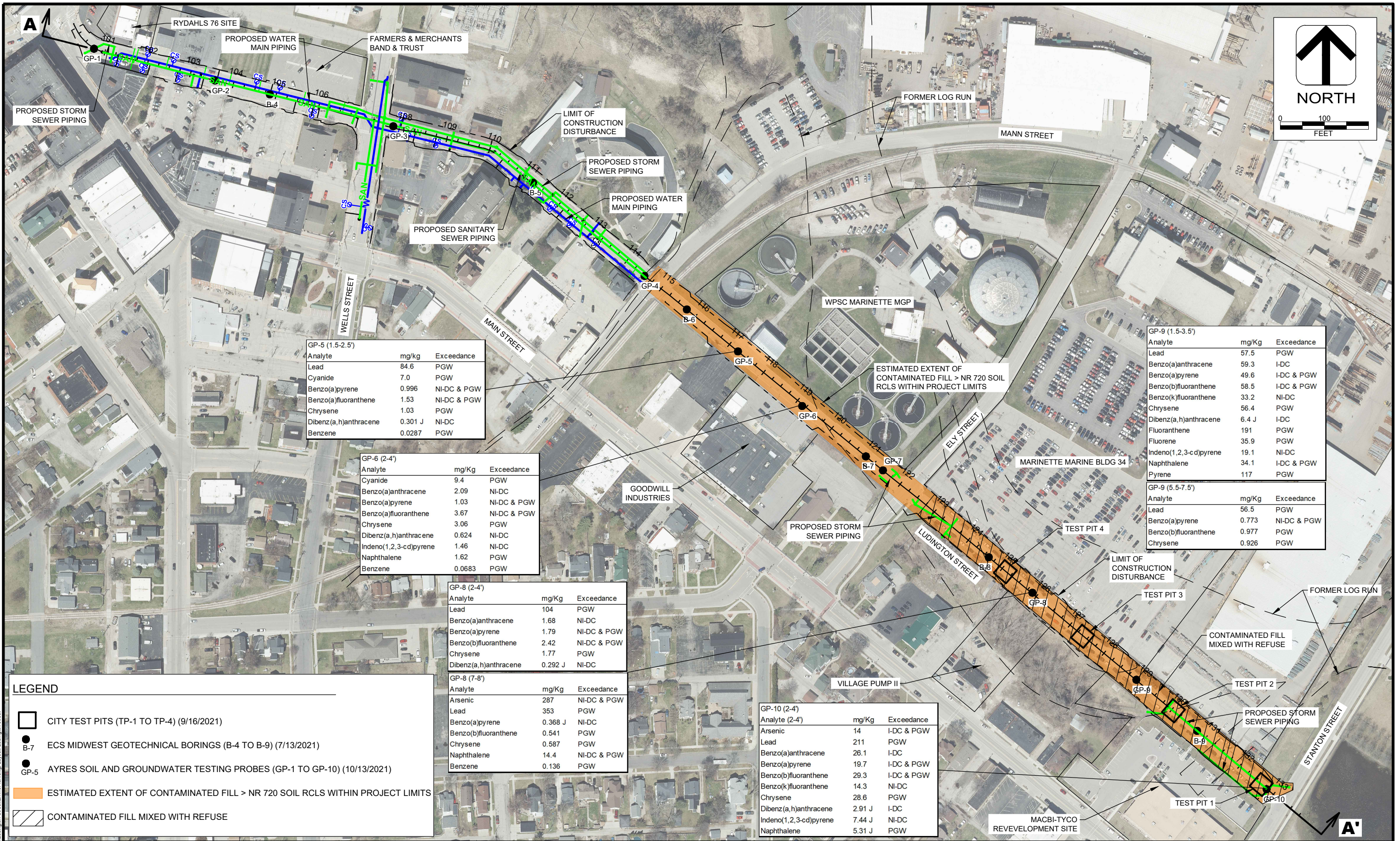
LOCATION MAP

FIGURE NO.

1

**Figure 2: Site Plan with Sample Locations**





GP-5 (1.5-2.5')

Analyte	mg/kg	Exceedance
Lead	84.6	PGW
Cyanide	7.0	PGW
Benzo(a)pyrene	0.996	NI-DC & PGW
Benzo(a)fluoranthene	1.53	NI-DC & PGW
Chrysene	1.03	PGW
Dibenz(a,h)anthracene	0.301 J	NI-DC
Benzene	0.0287	PGW

GP-6 (2-4')

Analyte	mg/Kg	Exceedance
Cyanide	9.4	PGW
Benzo(a)anthracene	2.09	NI-DC
Benzo(a)pyrene	1.03	NI-DC & PGW
Benzo(a)fluoranthene	3.67	NI-DC & PGW
Chrysene	3.06	PGW
Dibenz(a,h)anthracene	0.624	NI-DC
Indeno(1,2,3-cd)pyrene	1.46	NI-DC
Naphthalene	1.62	PGW
Benzene	0.0683	PGW

GP-8 (2-4')

Analyte	mg/Kg	Exceedance
Lead	104	PGW
Benzo(a)anthracene	1.68	NI-DC
Benzo(a)pyrene	1.79	NI-DC & PGW
Benzo(b)fluoranthene	2.42	NI-DC & PGW
Chrysene	1.77	PGW
Dibenz(a,h)anthracene	0.292 J	NI-DC

GP-7 (7-8')

Analyte	mg/Kg	Exceedance
Arsenic	287	NI-DC & PGW
Lead	353	PGW
Benzo(a)pyrene	0.368 J	NI-DC
Benzo(b)fluoranthene	0.541	PGW
Chrysene	0.587	PGW
Naphthalene	14.4	NI-DC & PGW
Benzene	0.136	PGW

GP-10 (2-4')

Analyte (2-4')	mg/Kg	Exceedance
Arsenic	14	I-DC & PGW
Lead	211	PGW
Benzo(a)anthracene	26.1	I-DC
Benzo(a)pyrene	19.7	I-DC & PGW
Benzo(b)fluoranthene	29.3	I-DC & PGW
Benzo(k)fluoranthene	14.3	NI-DC
Chrysene	28.6	PGW
Dibenz(a,h)anthracene	2.91 J	I-DC
Indeno(1,2,3-cd)pyrene	7.44 J	NI-DC
Naphthalene	5.31 J	PGW

GP-9 (1.5-3.5')

Analyte	mg/Kg	Exceedance
Lead	57.5	PGW
Benzo(a)anthracene	59.3	I-DC
Benzo(a)pyrene	49.6	I-DC & PGW
Benzo(b)fluoranthene	58.5	I-DC & PGW
Benzo(k)fluoranthene	33.2	NI-DC
Chrysene	56.4	PGW
Dibenz(a,h)anthracene	6.4 J	I-DC
Fluoranthene	191	PGW
Fluorene	35.9	PGW
Indeno(1,2,3-cd)pyrene	19.1	NI-DC
Naphthalene	34.1	I-DC & PGW
Pyrene	117	PGW

GP-9 (5.5-7.5')

Analyte	mg/Kg	Exceedance
Lead	56.5	PGW
Benzo(a)pyrene	0.773	NI-DC & PGW
Benzo(b)fluoranthene	0.977	PGW
Chrysene	0.926	PGW

**LEGEND**

- CITY TEST PITS (TP-1 TO TP-4) (9/16/2021)
- B-7 ECS MIDWEST GEOTECHNICAL BORINGS (B-4 TO B-9) (7/13/2021)
- GP-5 AYRES SOIL AND GROUNDWATER TESTING PROBES (GP-1 TO GP-10) (10/13/2021)
- ESTIMATED EXTENT OF CONTAMINATED FILL > NR 720 SOIL RCLS WITHIN PROJECT LIMITS
- CONTAMINATED FILL MIXED WITH REFUSE

DES BY	BOOK NO	NO	DATE	REVISION	NO	DATE	REVISION
B. HONEA							
DR BY	PROJ NO						
T. SHUPERT	52-0712.00						
CHK BY	DATE						
B. HONEA	DEC. 2021						

**SOIL AND GROUNDWATER TESTING  
LUDINGTON ROAD  
MARINETTE, WISCONSIN**

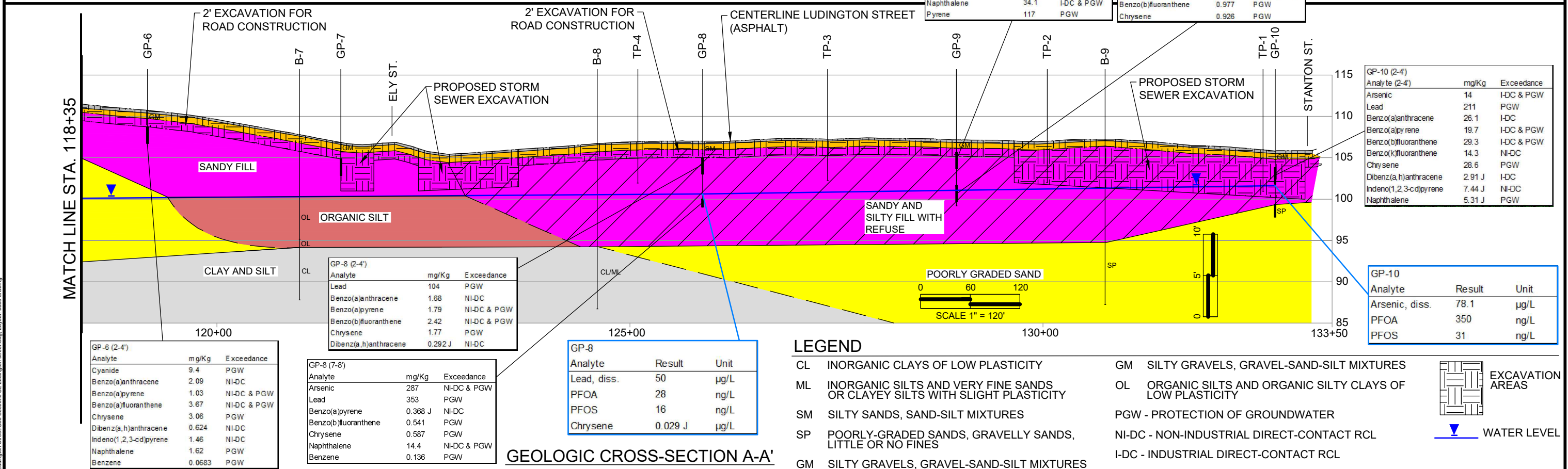
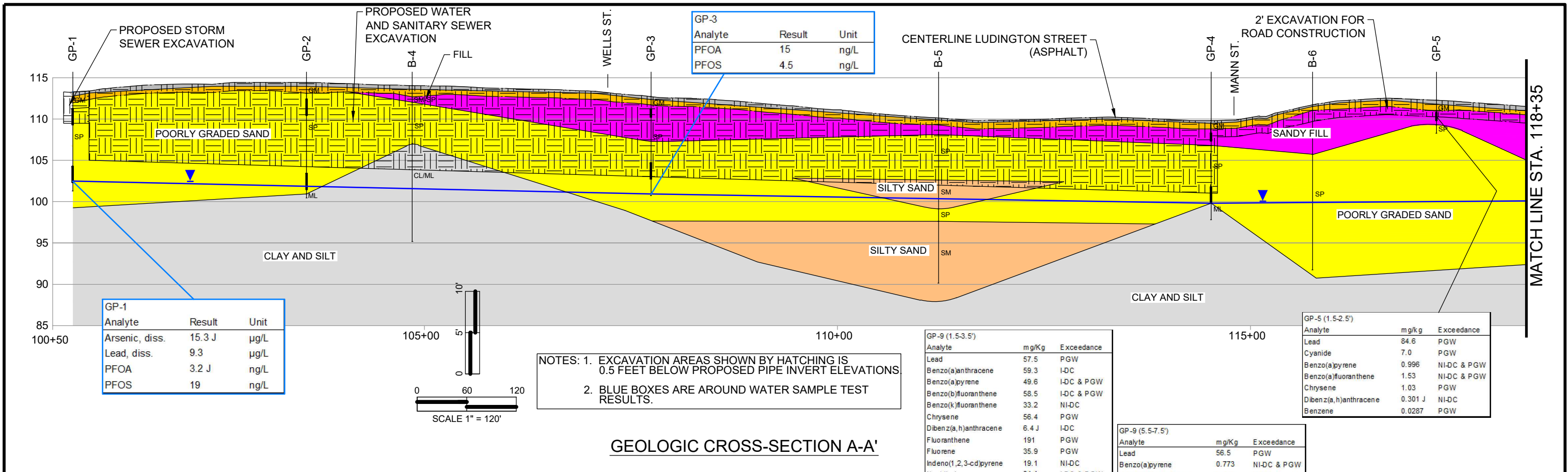


SITE PLAN

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**Figure 3: Geologic Section A - A' (Centerline  
of Roadway)**





**Table 1: List of Soil Explorations, Samples  
Collected, and Analytes Sought**

**Table 1**  
**Soil Explorations, Samples Collected, and Analytes Sought**  
 Ludington Street  
 Hall Avenue to Stanton Street, Marinette, WI

Boring	Boring Depth (ft bgs)	Sample Depth (ft bgs)	Soil Type	As and Pb (EPA 6010)	Cyanide (EPA 9012)	PFAS (Isotope)	VOCs (EPA 8260)	PAHs (SIM 8270)	PCBs (EPA 8081)	Asbestos (PLM)
GP-1	12	2 - 4	Sand	✓			✓			
GP-1	12	9 - 11	Sand	✓			✓			
GP-2	12	2 - 4	Sand	✓			✓			
GP-2	12	9 - 11	Sand	✓			✓			
GP-3	12	1.5 - 2.5	Sand	✓						
GP-3	12	8 - 10	Sand	✓						
GP-4	12	1.5 - 2.5	Sand	✓						
GP-4	12	8 - 10	Sand	✓						
GP-5	4	1.5 - 2.5	Sand	✓	✓		✓	✓	✓	
GP-6	4	2 - 4	Sand	✓	✓		✓	✓	✓	
GP-7	4	2 - 4	Sand	✓	✓		✓	✓	✓	
GP-8	8	2 - 4	Sand	✓		✓	✓	✓		✓
GP-8	8	7 - 8	Refuse	✓			✓	✓		✓
GP-9	8	1.5 - 3.5	Sand	✓		✓	✓	✓		✓
GP-9	8	5.5 - 7.5	Sand	✓		✓	✓	✓		✓
GP-10	8	2 - 4	Refuse	✓		✓	✓	✓		✓
GP-10	8	6.5 - 8	Sand	✓			✓	✓		✓

Notes: bgs - below ground surface. PAHs - Polycyclic aromatic hydrocarbons. VOCs - Volatile organic compounds. PCB - Polychlorinated biphenyls. PFAS - Per- and Polyfluoroalkyl substances.

**Table 2: List of Groundwater Sample Locations,  
Water Level Measurements, and Analytes Sought**

**Table 2**  
**Groundwater Sample Locations, Water Level Measurements, and Analytes Sought**  
 Ludington Street  
 Hall Avenue to Stanton Street, Marinette, WI

<b>Boring</b>	<b>Total Depth (ft bgs)</b>	<b>Screened Interval (ft bgs)</b>	<b>Depth to Water (ft bgs)</b>	<b>Dissolved As and Pb (EPA 6010)</b>	<b>PFAS</b>	<b>VOCs (EPA 8260)</b>	<b>PAHs (SIM 8270)</b>
GP-1	12	7 - 12	10.8	✓	✓	✓	
GP-3	12	7 - 12	11.8		✓		
GP-4	12	7 - 12	Dry				
GP-8	8	3 - 8	6.4	✓	✓	✓	✓
GP-10	8	3 - 8	4.2	✓	✓	✓	✓

Notes: bgs - below ground surface. PFAS - Per- and polyfluoroalkyl substances. PAHs - Polycyclic aromatic hydrocarbons. VOCs - Volatile organic compounds.

**Table 3: Soil Analyte Detection Summary**

Table 5  
 Previous Soil Analyte Detection Summary  
 Ludington Street  
 Hall Avenue to Stanton Street, Marinette, WI

	NR 720 Soil Cleanup Standards				Hall Avenue to Wells Street				Wells Street to Mann Street				Mann Street to Ely Street			Ely Street to Stanton Street					
	Industrial Direct Contact	Non-Industrial Direct Contact	Protection of Groundwater	Background Threshold Value	GP-1	GP-1	GP-2	GP-2	GP-3	GP-3	GP-4	GP-4	GP-5	GP-6	GP-7	GP-8	GP-8	GP-9	GP-9	GP-10	GP-10
					10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021
mg/Kg	3.0	0.677	0.584	8	2-4	9-11	2-4	9-11	1.5-2.5	8-10	1.5-2.5	8-10	1.5-2.5	2-4	2-4	2-4	7-8	1.5-3.5	5.5-7.5	2-4	6.5-8
					Sand	Sand	Sand	Sand	Sand	Sand	Fill	Sand	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Sand
Arsenic	3.0	0.677	0.584	8	2.4 J	1.9 J	<1.4	3.4	2.6	<1.5	3.5	1.8 J	2.3 J	2.8	2.7	6.3	<u>287</u>	3.6	3.4	<u>14.0</u>	1.7 J
Lead	800	400	27	52	1.0 J	0.64 J	0.74 J	1.2 J	11.9	0.88 J	42.4	6.2	<u>84.6</u>	47.1	4.6	<u>104</u>	<u>353</u>	<u>57.5</u>	<u>56.5</u>	<u>211</u>	2.9
Cyanide	195	27.1	4.04	NS	NA	NA	NA	NA	NA	NA	NA	NA	<u>7.0</u>	<u>9.4</u>	<0.18	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances PFAS (mg/Kg)																					
PFBA (Perfluorobutanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00003 J	NA	0.00003 J	0.000068 J	0.000051 J	NA
PFPeA (Perfluoropentanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00007 J	NA	0.000054 J	0.0001	0.00016	NA
PFHxA (Perfluorohexanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00003	NA	<0.00003	0.000042 J	0.000098 J	NA
PFHpA (Perfluoroheptanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000026	NA	<0.000022	0.000044 J	0.00007 J	NA
PFxS (Perfluorohexanesulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000051 J	NA	0.000067 J	0.000290 J	0.000027 J	NA
PFOA (Perfluorooctanoic acid)	16.4	1.26	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00003 J	NA	0.000034 J	0.000057 J	0.00022	NA
6:2 FTS (6:2 Fluorotelomer sulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000068 J	NA	0.000044 J	0.000038 J	<0.000022	NA
PFHpS (Perfluoroheptanesulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000025	NA	<0.000025	<0.000025	0.000063 J	NA
PFNA (Perfluorononanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000028	NA	<0.000028	<0.000028	0.00017	NA
PFOS (Perfluorooctanesulfonic acid)	16.4	1.26	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00033	NA	0.00031	0.00038	0.0032	NA
NEtFOSAA (N-Ethyl perfluorooctane sulfonamidoacetic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000077 J	NA	<0.000024	<0.000024	0.00017	NA
PFTrDA (Perfluorotridecanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000021	NA	<0.000021	<0.000021	0.000068 J	NA
1-Methylnaphthalene	72.7	17.6	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.0718 J	0.282 J	<0.0026	0.0543 J	8.58	8.52 J	0.124 J	2.36 J	<0.0029
2-Methylnaphthalene	3,010	239	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.109 J	0.665	<0.0026	0.0752 J	13.0	12.3	0.150 J	3.09 J	<0.0029
Acenaphthene	45,200	3,590	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	<0.0452	<0.0472	<0.0023	0.0585 J	0.555	17.0	0.154 J	2.93 J	<0.0026
Acenaphthylene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.78	2.0	0.003 J	0.0339 J	0.748	1.61	0.122 J	3.57 J	<0.0025
Anthracene	100,000	17,900	197	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.317 J	0.456	0.0032 J	0.0352 J	0.458 J	63.6	0.301 J	14.3	<0.0025
Benzo(a)anthracene	20.8	1.14	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.867	2.09	0.0185	1.68	0.655	<u>59.3</u>	0.861	<u>26.1</u>	0.0045 J
Benzo(a)pyrene	2.11	0.115	0.47	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.996	1.03	0.0251	1.79	0.368 J	<u>49.6</u>	0.773	<u>19.7</u>	0.0026 J
Benzo(b)fluoranthene	21.1	1.15	0.4781	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.53	3.67	0.0375	2.42	<u>0.541</u>	<u>58.5</u>	<u>0.977</u>	<u>29.3</u>	0.0036 J
Benzo(g,h,i)perylene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.09	1.6	0.0157 J	0.949	0.146 J	20.9	0.469	7.53 J	<0.0035
Benzo(k)fluoranthene	211	11.5	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.597	1.74	0.0144 J	1.21	0.183 J	33.2	0.324 J	14.3	<0.0026
Chrysene	2,110	115	0.1442	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.03	3.06	0.0307	1.77	<u>0.587</u>	<u>56.4</u>	<u>0.926</u>	<u>28.6</u>	<0.0038
Dibenz(a,h)anthracene	2.11	0.115	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.301 J	0.624	0.0046 J	0.292 J	<0.0659	<u>6.4 J</u>	0.100 J	<u>2.91 J</u>	<0.0028
Fluoranthene	30,100	2,390	88.9	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.16	1.01	0.0431	3.35	1.25	<u>191</u>	1.39	65.4	0.0072 J
Fluorene	30,100	2,390	14.8	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.0667 J	0.1 J	<0.0021	0.117 J	0.937	<u>35.9</u>	0.236 J	13.2	<0.0024
Indeno(1,2,3-cd)pyrene	21.1	1.15	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.893	1.46	0.0104 J	0.858	0.123 J	19.1	0.345 J	7.44 J	<0.0042
Naphthalene	24.1	5.52	0.6582	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.388	<u>1.62</u>	0.0019 J	0.111 J	14.4	<u>34.1</u>	0.118 J	<u>5.31 J</u>	<0.0020
Phenanthrene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.519	0.372	0.013 J	1.04	2.14	184	1.8	71.6	0.0061 J
Pyrene	22,600	1,790	55	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.31	1.09	0.0351	2.76	1.47	<u>117</u>	3.89	41.5	0.0045 J
1,2,4-Trimethylbenzene	219	219	NS	NS	<0.0158	<0.0168	<0.0155	<0.0163	NA	NA	NA	NA	<0.0162	<0.0175	<0.0170	<0.0169	0.306	<0.0164	0.0210 J	<0.0286	<0.0210
1,3,5-Trimethylbenzene	182	182	NS	NS	<0.0170	<0.0182	<0.0168	<0.0176	NA	NA	NA	NA	<0.0175	<0.0190	<0.0184	<0.0182	0.18	<0.0177	<0.0187	<0.0309	<0.0226
Benzene	7.07	1.6	0.0051	NS	<0.0126	<0.0134	<0.0124	<0.0130	NA	NA	NA	NA	<u>0.0287</u>	<u>0.0683</u>	<0.0136	<0.0135	<u>0.0458</u>	<0.0131	0.0149 J	<0.0228	<0.0167
Chlorobenzene	761	370	0.1358	NS	<0.0063	<0.0068	<0.0062	<0.0065	NA	NA	NA	NA	<0.0065	<0.0071	<0.0068	<0.0068	0.0230 J	<0.0066	<0.0070	<0.0115	<0.0084
Ethylbenzene	35.4	8.02	1.57	NS	<0.0126	<0.0134	<0.0124	<0.0130	NA	NA	NA	NA	<0.0130	<0.0140	<0.0136	<0.0135	0.11	<0.0131	<0.0138	0.0288 J	<0.0167
Isopropylbenzene (Cumene)	268	268	NS	NS	<0.0143	<0.0152	<0.0141	<0.0148	NA	NA	NA	NA	<0.0147	<0.0159	<0.0154	<0.0153	0.379	<0.0148	<0.0157	<0.0259	<0.0190
m&p-Xylene	388	388	NS	NS	<0.0223	<0.0238	<0.0220	<0.0231	NA	NA	NA	NA	0.0243 J	0.0467 J	<0.0241	<0.0239	0.0716 J	<0.0232	0.0277 J	0.239	<0.0297
Naphthalene	24.1	5.52	0.6582	NS	<0.0165	<0.0176	<0.0163	<0.0171	NA	NA	NA	NA	0.240 J	<u>0.819</u>	<0.0178	<0.0177	<u>4.84</u>	0.611	0.136 J	0.0666 J	<0.0219
n-Butylbenzene	108	108	NS	NS	<0.0242	<0.0258	<0.0239	<0.0250	NA	NA	NA	NA	<0.0249	<0.0270	<0.0261	<0.0260	1.01	<0.0251	<0.0267	<0.0439	<0.0322
n-Propylbenzene	264	264	NS	NS	<0.0127	<0.0135	<0.0125	<0.0131	NA	NA	NA	NA	<0.0131	<0.0141	<0.0137	<0.0136	0.137	<0.0132	<0.0140	<0.0230	<0.0169
o-Xylene	434	434	NS	NS	<0.0159	<0.0169	<0.0156	<0.0164	NA	NA	NA	NA	<0.0163	0.0194 J	<0.0171	<0.0170	0.0682 J	<0.0165	<0.0175	0.0487 J	<0.0211
p-Isopropyltoluene	162	162	NS	NS	<0.0161	<0.0172	<0.0159	<0.0166	NA	NA	NA	NA	<0.0165	<0.0179	<0.0173	<0.0172	0.164	<0.0167	<0.0177	<0.0291	<0.0214
sec-Butylbenzene	145	145	NS	NS	<0.0129	<0.0138	<0.0127	<0.0133	NA	NA	NA	NA	<0.0133	<0.0144	<0.0139	<0.0138	0.198	<0.0134	<0.0142	<0.0234	<0.0172
Styrene	867	867	0.22	NS	<0.0136	<0.0144	<0.0134	<0.0140	NA	NA	NA	NA	0.0143 J	0.0328 J	<0.0146	<0.0145	<0.0237	<0.0141	<0.0149	<0.0245	<0.0180
tert-Butylbenzene	183	183	NS	NS	<0.0166	<0.0177	<0.0164	<0.0172	NA	NA	NA	NA	<0.0171	<0.0185	<0.0179	<0.0178	0.0348 J	<0.0172	<0.0183	<0.0301	<0.0221
Toluene	818	818	1.1072	NS	<0.0133	<0.0142	<0.0131	<0.0138	NA	NA	NA	NA	0.0458 J	0.0959	<0.0144	<0.0143	0.146	<0.0138			

**Table 4: Groundwater Analyte Detection Summary**

**Table 4**  
**Groundwater**  
**Analyte Detection Summary**  
Ludington Street  
Hall Avenue to Stanton Street, Marinette, WI

		NR 140 Groundwater Quality Standards		Hall Avenue to Mann Street			Ely Street to Stanton Street	
		Preventive Action Limit	Enforcement Standard	GP-1	GP-3	GP-4	GP-8	GP-10
				10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021
µg/L	Arsenic, Dissolved	1	10	<b>15.3 J</b>	NA	NA	<8.3	<b>78.1</b>
	Lead, Dissolved	1.5	15	<u>9.3</u>	NA	NA	<b>50</b>	<6.4
PFAS ng/L	PFBA (Perfluorobutanoic acid)	NS	NS	2.2 J	21	NA	60	49
	PFPeA (Perfluoropentanoic acid)	NS	NS	3.5 J	30	NA	150	140
	PFBS (Perfluorobutanesulfonic acid)	NS	NS	4.8 J	8.3	NA	6	6.8
	PFHxA (Perfluorohexanoic acid)	NS	NS	<2.2	18	NA	120	120
	PFPeS (Perfluoropentanesulfonic acid)	NS	NS	<2.1	<1.1	NA	<1.2	6.0
	PFHpA (Perfluoroheptanoic acid)	NS	NS	4.0 J	12	NA	72	130
	PFHxS (Perfluorohexanesulfonic acid)	NS	NS	<2.3	2.5 J	NA	6.8	22
	PFOA (Perfluorooctanoic acid)	2	20	<u>3.2 J</u>	<u>15</u>	NA	<b>28</b>	<b>350</b>
	6:2 FTS (6:2 Fluorotelomer sulfonic acid)	NS	NS	<2.9	<1.6	NA	4.4 J	11
	PFHpS (Perfluoroheptanesulfonic acid)	NS	NS	<1.8	<0.99	NA	<1.0	1.6 J
	PFNA (Perfluorononanoic acid)	NS	NS	<3.3	3.9 J	NA	3.3 J	<1.9
	PFOS (Perfluorooctanesulfonic acid)	2	20	<u>19</u>	<u>4.5</u>	NA	<u>16</u>	<b>31</b>
	PFDA (Perfluorodecanoic acid)	NS	NS	3.8 J	<1.4	NA	1.7 J	<1.4
	8:2 FTS (8:2 Fluorotelomer sulfonic acid)	NS	NS	<2.9	<1.6	NA	<1.6	4.7 J
	NEtFOSAA (N-Ethyl perfluorooctane sulfonamidoacetic acid)	NS	NS	<2.5	<1.3	NA	7.5	<1.4
PAH (µg/L)	1-Methylnaphthalene	NS	NS	NA	NA	NA	0.78	<0.017
	2-Methylnaphthalene	NS	NS	NA	NA	NA	0.47	0.016 J
	Acenaphthene	NS	NS	NA	NA	NA	0.47	0.021 J
	Benzo(a)anthracene	NS	NS	NA	NA	NA	0.014 J	<0.013
	Chrysene	0.02	0.2	NA	NA	NA	<u>0.029 J</u>	<0.025
	Fluoranthene	80	400	NA	NA	NA	0.043 J	<0.025
	Fluorene	80	400	NA	NA	NA	0.024 J	<0.022
	Naphthalene	10	100	NA	NA	NA	0.37	0.046 J
	Phenanthrene	NS	NS	NA	NA	NA	0.093	0.044 J
	Pyrene	50	250	NA	NA	NA	0.035 J	<0.021
VOC (µg/L)	1,2,4-Trimethylbenzene	96	480	<0.45	NA	NA	1.4	<0.45
	Chlorobenzene	NS	NS	<0.86	NA	NA	2.8	<0.86

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. NA - not analyzed. ND - none detected. NS - no standard. Underlined italic values are greater than preventive action limits. **Bold** values are greater than enforcement standards.



**Table 5: Groundwater Vapor Risk Screening Level  
Summary**

**Table 5 - Groundwater Vapor Risk Screening Level Summary**

Ludington Street  
Hall Avenue to Stanton Street, Marinette, WI

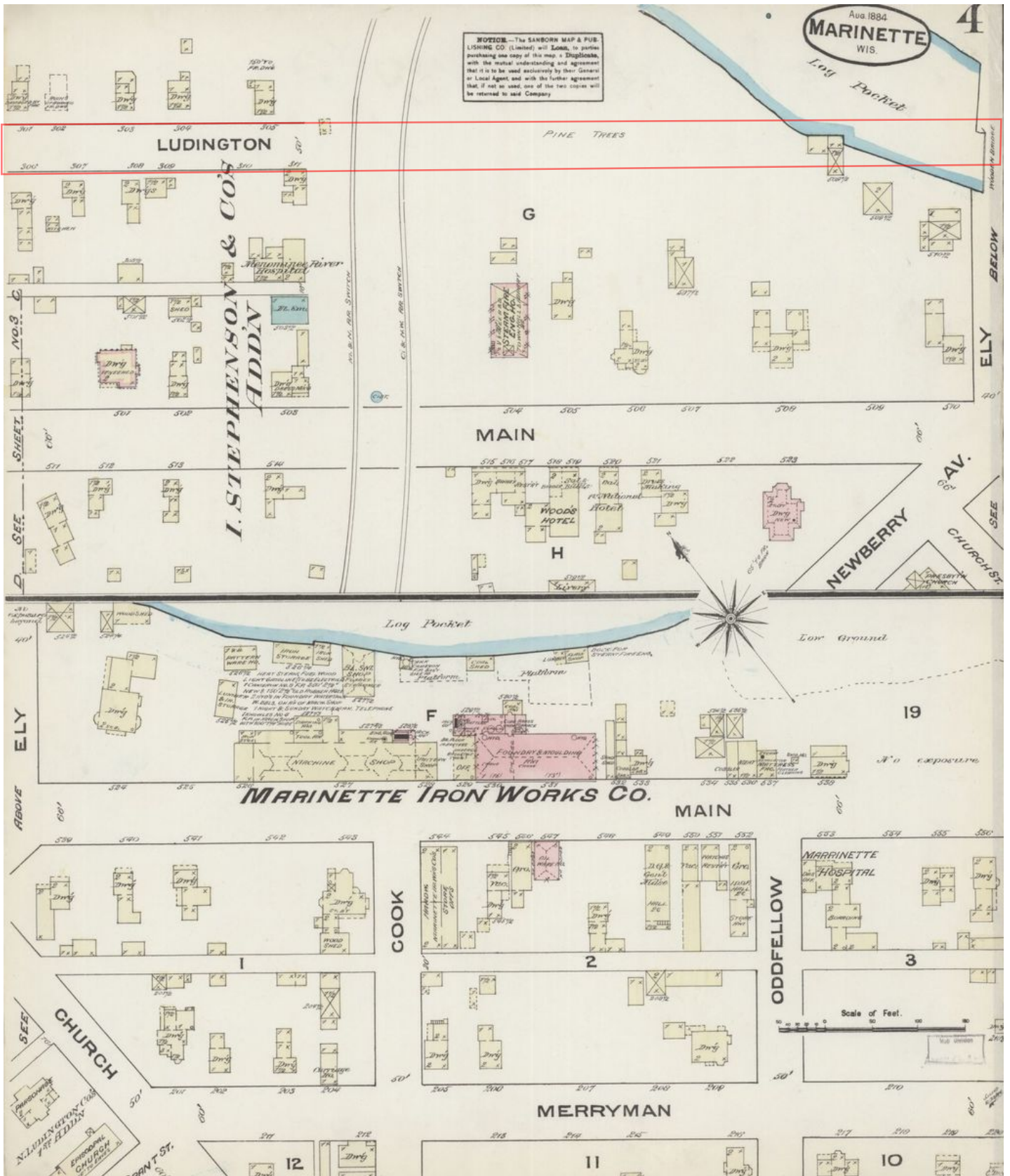
		Groundwater VRSL		Groundwater Samples					
		U.S. EPA RSL Basis	Residential	Non-residential	GP-1 10/13/2021	GP-3 10/13/2021	GP-4 10/13/2021	GP-8 10/13/2021	GP-10 10/13/2021
VOCs (µg/L)	1,2,4-Trimethylbenzene	n	250	10,317	<0.45	NA	NA	1.4	<0.45
	Chlorobenzene	n	409	17,323	<0.86	NA	NA	2.8	<0.86
	Naphthalene	c	46	2,000	<1.1	NA	NA	0.37	0.046 J

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. Bold values are greater than or equal to residential VRSLs. Bold underlined values are greater than or equal to small commercial VRSLs. Bold Underlined Italic values are greater than or equal to large commercial/industrial VRSLs. c - carcinogenic based RSL. n - non-carcinogenic based RSL. VAL - Vapor action level. VRSL - Vapor risk screening level. RSL - Regional screening level.

**Appendix A**  
**Historical Reference and Scoping Documents**





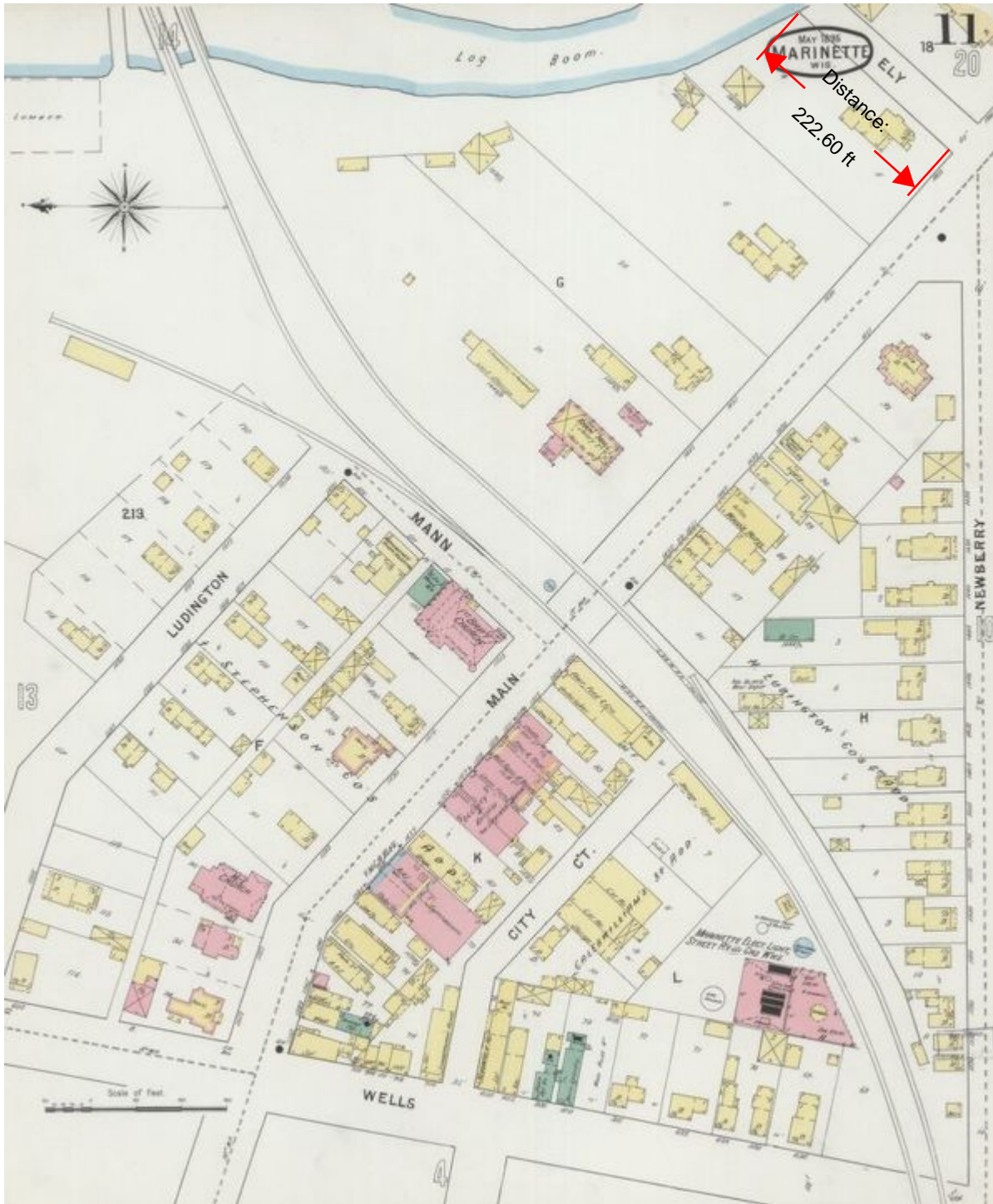


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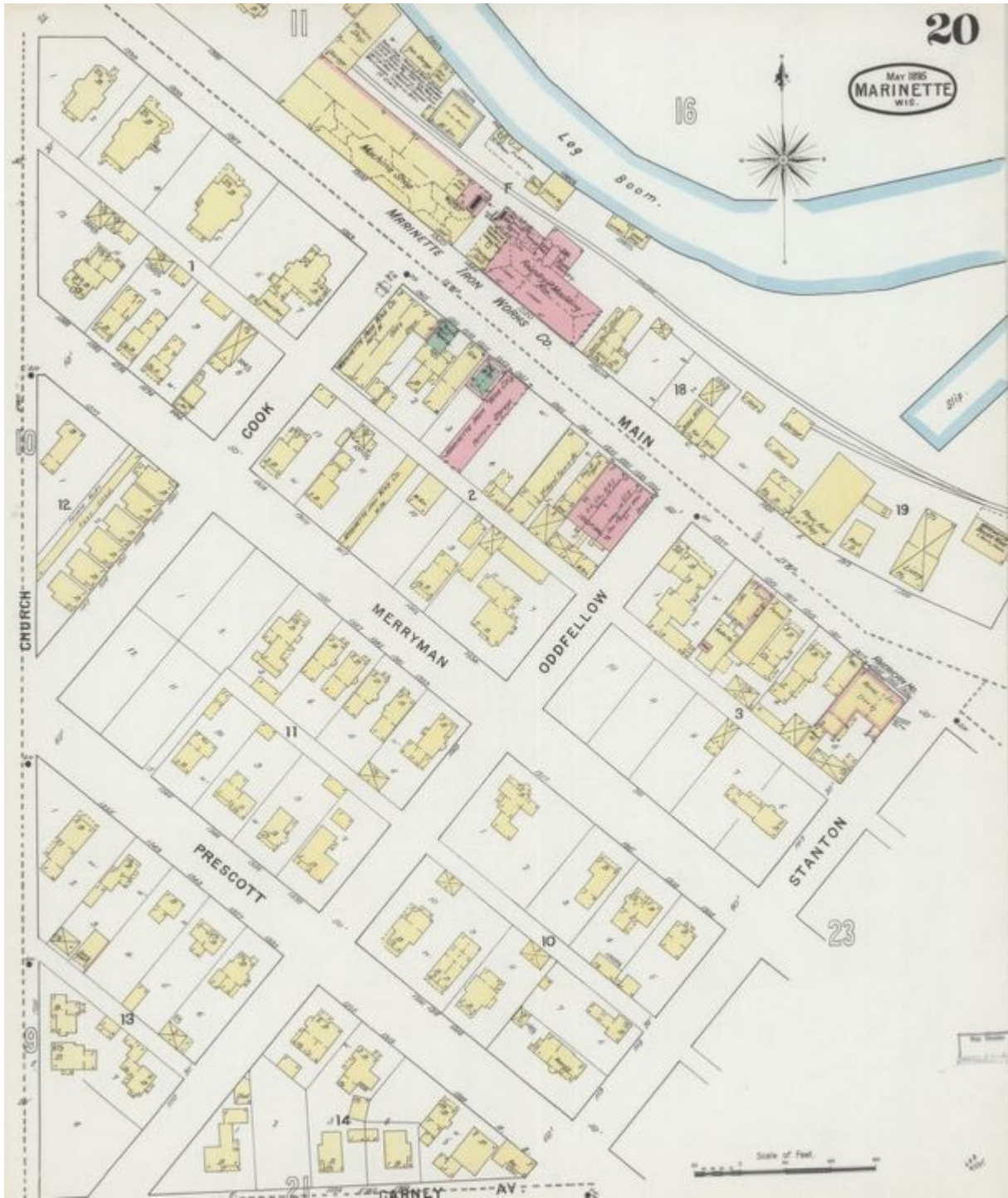






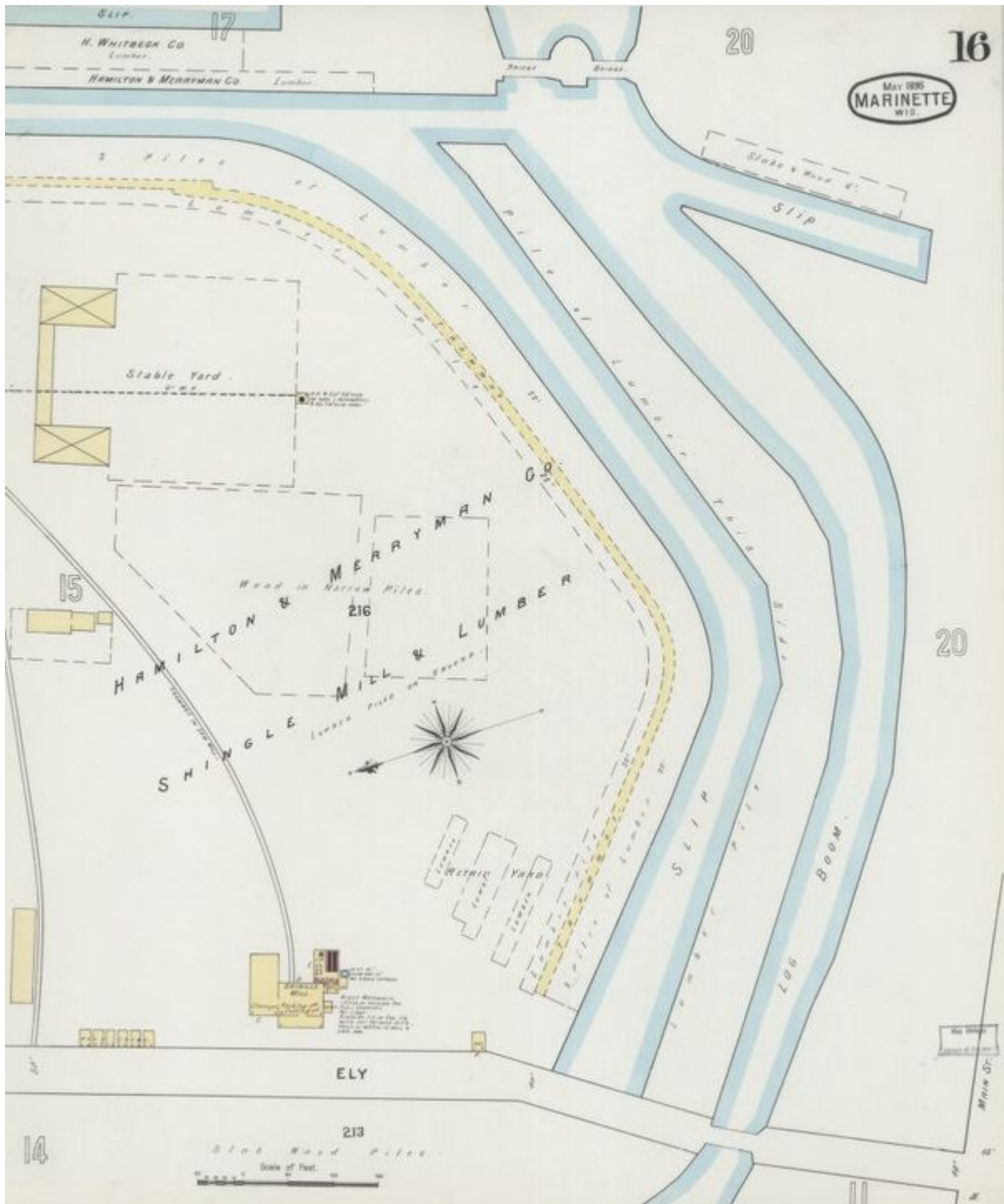


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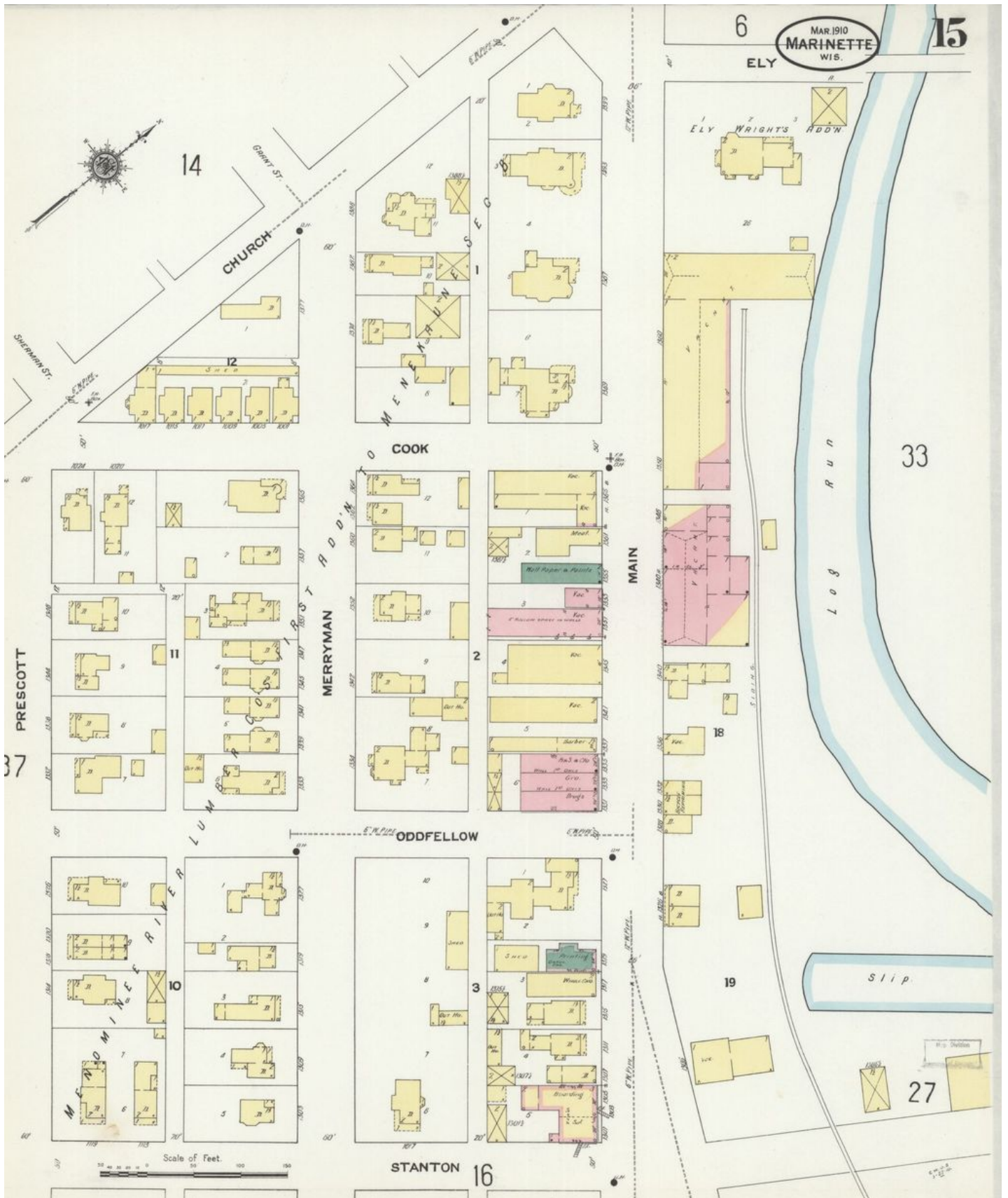






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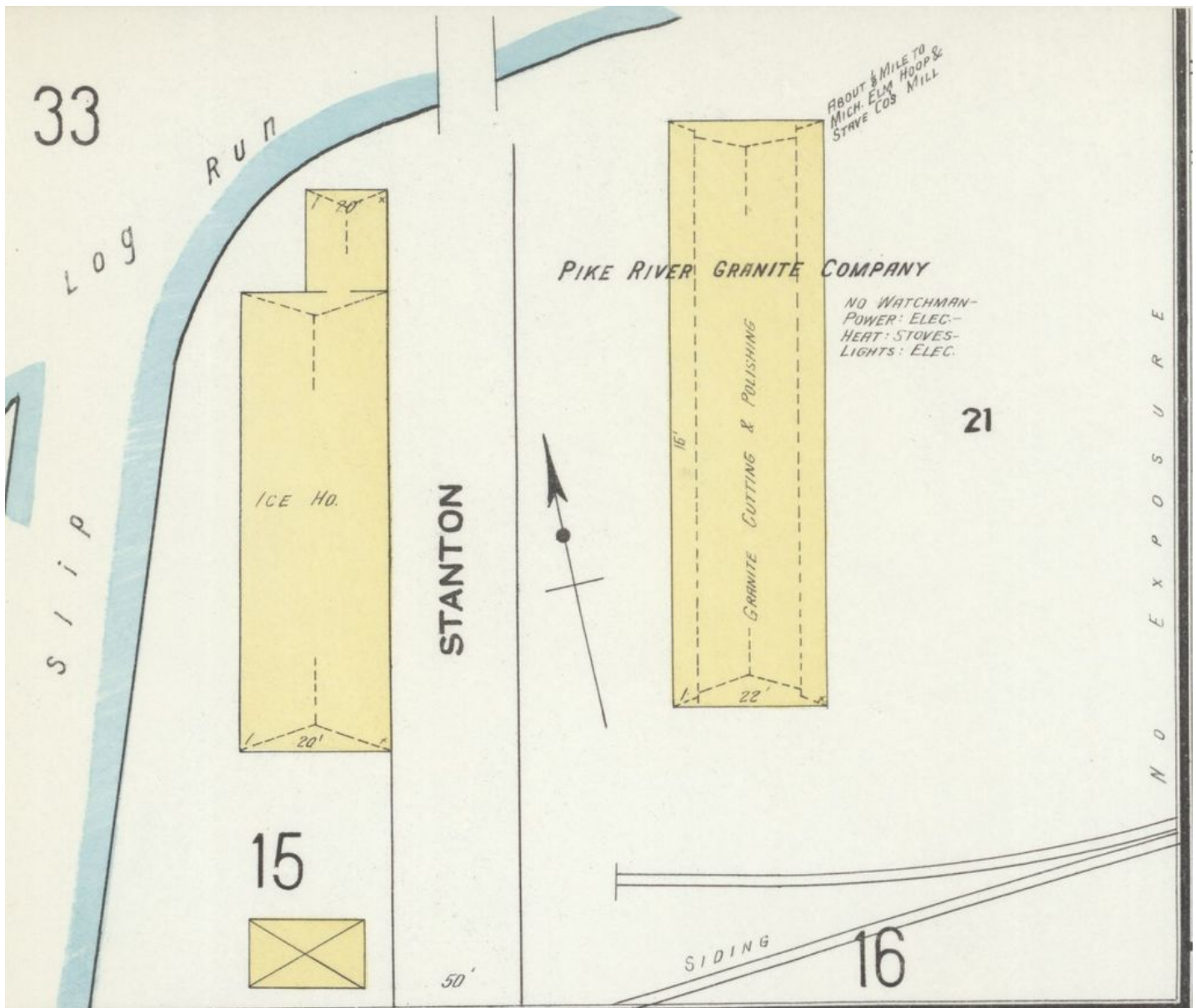
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MAP

# Image 28 of Sanborn Fire Insurance Map from Marinette, Marinette County, Wisconsin.

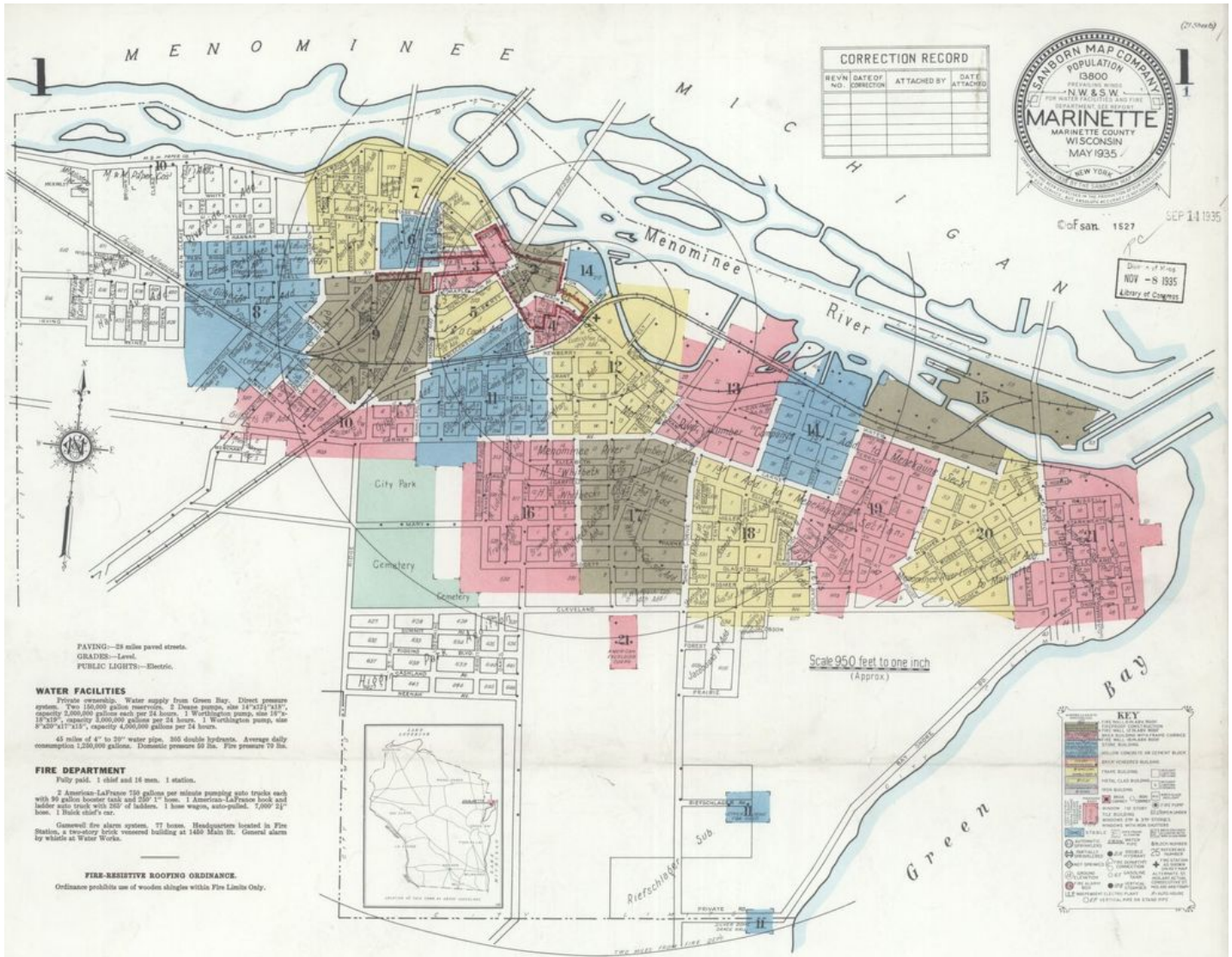
Image provided by: Library of Congress, Washington, DC

Link to the full image: <https://www.loc.gov/resource/g4124mm.g096051910/?sp=28>



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**PAVING**—28 miles paved streets.  
**GRADES**—Level.  
**PUBLIC LIGHTS**—Electric.

**WATER FACILITIES**  
 Private ownership. Water supply from Green Bay. Direct pressure system. Two 100,000 gallon reservoirs. 2 Diesel pumps, size 14" x 24" x 18", capacity 2,000,000 gallons each per 24 hours. 1 Worthington pump, size 18" x 24" x 18", capacity 8,000,000 gallons per 24 hours. 1 Worthington pump, size 8" x 20" x 14", capacity 4,000,000 gallons per 24 hours.  
 45 miles of 6" to 30" water pipe. 360 double hydrants. Average daily consumption 1,200,000 gallons. Domestic pressure 60 lbs. Fire pressure 70 lbs.

**FIRE DEPARTMENT**  
 Fully paid. 1 chief and 16 men. 1 station.  
 2 American-LaFrance 750 gallon per minute portable auto trucks each with 60 gallon booster tank and 200' 1" hose. 1 American-LaFrance hook and ladder auto truck with 200' of ladders. 1 hose wagon, auto-pumped. 7,000 2 1/2" hose. 1 truck stack car.  
 General fire alarm system. 77 bells. Headquarters located in Fire Station, a two-story brick veneered building at 1400 Main St. General alarm by whistle at Water Works.

**FIRE-RESISTIVE ROOFING ORDINANCE**  
 Ordinance prohibits use of wooden shingles within Fire Limits Only.

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Alvina St.	910-912	914-916	918-920	922-924	926-928	930-932	934-936
Alvina St.	940-942	944-946	948-950	952-954	956-958	960-962	964-966
Alvina St.	970-972	974-976	978-980	982-984	986-988	990-992	994-996
Alvina St.	998-1000						

\* Indicates only one side of Street shown.

Share



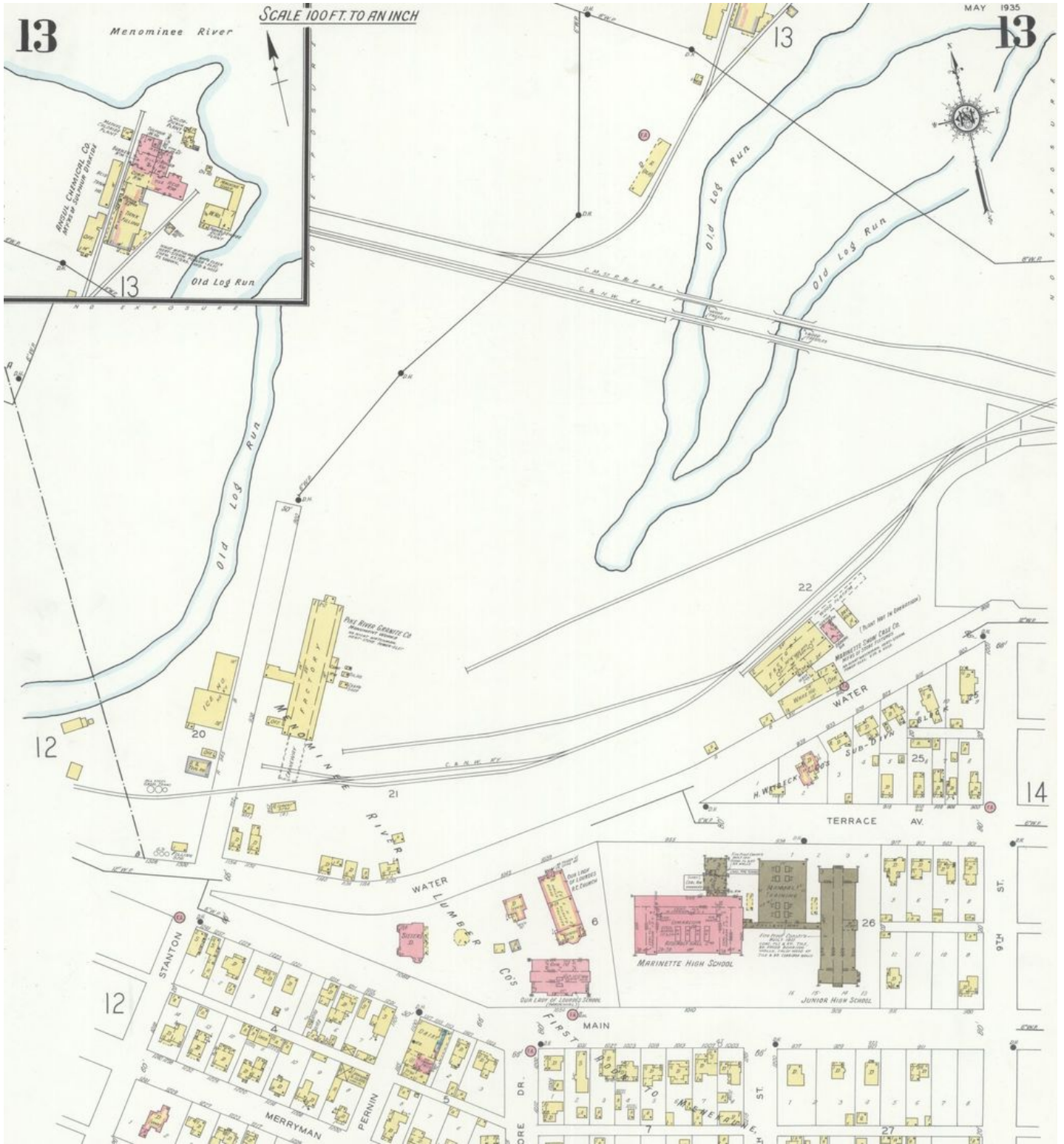
MAP

# Image 12 of Sanborn Fire Insurance Map from Marinette, Marinette County, Wisconsin.

Image provided by: Library of Congress, Washington, DC

Link to the full image: <https://www.loc.gov/resource/g4124mm.g096051935/?sp=12>





Share

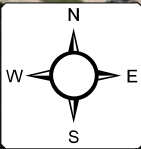









Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors



**Legend**

 Approximate boring locations -



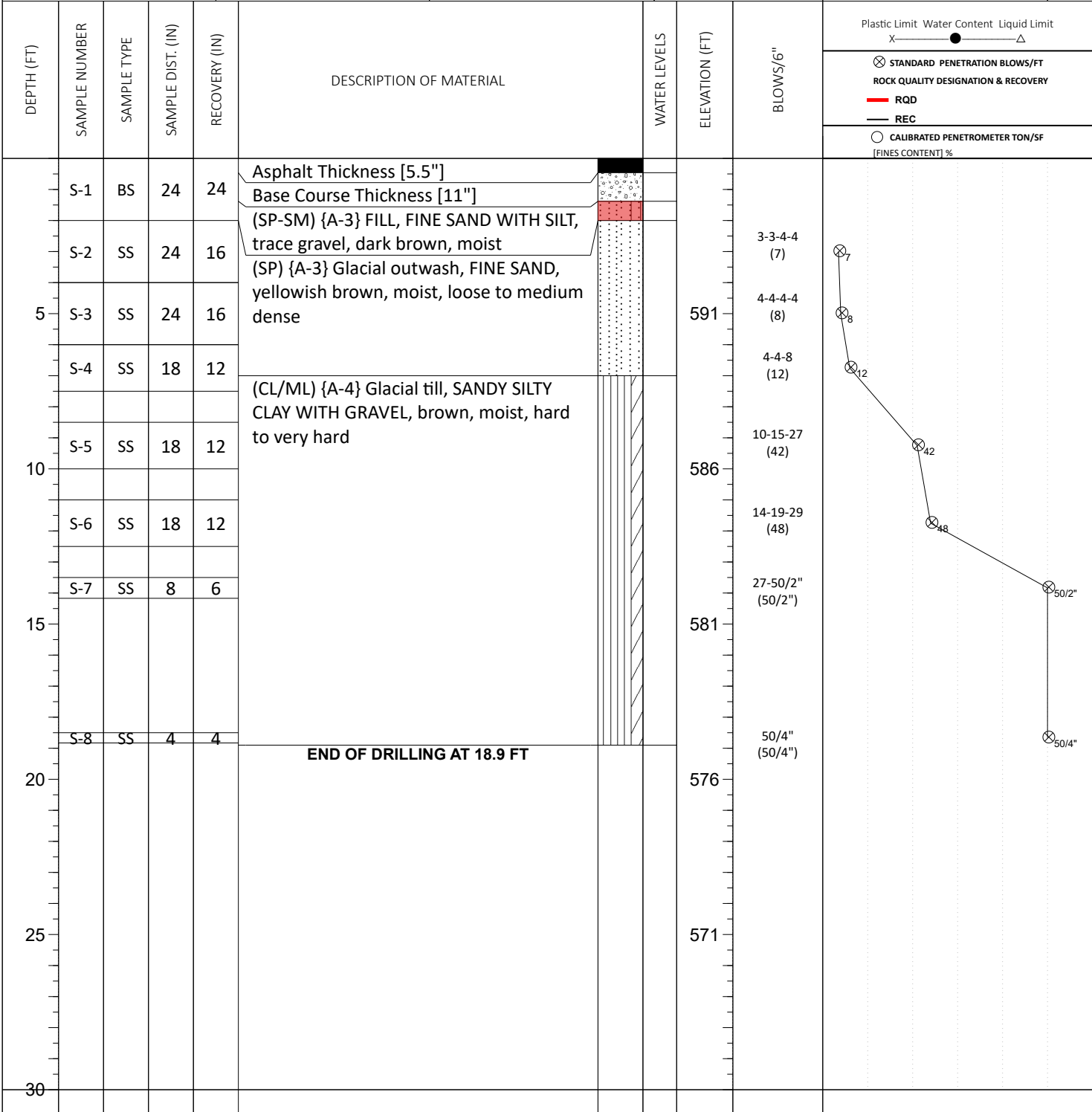
# BORING LOCATION DIAGRAM DOWNTOWN AREA ROADWAY AND UTILITY IMPROVEMENTS

MAIN ST, WELLS ST, AND LUDINGTON ST, MARINETTE, WISCONSIN  
AYRES ASSOCIATES, INC.

ENGINEER MEK
SCALE AS NOTED
PROJECT NO. 59:2769
SHEET 1 OF 1
DATE 7/30/2021

SITE LOCATION:  
**Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143**

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: <b>596.0+/-</b>	LOSS OF CIRCULATION
				BOTTOM OF CASING



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

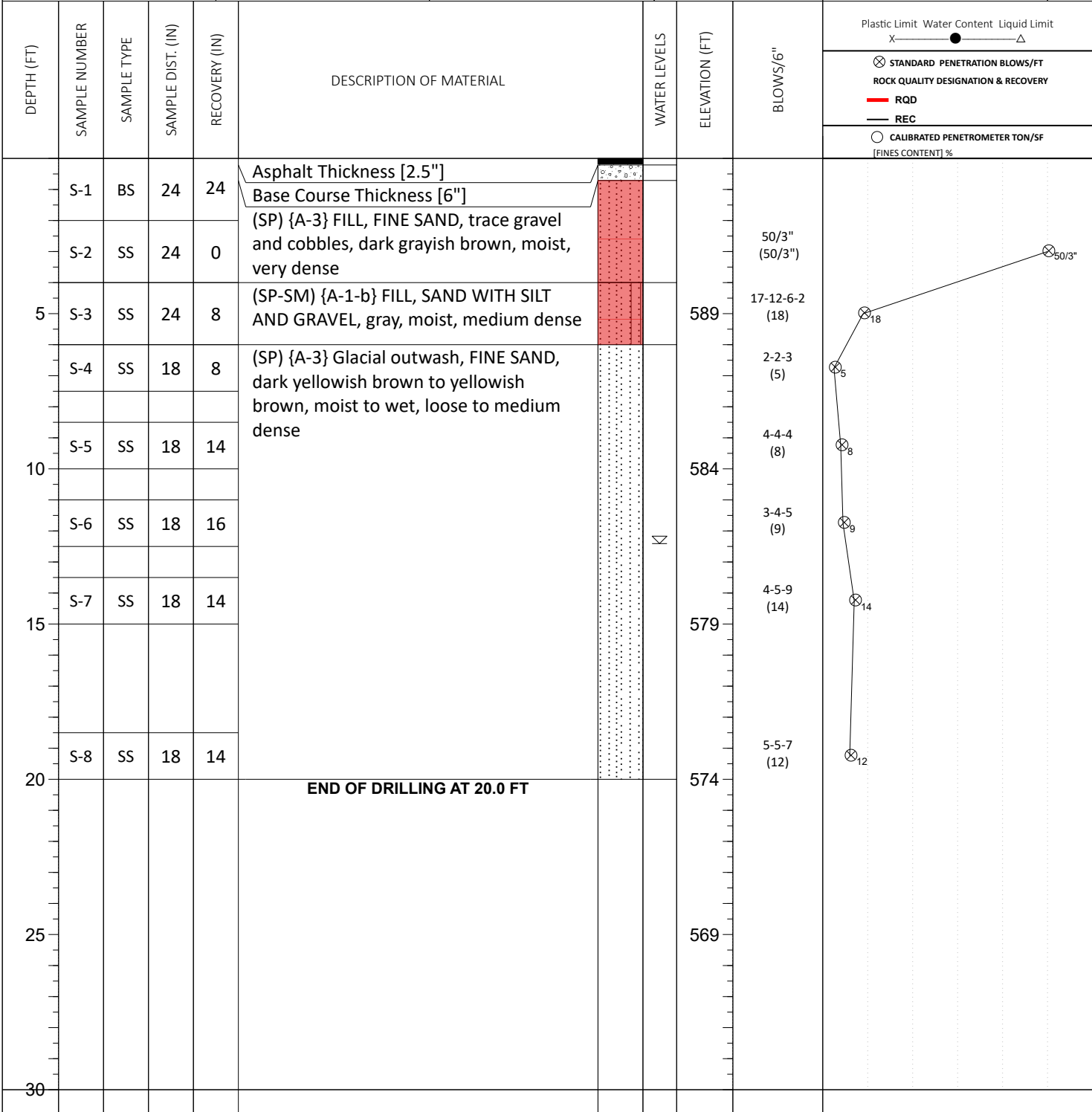
<input checked="" type="checkbox"/> WL (First Encountered) <b>None</b>	BORING STARTED: <b>Jul 13 2021</b>	CAVE IN DEPTH:
<input checked="" type="checkbox"/> WL (Completion) <b>None</b>	BORING COMPLETED: <b>Jul 13 2021</b>	HAMMER TYPE: <b>Auto</b>
<input checked="" type="checkbox"/> WL (Seasonal High Water)	EQUIPMENT: <b>Truck</b>	LOGGED BY:
<input checked="" type="checkbox"/> WL (Stabilized)		DRILLING METHOD: <b>4 1/4" HSA 0' to 18.5' (AH)</b>

**GEOTECHNICAL BOREHOLE LOG**






SITE LOCATION: <b>Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143</b>	LOSS OF CIRCULATION 			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: <b>594.0</b>	BOTTOM OF CASING 

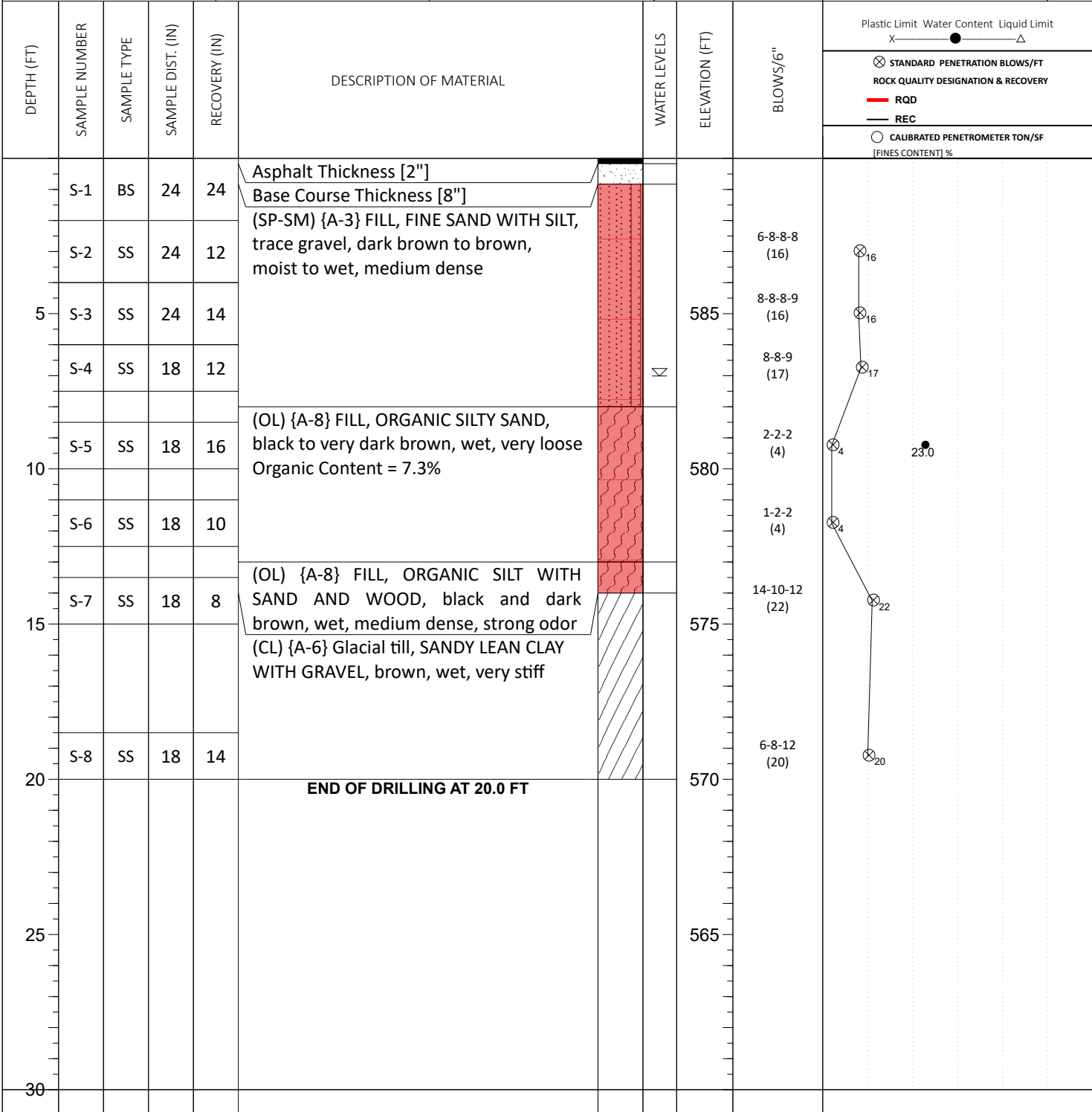


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

∇ WL (First Encountered) <b>12.30</b>	BORING STARTED: <b>Jul 13 2021</b>	CAVE IN DEPTH: <b>14.00</b>
▼ WL (Completion)	BORING COMPLETED: <b>Jul 13 2021</b>	HAMMER TYPE: <b>Auto</b>
∇ WL (Seasonal High Water)	EQUIPMENT: <b>Truck</b>	LOGGED BY: <b>MEK1</b>
∇ WL (Stabilized)	DRILLING METHOD: <b>4 1/4" HSA 0' to 18.5' (AH)</b>	

**GEOTECHNICAL BOREHOLE LOG**

SITE LOCATION: <b>Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143</b>			LOSS OF CIRCULATION 
NORTHING:	EASTING:	STATION:	BOTTOM OF CASING 
			<b>590.0</b>

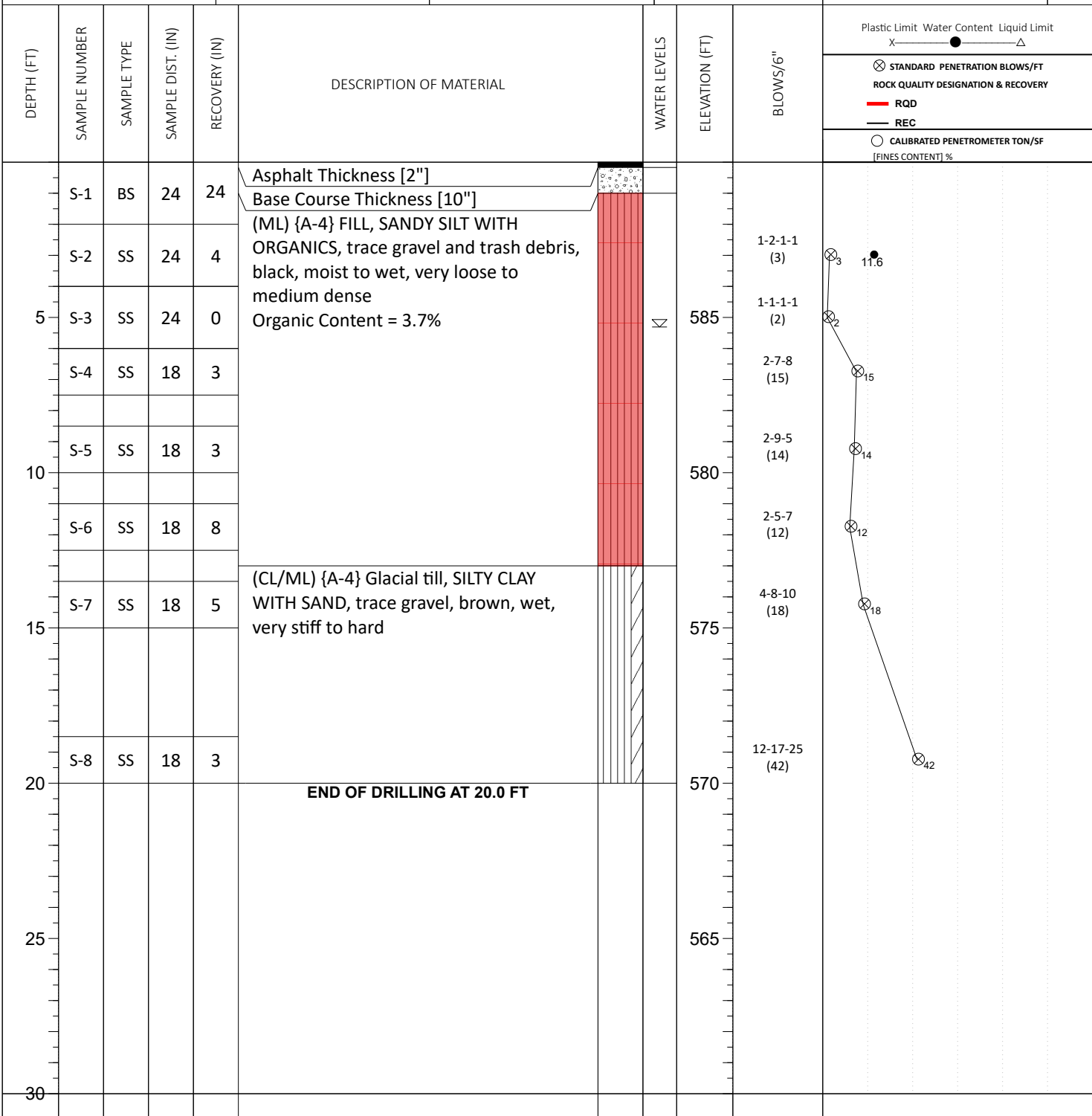


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

∇ WL (First Encountered) <b>6.90</b>	BORING STARTED: <b>Jul 13 2021</b>	CAVE IN DEPTH: <b>8.50</b>
▼ WL (Completion)	BORING COMPLETED: <b>Jul 13 2021</b>	HAMMER TYPE: <b>Auto</b>
∇ WL (Seasonal High Water)	EQUIPMENT: <b>Truck</b>	LOGGED BY: <b>MEK1</b>
∇ WL (Stabilized)		DRILLING METHOD: <b>4 1/4" HSA 0' to 18.5' (AH)</b>

**GEOTECHNICAL BOREHOLE LOG**

SITE LOCATION: <b>Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143</b>	LOSS OF CIRCULATION 			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: <b>590.0</b>	BOTTOM OF CASING 

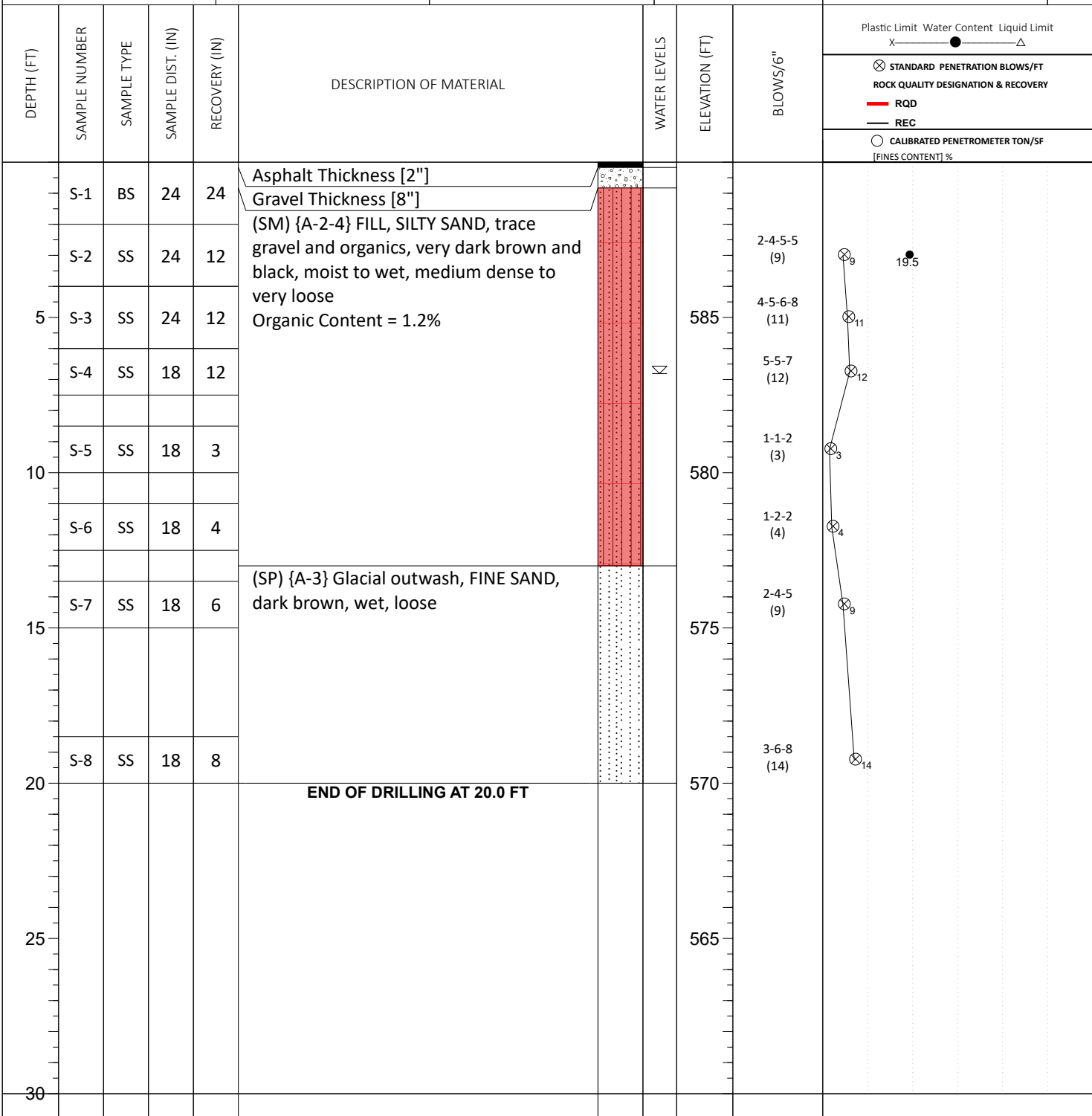


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

∇ WL (First Encountered)	<b>5.20</b>	BORING STARTED:	<b>Jul 13 2021</b>	CAVE IN DEPTH:	<b>5.50</b>
▼ WL (Completion)		BORING COMPLETED:	<b>Jul 13 2021</b>	HAMMER TYPE:	<b>Auto</b>
∇ WL (Seasonal High Water)		EQUIPMENT:	Truck	LOGGED BY:	MEK1
∇ WL (Stabilized)		DRILLING METHOD: <b>4 1/4" HSA 0' to 18.5' (AH)</b>			

### GEOTECHNICAL BOREHOLE LOG

SITE LOCATION: <b>Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143</b>	LOSS OF CIRCULATION 			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: <b>590.0</b>	BOTTOM OF CASING 



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

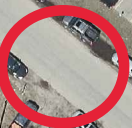
∇ WL (First Encountered) <span style="float: right;"><b>6.70</b></span>	BORING STARTED: <b>Jul 14 2021</b>	CAVE IN DEPTH: <b>8.50</b>
▼ WL (Completion)	BORING COMPLETED: <b>Jul 14 2021</b>	HAMMER TYPE: <b>Auto</b>
∇ WL (Seasonal High Water)	EQUIPMENT: <b>Truck</b>	LOGGED BY: <b>MEK1</b>
∇ WL (Stabilized)	DRILLING METHOD: <b>4 1/4" HSA 0' to 18.5' (AH)</b>	

**GEOTECHNICAL BOREHOLE LOG**

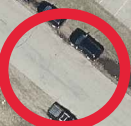




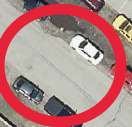
Approx Location of  
Previously  
completed Boring.



4



3



2



1



## TEST HOLES FOR STREET PROJECTS

PROJECT NAME:	LUDINGTON ST
DATE:	9/16/21
OBSERVED BY:	TAKA HEARLEY

TEST HOLE NO.		RANGE IN DEPTH	DESCRIPTION OF MATERIAL
TEST HOLE NO. 1	COMMENTS: FUEL OIL SMELL 4.5' GROUND WATER	5"	ASPHALT
		4"	GRAVEL
		4.5'	GARBAGE (LANDFILL)
TEST HOLE NO. 2	COMMENTS: FUEL OIL SMELL NO GROUND WATER	3"	ASPHALT
		1"	GRAVEL
		1'	GARBAGE
		1'	SAND
		1.5'	GARBAGE
TEST HOLE NO. 3	COMMENTS: FUEL OIL SMELL (WORST) NO GROUND WATER	2.5"	ASPHALT
		8"	GRAVEL
		4'	SAND FILL
		6" TO BOTTOM	GARBAGE

# TEST HOLES FOR STREET PROJECTS

PROJECT NAME:	LUDINGTON ST.
DATE:	9/16/21
OBSERVED BY:	JACK HEARLEY

TEST HOLE NO.		RANGE IN DEPTH	DESCRIPTION OF MATERIAL
4	COMMENTS: SLIGHT FUEL OIL SMELL GROUND WATER @ 5'	2.75"	ASPHALT
		1'	GRAVEL
		4'	SAND FILL W/GARBAGE & WOOD
TEST HOLE NO.		RANGE IN DEPTH	DESCRIPTION OF MATERIAL
	COMMENTS:		
TEST HOLE NO.		RANGE IN DEPTH	DESCRIPTION OF MATERIAL
	COMMENTS:		

**Appendix B**  
**Subsurface Exploration Logs and Borehole**  
**Abandonment Forms**



Route to:  
Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <u>Ludington Street</u>		License/Permit/Monitoring Number <u>NA</u>		Boring Number <u>G-P-1</u>	
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: _____ Last Name: _____ Firm: <u>Geiss</u>		Date Drilling Started <u>10/13/21</u> M/D/Y	Date Drilling Completed <u>10/13/21</u> M/D/Y	Drilling Method <u>DPT</u>	
WI Unique Well No.	DNR Well Id No.	Well Name		Final Static Water Level <u>10.8' bgs</u>	Surface Elevation <u>~ 598</u>
Local Grid Origin (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>		Lat. _____		Local Grid Location (If applicable)	
State Plane _____ N, _____ E 1/4 of _____ 1/4, of Section _____, T _____ N, R _____		Long _____		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility Id. <u>NA</u>		County <u>Marinette</u>		County Code <u>3 8</u>	
				Civil Town/City/or Village <u>Marinette</u>	

SAMPLE		Blow Counts	Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PID/FID	SOIL PROPERTIES					ROD/Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
GF-1 2-4'	30/48		-1	ASPHALT 6" silty CLAYEEL, (l. gray, dry 10"	GM			NA						FILL
			-2	poorly-graded med SAND, brown moist, loose	SP			0.2					NATIVE	
GF-1 9-11'	30/48		-6				0.0							
			-8				0.1							
			-10				0.1							
			-11	wet @ 11'			0.1							
			-12	FOB @ 12'			0.1							

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
Signature William Honea Firm AYRES ASSOCIATES

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis.Stats. Completion of this report is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Route to:  
Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <u>Ludington Street</u>		License/Permit/Monitoring Number <u>NA</u>		Boring Number <u>GP-2</u>	
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: _____ Last Name: _____		Date Drilling Started <u>10/13/21</u> M/D/Y	Date Drilling Completed <u>10/13/21</u> M/D/Y	Drilling Method <u>DPT</u>	
Firm: <u>Geiss</u>		Final Static Water Level <u>NA</u>		Surface Elevation <u>~597</u>	Borehole Dia. <u>2.25"</u>
WI Unique Well No.	DNR Well Id No.	Well Name			
Local Grid Origin (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>		Lat. _____		Local Grid Location (If applicable)	
State Plane _____ N, _____ E		Long _____		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
1/4 of _____ 1/4, of Section _____, T _____ N, R _____		Feet _____		Feet _____	
Facility Id. <u>NA</u>		County <u>Marinette</u>		County Code <u>38</u>	
				Civil Town/City/or Village <u>Marinette</u>	

SAMPLE	Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PID/FID	SOIL PROPERTIES					RCD/Comments	
										Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P. 200		
				-1	<u>ASPHALT 6"</u>			<u>NA</u>								
				-2	<u>silty GRAVEL, lt. gray, moist 10"</u>	<u>G-M</u>										<u>FILL</u>
	<u>GP-2</u>	<u>2-4'</u>	<u>32/48</u>	-3	<u>poorly-graded med SAND, brown moist, loose</u>	<u>SP</u>										<u>NATIVE</u>
				-4					<u>0.1</u>							
				-5					<u>0.2</u>							
			<u>30/48</u>	-6					<u>0.1</u>							
				-7					<u>0.2</u>							
				-8					<u>0.1</u>							
				-9					<u>0.2</u>							
	<u>GP-2</u>	<u>9-11'</u>	<u>24/48</u>	-10					<u>0.2</u>							
				-11	<u>net @ 11.5'</u>				<u>0.2</u>							
				-12	<u>SECT, <del>lt. gray</del> brown, moist, hard</u>	<u>ML</u>										
				-13	<u>EOB @ 12'</u>											
				-14												
				-15												
				-16												
				-17												
				-18												
				-19												
				-20												
				-21												
				-22												
				-23												
				-24												
				-25												

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: William Horca Firm: AYRES ASSOCIATES

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Route to:  
Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <u>Ludington Street</u>			License/Permit/Monitoring Number <u>NA</u>			Boring Number <u>GP-3</u>								
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: _____ Last Name: _____ Firm: <u>Geiss</u>			Date Drilling Started <u>10/13/21</u> M/D/Y		Date Drilling Completed <u>10/13/21</u> M/D/Y		Drilling Method <u>DPT</u>							
WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level <u>11.8' bgs</u>		Surface Elevation <u>~595'</u>		Borehole Dia. <u>2.25"</u>							
Local Grid Origin (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>			Lat. <u>0</u>		Local Grid Location (If applicable)									
State Plane _____ N, _____ E 1/4 of _____ 1/4, of Section _____, T _____ N, R _____			Long _____		Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		Feet <input type="checkbox"/> W							
Facility Id. <u>NA</u>		County <u>Marinette</u>		County Code <u>38</u>		Civil Town/City/or Village <u>Marinette</u>								
SAMPLE			SOIL PROPERTIES											
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PIF/ID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P-200	ROD/Comments
<u>GP-3</u> <u>1.5'-2.5'</u>	<u>30/48</u>		-1	<u>ASPHALT 4"</u>	<u>GM</u>			<u>NA</u>						
			-2	<u>silty GRAVEL, lt. gray, dry</u> <u>poorly-graded med SAND, dk. brown, moist, trace cinders @ 4'</u>	<u>SP</u>			<u>0.1</u>						
			-3					<u>0.0</u>						
<u>GP-3</u> <u>8-10'</u>	<u>32/48</u>		-4					<u>0.1</u>						
			-5	<u>- color change to brown @ 5.5'</u>				<u>0.1</u>						
			-6					<u>0.1</u>						
			-7					<u>0.1</u>						
			-8					<u>0.0</u>						
			-9					<u>0.0</u>						
			-10					<u>0.2</u>						
			-11	<u>- wet @ 11.5'</u>										
			-12	<u>EOB @ 12'</u>										
			-13	<u>groundwater sampling difficult, casing purges dry ~ 200 mL takes about 3-5 min to recharge</u>										
			-14											
			-15											
			-16											
			-17											
			-18											
			-19											
			-20											
			-21											
			-22											
			-23											
			-24											
			-25											

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Route to:  
Watershed/Wastewater   
Remediation/Redevelopment

Waste Management   
Other

Page 1 of 1

Facility/Project Name <u>Ludington Street</u>			License/Permit/Monitoring Number <u>NA</u>			Boring Number <u>GP-4</u>									
Boring Drilled By: Name of Chief (first, last) and Firm First Name: _____ Last Name: _____ Firm: <u>Geiss</u>			Date Drilling Started <u>10/13/21</u> M/D/Y		Date Drilling Completed <u>10/13/21</u> M/D/Y		Drilling Method <u>DPT</u>								
WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level <u>DRY</u>		Surface Elevation <u>~594</u>		Borehole Dia. <u>2.25"</u>								
Local Grid Origin (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>			Lat. _____		Local Grid Location (If applicable)										
State Plane _____ N, _____ E 1/4 of _____ 1/4, of Section _____, T _____ N, R _____			Long _____		Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W								
Facility Id. <u>NA</u>		County <u>Marinette</u>		County Code <u>38</u>		Civil Town/City/or Village <u>Marinette</u>									
SAMPLE		Blow Counts	Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PID/FID	SOIL PROPERTIES					RQD/Comments	
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
<u>GP-4</u>	<u>15'-25'</u>	<u>32</u>	<u>1</u>	<u>ASPHALT 4"</u>	<u>GM</u>			<u>NA</u>							
		<u>48</u>	<u>2</u>	<u>silty GRAVEL, lt. gray, dry 8"</u>	<u>SM</u>			<u>0.1</u>							<u>FILL</u>
			<u>3</u>	<u>silty SAND, brown, moist, loose</u>				<u>0.1</u>							<u>NATIVE</u>
			<u>4</u>	<u>trace cinders</u>											
		<u>30</u>	<u>6</u>	<u>poorly-graded SAND, brown, moist</u>	<u>SP</u>			<u>0.4</u>							
		<u>48</u>	<u>7</u>	<u>loose</u>				<u>0.0</u>							
			<u>8</u>					<u>0.0</u>							
<u>GP-4</u>	<u>8-16'</u>	<u>48</u>	<u>9</u>	<u>- Wet @ 9.5'</u>				<u>0.1</u>							
		<u>48</u>	<u>10</u>	<u>SILT, brown, moist, hard</u>	<u>ML</u>			<u>0.2</u>							
			<u>11</u>												
			<u>12</u>	<u>EOB @ 12'</u>											
			<u>13</u>	<u>No water produced after 30 min</u>											
			<u>14</u>												
			<u>15</u>												
			<u>16</u>												
			<u>17</u>												
			<u>18</u>												
			<u>19</u>												
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			<u>21</u>												
			<u>22</u>												
			<u>23</u>												
			<u>24</u>												
			<u>25</u>												

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature William Honca Firm AYRES ASSOCIATES

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Route to:  
Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <u>Ludington Street</u>			License/Permit/Monitoring Number <u>NA</u>		Boring Number <u>GP-5</u>
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: Last Name: Firm: <u>Geiss</u>			Date Drilling Started <u>10/13/21</u> M/D/Y	Date Drilling Completed <u>10/13/21</u> M/D/Y	Drilling Method <u>DPT</u>
WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level <u>NA</u>	Surface Elevation <u>~593</u>	Borehole Dia. <u>2.25"</u>
Local Grid Origin (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>			Lat. _____"	Local Grid Location (If applicable)	
State Plane _____ N, _____ E			Long _____"	<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility Id. <u>NA</u>		County <u>Marinette</u>	County Code <u>38</u>	Civil Town/City/or Village <u>Marinette</u>	

SAMPLE		Blow Counts	Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PID/FID	SOIL PROPERTIES					RQD/Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
<u>GP-5</u>	<u>1.5</u>	<u>30</u>	-1	<u>ASPHALT C</u> silty GRAVEL, lt gray, moist 10"	<u>GM</u>			<u>NA</u>						
<u>1.5</u>	<u>48</u>		-2	silty <del>SAND</del> SAND, brown, moist, loose, trace cinders, bands of black staining, slight naphtha odor	<u>SM</u>			<u>0.1</u>						<u>FILL</u>
			-3	poorly-graded med. SAND, brown moist, loose	<u>SP</u>			<u>0.1</u>						<u>NATIVE</u>
			-4	<u>EOB @ 4'</u>										
			-5											
			-6											
			-7											
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			-25											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: William Honea Firm: AYRES ASSOCIATES

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Route to:  
Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <u>Ludington Street</u>			License/Permit/Monitoring Number <u>NA</u>		Boring Number <u>GP-6</u>
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: _____ Last Name: _____ Firm: <u>Geiss</u>			Date Drilling Started <u>10/13/21</u> M/D/Y	Date Drilling Completed <u>10/13/21</u> M/D/Y	Drilling Method <u>DPT</u>
WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level <u>NA</u>	Surface Elevation <u>~ 592</u>	Borehole Dia. <u>2.25"</u>
Local Grid Origin (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/> State Plane _____ N, _____ E _____ 1/4 of _____ 1/4, of Section _____, T _____ N, R _____			Lat. _____ " _____ "	Local Grid Location (If applicable) <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility Id. <u>NA</u>		County <u>Marinette</u>	County Code <u>38</u>	Civil Town/City/or Village <u>Marinette</u>	

SAMPLE			Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PID/FID	SOIL PROPERTIES					RQD/Comments
Number and Type	Length Att. & Recovered (in)	Blow Counts							Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
<u>GP-6</u> <u>2-4'</u>	<u>36</u> <u>48</u>		-1	<u>ASPHALT 4"</u>	<u>GM</u>			<u>NA</u>						<u>Possible FILL</u>
			-2	<u>silty GRAVEL, lt. gray, moist 8"</u>	<u>SP</u>			<u>0.1</u>						
			-3	<u>poorly-graded med. SAND, brown, moist, loose</u> <u>black staining from 2-4' with strong naphtha-like odor</u> <u>EOB @ 4'</u>				<u>0.3</u>						
			-4											
			-5											
			-6											
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Signature William Horne Firm AYRES ASSOCIATES

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Route to:  
 Watershed/Wastewater  Waste Management   
 Remediation/Redevelopment  Other

Facility/Project Name <u>Ludington Street</u>			License/Permit/Monitoring Number <u>NA</u>		Boring Number <u>GP-7</u>
Boring Drilled By: Name of crew/Chief (first,last) and Firm First Name: _____ Last Name: _____ Firm: <u>Geiss</u>			Date Drilling Started <u>10/13/21</u> M/D/Y	Date Drilling Completed <u>10/13/21</u> M/D/Y	Drilling Method <u>DPT</u>
WI Unique Well No. <u>                    </u>	DNR Well Id No. <u>                    </u>	Well Name <u>                    </u>	Final Static Water Level <u>NA</u>	Surface Elevation <u>~ 590</u>	Borehole Dia. <u>2.25"</u>
Local Grid Origin (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/> State Plane _____ N, _____ E 1/4 of _____ 1/4, of Section _____, T _____ N, R _____			Lat. _____ Long. _____	Local Grid Location (If applicable) <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility Id. <u>NA</u>		County <u>Marinette</u>	County Code <u>38</u>	Civil Town/City/or Village <u>Marinette</u>	

SAMPLE		Blow Counts	Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PID/FID	SOIL PROPERTIES					ROD/Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
<u>GP-7</u> <u>2-4'</u>	<u>26</u> <u>48</u>			<u>ASPHALT 3"</u>										
				<u>silty GRAVEL, lt gray, moist 10"</u>	<u>GM</u>			<u>0.1</u>						
				<u>silty SAND with trace gravel, brown, moist, loose, -black staining from 2-4' with a slight naphtha-like odor</u>	<u>SM</u>			<u>0.4</u>						<u>FILL</u>
				<u>EOB @ 4'</u>										

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 Signature William Honea Firm AYRES ASSOCIATES

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Route to:  
Watershed/Wastewater   
Remediation/Redevelopment

Waste Management   
Other

Facility/Project Name <i>Ludington Street</i>		License/Permit/Monitoring Number <i>NA</i>		Boring Number <i>GP-8</i>
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: Last Name:		Date Drilling Started <i>10/13/21</i> M/D/Y	Date Drilling Completed <i>10/13/21</i> M/D/Y	Drilling Method <i>DPT</i>
WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level <i>6.4' bgs</i>	Surface Elevation <i>~590</i>
Local Grid Origin (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>		Lat. _____"	Local Grid Location (If applicable)	
State Plane _____ N, _____ E 1/4 of _____ 1/4, of Section _____, T _____ N, R _____		Long _____"	Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility Id. <i>NA</i>		County <i>Marinette</i>	County Code <i>3 8</i>	Civil Town/City/or Village <i>Marinette</i>

Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PID/FID	SOIL PROPERTIES					ROD/Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
<i>GP-8</i> <i>2-4'</i>	<i>30/48</i>		-1	<i>ASPHALT 4"</i> <i>SAND with gravel, brown, moist,</i>	<i>SM</i>			<i>0.4</i>						
			-2	<i>silty SAND, dk. gray with black staining, moist loose</i>	<i>SM</i>			<i>0.4</i>						
<i>GP-8</i> <i>7-8'</i>	<i>24/48</i>		-6	<i>-net @ 6'</i>				<i>0.8</i>						
			-7	<i>REFUSE with sand, glass, plastic, black staining with a strong petroleum-like odor</i> <i>EOB @ 8'</i>	<i>REFUSE</i>			<i>4.8</i>					<i>FILL</i>	

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
Signature *William Horca* Firm **AYRES ASSOCIATES**

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Route to:  
Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <u>Ludington Street</u>		License/Permit/Monitoring Number <u>NA</u>		Boring Number <u>GP-9</u>
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: _____ Last Name: _____ Firm: <u>Geiss</u>		Date Drilling Started <u>10/13/21</u> M/D/Y	Date Drilling Completed <u>10/13/21</u> M/D/Y	Drilling Method <u>DPT</u>
WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level <u>NA</u>	Surface Elevation <u>~590</u>
Local Grid Origin (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>		Lat. _____	Local Grid Location (If applicable)	
State Plane _____ N, _____ E 1/4 of _____ 1/4, of Section _____, T _____ N, R _____		Long _____	Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility Id. <u>NA</u>	County <u>Marinette</u>	County Code <u>38</u>	Civil Town/City/or Village <u>Marinette</u>	

Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PID/FID	SOIL PROPERTIES					RQD/Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
				<u>ASPHALT 4"</u>										
<u>GP-9</u>	<u>1.5-3.5'</u>	<u>30/48</u>	-1	<u>silty GRAVEL, lt gray, moist 8"</u>	<u>GM</u>			<u>0.6</u>						
			-2	<u>silty SAND, dk gray with black staining, moist, loose, trace fragments of brick, cinders, and glass</u>	<u>SM</u>									
			-3					<u>1.1</u>						
			-4											
			-5	<u>- slight petroleum-like odor from 4-8'</u>										
			-6					<u>0.9</u>						
<u>GP-9</u>	<u>5.5-7.5'</u>	<u>28/48</u>	-7					<u>0.7</u>						
			-8	<u>EOB @ 8'</u>										<u>FILL</u>
			-9											
			-10											
			-11											
			-12											
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Signature William Honea Firm AYRES ASSOCIATES

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Route to:  
 Watershed/Wastewater  Waste Management   
 Remediation/Redevelopment  Other

Facility/Project Name <u>Ludington Street</u>		License/Permit/Monitoring Number <u>NA</u>		Boring Number <u>GP-10</u>	
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: _____ Last Name: _____ Firm: <u>Geiss</u>		Date Drilling Started <u>10/13/21</u> M/D/Y	Date Drilling Completed <u>10/13/21</u> M/D/Y	Drilling Method <u>DPT</u>	
WI Unique Well No.	DNR Well Id No.	Well Name <u>4.2' bgs</u>		Final Static Water Level <u>~590</u>	Borehole Dia. <u>2</u>
Local Grid Origin 1 (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>		Lat. _____		Local Grid Location (if applicable)	
State Plane _____ N, _____ E 1/4 of _____ 1/4, of Section _____, 1 _____ N, R _____		Long _____		Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility Id. <u>NA</u>		County <u>Marinette</u>		County Code <u>38</u>	
				Civil Town/City/or Village <u>Marinette</u>	

SAMPLE	Number and Type	Length Att. & Recovered (in)	Blew Counts	Depth in Feet (Below ground surface)	SOIL/ROCK DESCRIPTION AND GEOLOGIC ORIGIN FOR EACH MAJOR UNIT	USCS	Graphic Log	Well Diagram	PID/FID	SOIL PROPERTIES					ROD/Comments
										Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
				-1	<del>silty GRAVEL, lt. gray, moist 8"</del>	<del>GM</del>			0.5						
	GP-10	2-4'	24/48	-2	REFUSE with silt and sand, brown with black staining, some wood, styrofoam, paper, plastic, and organics.	Refuse			0.7						
				-6	- wet @ 6'				0.5						Fill
	GP-10	6.5-8'	24/48	-7	poorly-graded med SAND, brown, moist, loose				0.5						Native
				-8	EOB @ 8'										

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
 Signature William Honea Firm AYRES ASSOCIATES

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**Verification Only of Fill and Seal**

**Route to DNR Bureau:**

- Drinking Water       Watershed/Wastewater       Remediation/Redevelopment  
 Waste Management       Other: \_\_\_\_\_

**1. Well Location Information**

County <b>Marinette</b>	WI Unique Well # of Removed Well	Hicap #
Latitude / Longitude (see instructions) _____ N _____ W	Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM	Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001
1/4 / 1/4 or Gov't Lot #	Section <b>6</b>	Township <b>30 N</b>
Well Street Address <b>Ludington St. between Hall Ave. and Stanton St.</b>	Range <b>24</b>	<input checked="" type="checkbox"/> E <input type="checkbox"/> W
Well City, Village or Town <b>Marinette</b>	Well ZIP Code <b>54143</b>	
Subdivision Name	Lot #	

**2. Facility / Owner Information**

Facility Name <b>Ludington St. between Hall Ave. and Stanton St.</b>		
Facility ID (FID or PWS)		
License/Permit/Monitoring #		
Original Well Owner <b>City of Marinette</b>		
Present Well Owner <b>City of Marinette</b>		
Mailing Address of Present Owner <b>1905 Hall Ave.</b>		
City of Present Owner <b>Marinette</b>	State <b>WI</b>	ZIP Code <b>54143</b>

**3. Filled & Sealed Well / Drillhole / Borehole Information**

Reason for Removal from Service <b>Exploratory Probe</b>	WI Unique Well # of Replacement Well
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input checked="" type="checkbox"/> Borehole / Drillhole	Original Construction Date (mm/dd/yyyy) <b>10/13/2021</b> If a Well Construction Report is available, please attach.
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (specify): _____	
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock	
Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.) <b>2</b>
Lower Drillhole Diameter (in.) <b>2</b>	Casing Depth (ft.) <b>## 12</b>
Was well annular space grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown	
If yes, to what depth (feet)?	Depth to Water (feet) <b>11</b>

**4. Pump, Liner, Screen, Casing & Sealing Material**

Pump and piping removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Liner(s) removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Liner(s) perforated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Screen removed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Casing left in place?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Was casing cut off below surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Did sealing material rise to surface?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Did material settle after 24 hours? If yes, was hole retopped?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Required Method of Placing Sealing Material	<input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain): _____
Sealing Materials	<input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Bentonite Chips
For Monitoring Wells and Monitoring Well Boreholes Only:	<input type="checkbox"/> Bentonite Chips <input type="checkbox"/> Bentonite - Cement Grout <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Sand Slurry

**5. Material Used to Fill Well / Drillhole**

Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
<i>Bentonite chips</i>	Surface	<i>12</i>	<i>4</i>	

**6. Comments**

*GP-1*

**7. Supervision of Work**

Name of Person or Firm Doing Filling & Sealing <b>Ayres Associates</b>	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) <b>10/13/2021</b>	<b>DNR Use Only</b>	
Street or Route <b>3376 Packerland Dr.</b>	Telephone Number <b>(920) 498-1200</b>	Comments	Date Received	Noted By
City <b>Ashwaubenon</b>	State <b>WI</b>	ZIP Code <b>54115</b>	Signature of Person Doing Work <i>William Jay</i>	Date Signed <b>10/14/2021</b>



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**Verification Only of Fill and Seal**

Route to DNR Bureau:

Drinking Water       Watershed/Wastewater       Remediation/Redevelopment

Waste Management       Other: \_\_\_\_\_

**1. Well Location Information**      **2. Facility / Owner Information**

County <b>Marinette</b>		WI Unique Well # of Removed Well	Hicap #	Facility Name <b>Ludington St. between Hall Ave. and Stanton St.</b>	
Latitude / Longitude (see instructions) _____ N _____ W		Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM	Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001	Facility ID (FID or PWS)	
1/4 / 1/4 or Gov't Lot #	Section <b>6</b>	Township <b>30 N</b>	Range <b>24</b>	<input checked="" type="checkbox"/> E <input type="checkbox"/> W	License/Permit/Monitoring #
Well Street Address <b>Ludington St. between Hall Ave. and Stanton St.</b>			Original Well Owner <b>City of Marinette</b>		
Well City, Village or Town <b>Marinette</b>			Present Well Owner <b>City of Marinette</b>		
Subdivision Name			Well ZIP Code <b>54143</b>		Mailing Address of Present Owner <b>1905 Hall Ave.</b>
Reason for Removal from Service <b>Exploratory Probe</b>			City of Present Owner <b>Marinette</b>		State <b>WI</b>
Well Unique Well # of Replacement Well			Lot #		ZIP Code <b>54143</b>

**3. Filled & Sealed Well / Drillhole / Borehole Information**      **4. Pump, Liner, Screen, Casing & Sealing Material**

<input type="checkbox"/> Monitoring Well	Original Construction Date (mm/dd/yyyy) <b>10/13/2021</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Water Well	If a Well Construction Report is available, please attach.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
<input checked="" type="checkbox"/> Borehole / Drillhole		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Construction Type:		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
<input type="checkbox"/> Other (specify): _____		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Formation Type:		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.) <b>2</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Lower Drillhole Diameter (in.) <b>2</b>	Casing Depth (ft.) <b>NA</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Was well annular space grouted?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
If yes, to what depth (feet)?	Depth to Water (feet) <b>11.5</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

5. Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
<b>Bentonite chips</b>	Surface	12	1/4	

**6. Comments**

**GP-2**

<b>7. Supervision of Work</b>			<b>DNR Use Only</b>	
Name of Person or Firm Doing Filling & Sealing <b>Ayres Associates</b>	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) <b>10/13/2021</b>	Date Received	Noted By
Street or Route <b>3376 Packerland Dr.</b>		Telephone Number <b>(920) 498-1200</b>	Comments	
City <b>Ashwaubenon</b>	State <b>WI</b>	ZIP Code <b>54115</b>	Signature of Person Doing Work <i>William Ayres</i>	Date Signed <b>10/14/2021</b>

**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Verification Only of Fill and Seal

**Route to DNR Bureau:**

- Drinking Water       Watershed/Wastewater       Remediation/Redevelopment  
 Waste Management       Other: \_\_\_\_\_

**1. Well Location Information**      **2. Facility / Owner Information**

County: **Marinette**      WI Unique Well # of Removed Well: \_\_\_\_\_      Hicap #: \_\_\_\_\_  
 Latitude / Longitude (see instructions): \_\_\_\_\_ N      Format Code:  DD      Method Code:  GPS008  
 \_\_\_\_\_ W       DDM       SCR002  
 \_\_\_\_\_       OTH001  
 1/4 / 1/4      Section: **6**      Township: **30 N**      Range: **24**  E  W  
 or Gov't Lot #: \_\_\_\_\_  
 Well Street Address: **Ludington St. between Hall Ave. and Stanton St.**  
 Well City, Village or Town: **Marinette**      Well ZIP Code: **54143**  
 Subdivision Name: \_\_\_\_\_      Lot #: \_\_\_\_\_

Facility Name: **Ludington St. between Hall Ave. and Stanton St.**  
 Facility ID (FID or PWS): \_\_\_\_\_  
 License/Permit/Monitoring #: \_\_\_\_\_  
 Original Well Owner: **City of Marinette**  
 Present Well Owner: **City of Marinette**  
 Mailing Address of Present Owner: **1905 Hall Ave.**  
 City of Present Owner: **Marinette**      State: **WI**      ZIP Code: **54143**

Reason for Removal from Service: **Exploratory Probe**      WI Unique Well # of Replacement Well: \_\_\_\_\_

**3. Filled & Sealed Well / Drillhole / Borehole Information**

Monitoring Well      Original Construction Date (mm/dd/yyyy): **10/13/2021**  
 Water Well  
 Borehole / Drillhole      If a Well Construction Report is available, please attach. \_\_\_\_\_  
 Construction Type:  
 Drilled       Driven (Sandpoint)       Dug  
 Other (specify): \_\_\_\_\_  
 Formation Type:  
 Unconsolidated Formation       Bedrock  
 Total Well Depth From Ground Surface (ft.): \_\_\_\_\_      Casing Diameter (in.): **2**  
 Lower Drillhole Diameter (in.): **2**      Casing Depth (ft.): **12**  
 Was well annular space grouted?       Yes       No       Unknown  
 If yes, to what depth (feet)? \_\_\_\_\_      Depth to Water (feet): **11.8**

**4. Pump, Liner, Screen, Casing & Sealing Material**

Pump and piping removed?       Yes       No       N/A  
 Liner(s) removed?       Yes       No       N/A  
 Liner(s) perforated?       Yes       No       N/A  
 Screen removed?       Yes       No       N/A  
 Casing left in place?       Yes       No       N/A  
 Was casing cut off below surface?       Yes       No       N/A  
 Did sealing material rise to surface?       Yes       No       N/A  
 Did material settle after 24 hours?       Yes       No       N/A  
 If yes, was hole retopped?       Yes       No       N/A  
 If bentonite chips were used, were they hydrated with water from a known safe source?       Yes       No       N/A  
 Required Method of Placing Sealing Material:  
 Conductor Pipe-Gravity       Conductor Pipe-Pumped  
 Screened & Poured (Bentonite Chips)       Other (Explain): \_\_\_\_\_  
 Sealing Materials:  
 Neat Cement Grout       Concrete  
 Sand-Cement (Concrete) Grout       Bentonite Chips  
 For Monitoring Wells and Monitoring Well Boreholes Only:  
 Bentonite Chips       Bentonite - Cement Grout  
 Granular Bentonite       Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
<i>Bentonite chips</i>	Surface	<i>12</i>	<i>1/4</i>	

**6. Comments**

*GP-3*

**7. Supervision of Work**      **DNR Use Only**

Name of Person or Firm Doing Filling & Sealing: **Ayres Associates**      License #: \_\_\_\_\_      Date of Filling & Sealing or Verification (mm/dd/yyyy): **10/13/2021**  
 Street or Route: **3376 Packerland Dr.**      Telephone Number: **(920) 498-1200**  
 City: **Ashwaubenon**      State: **WI**      ZIP Code: **54115**      Signature of Person Doing Work: *William Jonea*      Date Signed: **10/14/2021**

**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

**Verification Only of Fill and Seal**

**Route to DNR Bureau:**

Drinking Water       Watershed/Wastewater       Remediation/Redevelopment

Waste Management       Other: \_\_\_\_\_

1. Well Location Information				2. Facility / Owner Information			
County <b>Marinette</b>		WI Unique Well # of Removed Well		Hicap #		Facility Name <b>Ludington St. between Hall Ave. and Stanton St.</b>	
Latitude / Longitude (see instructions) _____ N _____ W		Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM		Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001		Facility ID (FID or PWS)	
1/4 / 1/4 or Gov't Lot #		Section <b>6</b>		Township <b>30 N</b>		License/Permit/Monitoring #	
		Range <b>24</b>		<input checked="" type="checkbox"/> E <input type="checkbox"/> W		Original Well Owner <b>City of Marinette</b>	
Well Street Address <b>Ludington St. between Hall Ave. and Stanton St.</b>				Present Well Owner <b>City of Marinette</b>			
Well City, Village or Town <b>Marinette</b>				Mailing Address of Present Owner <b>1905 Hall Ave.</b>			
Subdivision Name				Well ZIP Code <b>54143</b>		City of Present Owner <b>Marinette</b>	
				Lot #		State <b>WI</b>	
						ZIP Code <b>54143</b>	

Reason for Removal from Service  
**Exploratory Probe**

WI Unique Well # of Replacement Well

**3. Filled & Sealed Well / Drillhole / Borehole Information**

Monitoring Well  
 Water Well  
 Borehole / Drillhole

Original Construction Date (mm/dd/yyyy)  
**10/13/2021**

If a Well Construction Report is available, please attach.

Construction Type:  
 Drilled       Driven (Sandpoint)       Dug  
 Other (specify): \_\_\_\_\_

Formation Type:  
 Unconsolidated Formation       Bedrock

Total Well Depth From Ground Surface (ft.)      Casing Diameter (in.)  
\_\_\_\_\_      **2**

Lower Drillhole Diameter (in.)      Casing Depth (ft.)  
**2**      **12**

Was well annular space grouted?       Yes       No       Unknown

If yes, to what depth (feet)?      Depth to Water (feet)  
\_\_\_\_\_      **Dry**

**4. Pump, Liner, Screen, Casing & Sealing Material**

Pump and piping removed?       Yes       No       N/A

Liner(s) removed?       Yes       No       N/A

Liner(s) perforated?       Yes       No       N/A

Screen removed?       Yes       No       N/A

Casing left in place?       Yes       No       N/A

Was casing cut off below surface?       Yes       No       N/A

Did sealing material rise to surface?       Yes       No       N/A

Did material settle after 24 hours?       Yes       No       N/A

If yes, was hole retopped?       Yes       No       N/A

If bentonite chips were used, were they hydrated with water from a known safe source?       Yes       No       N/A

Required Method of Placing Sealing Material

Conductor Pipe-Gravity       Conductor Pipe-Pumped  
 Screened & Poured (Bentonite Chips)       Other (Explain): \_\_\_\_\_

Sealing Materials

Neat Cement Grout       Concrete  
 Sand-Cement (Concrete) Grout       Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

Bentonite Chips       Bentonite - Cement Grout  
 Granular Bentonite       Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
<b>Bentonite Chips</b>	Surface	<b>12</b>	<b>Y4</b>	

**6. Comments**

*GP*

7. Supervision of Work				DNR Use Only	
Name of Person or Firm Doing Filling & Sealing <b>Ayres Associates</b>		License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) <b>10/13/2021</b>	Date Received	Noted By
Street or Route <b>3376 Packerland Dr.</b>			Telephone Number <b>(920) 498-1200</b>	Comments	
City <b>Ashwaubenon</b>	State <b>WI</b>	ZIP Code <b>54115</b>	Signature of Person Doing Work <i>William Hauer</i>	Date Signed <b>10/14/2021</b>	



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**Route to DNR Bureau:**

**Verification Only of Fill and Seal**

- Drinking Water       Watershed/Wastewater       Remediation/Redevelopment  
 Waste Management       Other: \_\_\_\_\_

**1. Well Location Information**      **2. Facility / Owner Information**

County: **Marinette**      WI Unique Well # of Removed Well: \_\_\_\_\_      Hicap #: \_\_\_\_\_  
 Latitude / Longitude (see instructions): \_\_\_\_\_ N      Format Code:  DD      Method Code:  GPS008  
 \_\_\_\_\_ W       DDM       SCR002  
 \_\_\_\_\_       OTH001  
 1/4 / 1/4: \_\_\_\_\_      Section: **6**      Township: **30 N**      Range: **24**  E  W

Facility Name: **Ludington St. between Hall Ave. and Stanton St.**  
 Facility ID (FID or PWS): \_\_\_\_\_  
 License/Permit/Monitoring #: \_\_\_\_\_  
 Original Well Owner: **City of Marinette**

Well Street Address: **Ludington St. between Hall Ave. and Stanton St.**  
 Well City, Village or Town: **Marinette**      Well ZIP Code: **54143**  
 Subdivision Name: \_\_\_\_\_      Lot #: \_\_\_\_\_

Present Well Owner: **City of Marinette**  
 Mailing Address of Present Owner: **1905 Hall Ave.**  
 City of Present Owner: **Marinette**      State: **WI**      ZIP Code: **54143**

Reason for Removal from Service: **Exploratory Probe**      WI Unique Well # of Replacement Well: \_\_\_\_\_

**3. Filled & Sealed Well / Drillhole / Borehole Information**

Monitoring Well      Original Construction Date (mm/dd/yyyy): **10/13/2021**  
 Water Well  
 Borehole / Drillhole      If a Well Construction Report is available, please attach.

Construction Type:  
 Drilled       Driven (Sandpoint)       Dug  
 Other (specify): \_\_\_\_\_

Formation Type:  
 Unconsolidated Formation       Bedrock

Total Well Depth From Ground Surface (ft.): \_\_\_\_\_      Casing Diameter (in.): **2**

Lower Drillhole Diameter (in.): **2**      Casing Depth (ft.): **NA**

Was well annular space grouted?       Yes       No       Unknown

If yes, to what depth (feet)? \_\_\_\_\_      Depth to Water (feet): **NA**

**4. Pump, Liner, Screen, Casing & Sealing Material**

Pump and piping removed?       Yes       No       N/A  
 Liner(s) removed?       Yes       No       N/A  
 Liner(s) perforated?       Yes       No       N/A  
 Screen removed?       Yes       No       N/A  
 Casing left in place?       Yes       No       N/A  
 Was casing cut off below surface?       Yes       No       N/A  
 Did sealing material rise to surface?       Yes       No       N/A  
 Did material settle after 24 hours?       Yes       No       N/A  
 If yes, was hole retopped?       Yes       No       N/A  
 If bentonite chips were used, were they hydrated with water from a known safe source?       Yes       No       N/A

**Required Method of Placing Sealing Material**

Conductor Pipe-Gravity       Conductor Pipe-Pumped  
 Screened & Poured (Bentonite Chips)       Other (Explain): \_\_\_\_\_

**Sealing Materials**

Neat Cement Grout       Concrete  
 Sand-Cement (Concrete) Grout       Bentonite Chips  
 For Monitoring Wells and Monitoring Well Boreholes Only:  
 Bentonite Chips       Bentonite - Cement Grout  
 Granular Bentonite       Bentonite - Sand Slurry

**5. Material Used to Fill Well / Drillhole**

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface	4	1/3	

**6. Comments**

*GP-5*

**7. Supervision of Work**

Supervision of Work			DNR Use Only	
Name of Person or Firm Doing Filling & Sealing <b>Ayres Associates</b>	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) <b>10/13/2021</b>	Date Received	Noted By
Street or Route <b>3376 Packerland Dr.</b>	Telephone Number <b>(920) 498-1200</b>	Comments		
City <b>Ashwaubenon</b>	State <b>WI</b>	ZIP Code <b>54115</b>	Signature of Person Doing Work <i>William J...</i>	Date Signed <b>10/14/2021</b>

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**Verification Only of Fill and Seal**

Route to DNR Bureau:

Drinking Water       Watershed/Wastewater       Remediation/Redevelopment

Waste Management       Other: \_\_\_\_\_

**1. Well Location Information**      **2. Facility / Owner Information**

County <b>Marinette</b>		WI Unique Well # of Removed Well	Hicap #	Facility Name <b>Ludington St. between Hall Ave. and Stanton St.</b>	
Latitude / Longitude (see instructions) _____ N _____ W		Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM	Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001	Facility ID (FID or PWS)	
1/4 / 1/4 or Gov't Lot #	Section <b>6</b>	Township <b>30 N</b>	Range <b>24</b>	<input checked="" type="checkbox"/> E <input type="checkbox"/> W	License/Permit/Monitoring #
Well Street Address <b>Ludington St. between Hall Ave. and Stanton St.</b>			Original Well Owner <b>City of Marinette</b>		
Well City, Village or Town <b>Marinette</b>			Present Well Owner <b>City of Marinette</b>		
Subdivision Name			Well ZIP Code <b>54143</b>		Mailing Address of Present Owner <b>1905 Hall Ave.</b>
Reason for Removal from Service <b>Exploratory Probe</b>			City of Present Owner <b>Marinette</b>		State <b>WI</b>
WI Unique Well # of Replacement Well			ZIP Code <b>54143</b>		

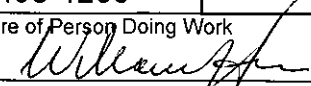
**3. Filled & Sealed Well / Drillhole / Borehole Information**      **4. Pump, Liner, Screen, Casing & Sealing Material**

<input type="checkbox"/> Monitoring Well	Original Construction Date (mm/dd/yyyy) <b>10/13/2021</b>	Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Water Well	If a Well Construction Report is available, please attach.	Liner(s) removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Borehole / Drillhole		Liner(s) perforated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug		Screen removed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		Casing left in place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.) <b>2</b>	Was casing cut off below surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Lower Drillhole Diameter (in.) <b>2</b>	Casing Depth (ft.) <b>NA</b>	Did sealing material rise to surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Was well annular space grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown	Depth to Water (feet) <b>NA</b>	Did material settle after 24 hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
If yes, to what depth (feet)?		If yes, was hole retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		If bentonite chips were used, were they hydrated with water from a known safe source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

5. Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
<b>Bentonite chips</b>	Surface	<b>4</b>	<b>1/8</b>	

**6. Comments**

**GP-6**

<b>7. Supervision of Work</b>			<b>DNR Use Only</b>	
Name of Person or Firm Doing Filling & Sealing <b>Ayres Associates</b>	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) <b>10/13/2021</b>	Date Received	Noted By
Street or Route <b>3376 Packerland Dr.</b>		Telephone Number <b>(920) 498-1200</b>	Comments	
City <b>Ashwaubenon</b>	State <b>WI</b>	ZIP Code <b>54115</b>	Signature of Person Doing Work 	Date Signed <b>10/14/2021</b>

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**Verification Only of Fill and Seal**

**Route to DNR Bureau:**

Drinking Water       Watershed/Wastewater       Remediation/Redevelopment

Waste Management       Other: \_\_\_\_\_

**1. Well Location Information**      **2. Facility / Owner Information**

County <b>Marinette</b>		WI Unique Well # of Removed Well	Hicap #	Facility Name <b>Ludington St. between Hall Ave. and Stanton St.</b>	
Latitude / Longitude (see instructions) _____ N _____ W		Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM	Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001	Facility ID (FID or PWS)	
1/4 / 1/4 or Gov't Lot #	Section <b>6</b>	Township <b>30 N</b>	Range <b>24</b> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	License/Permit/Monitoring #	
Well Street Address <b>Ludington St. between Hall Ave. and Stanton St.</b>				Original Well Owner <b>City of Marinette</b>	
Well City, Village or Town <b>Marinette</b>				Present Well Owner <b>City of Marinette</b>	
Well ZIP Code <b>54143</b>				Mailing Address of Present Owner <b>1905 Hall Ave.</b>	
Subdivision Name				City of Present Owner <b>Marinette</b>	State <b>WI</b>
Lot #				ZIP Code <b>54143</b>	

**3. Filled & Sealed Well / Drillhole / Borehole Information**      **4. Pump, Liner, Screen, Casing & Sealing Material**

Reason for Removal from Service <b>Exploratory Probe</b>	WI Unique Well # of Replacement Well	Original Construction Date (mm/dd/yyyy) <b>10/13/2021</b>		Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Monitoring Well		If a Well Construction Report is available, please attach.		Liner(s) removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Water Well				Liner(s) perforated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
<input checked="" type="checkbox"/> Borehole / Drillhole				Screen removed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Construction Type:				Casing left in place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug				Was casing cut off below surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Other (specify): _____				Did sealing material rise to surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Formation Type:				Did material settle after 24 hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
<input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock				If yes, was hole retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)			If bentonite chips were used, were they hydrated with water from a known safe source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
	<b>2</b>			Required Method of Placing Sealing Material	
Lower Drillhole Diameter (in.)	Casing Depth (ft.)			<input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped	
<b>2</b>	<b>NA</b>			<input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain): _____	
Was well annular space grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown	Depth to Water (feet)			Sealing Materials	
If yes, to what depth (feet)?	<b>NA</b>			<input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Concrete	
				<input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Bentonite Chips	

5. Material Used to Fill Well / Drillhole			
From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface	4	1/8	

**6. Comments**

*GP-7*

<b>7. Supervision of Work</b>			<b>DNR Use Only</b>	
Name of Person or Firm Doing Filling & Sealing <b>Ayres Associates</b>	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) <b>10/13/2021</b>	Date Received	Noted By
Street or Route <b>3376 Packerland Dr.</b>		Telephone Number <b>(920) 498-1200</b>	Comments	
City <b>Ashwaubenon</b>	State <b>WI</b>	ZIP Code <b>54115</b>	Signature of Person Doing Work <i>William Ayres</i>	Date Signed <b>10/14/2021</b>



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

**Route to DNR Bureau:**

**Verification Only of Fill and Seal**

- Drinking Water       Watershed/Wastewater       Remediation/Redevelopment  
 Waste Management       Other: \_\_\_\_\_

**1. Well Location Information**      **2. Facility / Owner Information**

County: **Marinette**      WI Unique Well # of Removed Well: \_\_\_\_\_      Hicap #: \_\_\_\_\_  
 Latitude / Longitude (see instructions): \_\_\_\_\_ N      Format Code:  DD      Method Code:  GPS008  
 \_\_\_\_\_ W       DDM       SCR002  
 \_\_\_\_\_       OTH001  
 ¼ / ¼      ¼      Section: **6**      Township: **30 N**      Range: **24**       E       W  
 or Gov't Lot #: \_\_\_\_\_  
 Well Street Address: **Ludington St. between Hall Ave. and Stanton St.**  
 Well City, Village or Town: **Marinette**      Well ZIP Code: **54143**  
 Subdivision Name: \_\_\_\_\_      Lot #: \_\_\_\_\_

Facility Name: **Ludington St. between Hall Ave. and Stanton St.**  
 Facility ID (FID or PWS): \_\_\_\_\_  
 License/Permit/Monitoring #: \_\_\_\_\_  
 Original Well Owner: **City of Marinette**  
 Present Well Owner: **City of Marinette**  
 Mailing Address of Present Owner: **1905 Hall Ave.**  
 City of Present Owner: **Marinette**      State: **WI**      ZIP Code: **54143**

Reason for Removal from Service: **Exploratory Probe**      WI Unique Well # of Replacement Well: \_\_\_\_\_

**3. Filled & Sealed Well / Drillhole / Borehole Information**

Monitoring Well      Original Construction Date (mm/dd/yyyy): **10/13/2021**  
 Water Well  
 Borehole / Drillhole      If a Well Construction Report is available, please attach. \_\_\_\_\_  
 Construction Type:  
 Drilled       Driven (Sandpoint)       Dug  
 Other (specify): \_\_\_\_\_  
 Formation Type:  
 Unconsolidated Formation       Bedrock  
 Total Well Depth From Ground Surface (ft.): \_\_\_\_\_      Casing Diameter (in.): **2**  
 Lower Drillhole Diameter (in.): **2**      Casing Depth (ft.): **8**  
 Was well annular space grouted?       Yes       No       Unknown  
 If yes, to what depth (feet)? \_\_\_\_\_      Depth to Water (feet): **6**

**4. Pump, Liner, Screen, Casing & Sealing Material**

Pump and piping removed?       Yes       No       N/A  
 Liner(s) removed?       Yes       No       N/A  
 Liner(s) perforated?       Yes       No       N/A  
 Screen removed?       Yes       No       N/A  
 Casing left in place?       Yes       No       N/A  
 Was casing cut off below surface?       Yes       No       N/A  
 Did sealing material rise to surface?       Yes       No       N/A  
 Did material settle after 24 hours?       Yes       No       N/A  
 If yes, was hole retopped?       Yes       No       N/A  
 If bentonite chips were used, were they hydrated with water from a known safe source?       Yes       No       N/A  
 Required Method of Placing Sealing Material:  
 Conductor Pipe-Gravity       Conductor Pipe-Pumped  
 Screened & Poured (Bentonite Chips)       Other (Explain): \_\_\_\_\_  
 Sealing Materials:  
 Neat Cement Grout       Concrete  
 Sand-Cement (Concrete) Grout       Bentonite Chips  
 For Monitoring Wells and Monitoring Well Boreholes Only:  
 Bentonite Chips       Bentonite - Cement Grout  
 Granular Bentonite       Bentonite - Sand Slurry

**5. Material Used to Fill Well / Drillhole**

Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
<i>Bentonite Chips</i>	Surface	<i>8</i>	<i>1/4</i>	

**6. Comments**

*GP-8*

**7. Supervision of Work**      **DNR Use Only**

Name of Person or Firm Doing Filling & Sealing: **Ayres Associates**      License #: \_\_\_\_\_      Date of Filling & Sealing or Verification (mm/dd/yyyy): **10/13/2021**  
 Street or Route: **3376 Packerland Dr.**      Telephone Number: **(920) 498-1200**  
 City: **Ashwaubenon**      State: **WI**      ZIP Code: **54115**      Signature of Person Doing Work: *William Jonea*      Date Signed: **10/14/2021**

**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Verification Only of Fill and Seal

**Route to DNR Bureau:**

- Drinking Water       Watershed/Wastewater       Remediation/Redevelopment  
 Waste Management       Other: \_\_\_\_\_

**1. Well Location Information**      **2. Facility / Owner Information**

County: **Marinette**      WI Unique Well # of Removed Well: \_\_\_\_\_      Hicap #: \_\_\_\_\_  
 Latitude / Longitude (see instructions): \_\_\_\_\_ N      Format Code:  DD      Method Code:  GPS008  
 \_\_\_\_\_ W       DDM       SCR002  
 \_\_\_\_\_       OTH001  
 1/4 / 1/4: \_\_\_\_\_      Section: **6**      Township: **30 N**      Range:  E       W  
 or Gov't Lot #: \_\_\_\_\_      **24**

Facility Name: **Ludington St. between Hall Ave. and Stanton St.**  
 Facility ID (FID or PWS): \_\_\_\_\_  
 License/Permit/Monitoring #: \_\_\_\_\_  
 Original Well Owner: **City of Marinette**

Well Street Address: **Ludington St. between Hall Ave. and Stanton St.**

Present Well Owner: **City of Marinette**

Well City, Village or Town: **Marinette**      Well ZIP Code: **54143**

Mailing Address of Present Owner: **1905 Hall Ave.**

Subdivision Name: \_\_\_\_\_      Lot #: \_\_\_\_\_

City of Present Owner: **Marinette**      State: **WI**      ZIP Code: **54143**

Reason for Removal from Service: **Exploratory Probe**      WI Unique Well # of Replacement Well: \_\_\_\_\_

**3. Filled & Sealed Well / Drillhole / Borehole Information**

Monitoring Well      Original Construction Date (mm/dd/yyyy): **10/13/2021**  
 Water Well  
 Borehole / Drillhole      If a Well Construction Report is available, please attach.

Construction Type:  
 Drilled       Driven (Sandpoint)       Dug  
 Other (specify): \_\_\_\_\_

Formation Type:  
 Unconsolidated Formation       Bedrock

Total Well Depth From Ground Surface (ft.): \_\_\_\_\_      Casing Diameter (in.): **2**

Lower Drillhole Diameter (in.): **2**      Casing Depth (ft.): **NA**

Was well annular space grouted?       Yes       No       Unknown

If yes, to what depth (feet)? \_\_\_\_\_      Depth to Water (feet): **6'**

**4. Pump, Liner, Screen, Casing & Sealing Material**

Pump and piping removed?       Yes       No       N/A  
 Liner(s) removed?       Yes       No       N/A  
 Liner(s) perforated?       Yes       No       N/A  
 Screen removed?       Yes       No       N/A  
 Casing left in place?       Yes       No       N/A  
 Was casing cut off below surface?       Yes       No       N/A  
 Did sealing material rise to surface?       Yes       No       N/A  
 Did material settle after 24 hours?       Yes       No       N/A  
 If yes, was hole retopped?       Yes       No       N/A  
 If bentonite chips were used, were they hydrated with water from a known safe source?       Yes       No       N/A

Required Method of Placing Sealing Material:  
 Conductor Pipe-Gravity       Conductor Pipe-Pumped  
 Screened & Poured (Bentonite Chips)       Other (Explain): \_\_\_\_\_

Sealing Materials:  
 Neat Cement Grout       Concrete  
 Sand-Cement (Concrete) Grout       Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:  
 Bentonite Chips       Bentonite - Cement Grout  
 Granular Bentonite       Bentonite - Sand Slurry

**5. Material Used to Fill Well / Drillhole**

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface	8	1/4	

**6. Comments**

*GP-9*

**7. Supervision of Work**      **DNR Use Only**

Name of Person or Firm Doing Filling & Sealing: **Ayres Associates**      License #: \_\_\_\_\_      Date of Filling & Sealing or Verification (mm/dd/yyyy): **10/13/2021**  
 Street or Route: **3376 Packerland Dr.**      Telephone Number: **(920) 498-1200**      Date Received: \_\_\_\_\_      Noted By: \_\_\_\_\_  
 City: **Ashwaubenon**      State: **WI**      ZIP Code: **54115**      Signature of Person Doing Work: *William Honea*      Date Signed: **10/14/2021**

**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Verification Only of Fill and Seal

**Route to DNR Bureau:**

- Drinking Water       Watershed/Wastewater       Remediation/Redevelopment  
 Waste Management       Other: \_\_\_\_\_

**1. Well Location Information**      **2. Facility / Owner Information**

County: **Marinette**      WI Unique Well # of Removed Well: \_\_\_\_\_      Hicap #: \_\_\_\_\_

Latitude / Longitude (see instructions): \_\_\_\_\_ N      Format Code:  DD      Method Code:  GPS008  
 \_\_\_\_\_ W       DDM       SCR002  
 OTH001

1/4 / 1/4: \_\_\_\_\_      Section: **6**      Township: **30 N**      Range: **24**  E  W

or Gov't Lot #: \_\_\_\_\_

Facility Name: **Ludington St. between Hall Ave. and Stanton St.**

Facility ID (FID or PWS): \_\_\_\_\_

License/Permit/Monitoring #: \_\_\_\_\_

Original Well Owner: **City of Marinette**

Well Street Address: **Ludington St. between Hall Ave. and Stanton St.**

Well City, Village or Town: **Marinette**      Well ZIP Code: **54143**

Subdivision Name: \_\_\_\_\_      Lot #: \_\_\_\_\_

Present Well Owner: **City of Marinette**

Mailing Address of Present Owner: **1905 Hall Ave.**

City of Present Owner: **Marinette**      State: **WI**      ZIP Code: **54143**

Reason for Removal from Service: **Exploratory Probe**      WI Unique Well # of Replacement Well: \_\_\_\_\_

**3. Filled & Sealed Well / Drillhole / Borehole Information**

Monitoring Well      Original Construction Date (mm/dd/yyyy): **10/13/2021**  
 Water Well  
 Borehole / Drillhole      If a Well Construction Report is available, please attach.

Construction Type:  
 Drilled       Driven (Sandpoint)       Dug  
 Other (specify): \_\_\_\_\_

Formation Type:  
 Unconsolidated Formation       Bedrock

Total Well Depth From Ground Surface (ft.): \_\_\_\_\_      Casing Diameter (in.): **2**

Lower Drillhole Diameter (in.): **2**      Casing Depth (ft.): **NA**

Was well annular space grouted?       Yes       No       Unknown

If yes, to what depth (feet)?      Depth to Water (feet): **4.2**

**4. Pump, Liner, Screen, Casing & Sealing Material**

Pump and piping removed?       Yes       No       N/A  
 Liner(s) removed?       Yes       No       N/A  
 Liner(s) perforated?       Yes       No       N/A  
 Screen removed?       Yes       No       N/A  
 Casing left in place?       Yes       No       N/A

Was casing cut off below surface?       Yes       No       N/A  
 Did sealing material rise to surface?       Yes       No       N/A  
 Did material settle after 24 hours?       Yes       No       N/A  
 If yes, was hole retopped?       Yes       No       N/A  
 If bentonite chips were used, were they hydrated with water from a known safe source?       Yes       No       N/A

Required Method of Placing Sealing Material:  
 Conductor Pipe-Gravity       Conductor Pipe-Pumped  
 Screened & Poured (Bentonite Chips)       Other (Explain): \_\_\_\_\_

Sealing Materials:  
 Neat Cement Grout       Concrete  
 Sand-Cement (Concrete) Grout       Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:  
 Bentonite Chips       Bentonite - Cement Grout  
 Granular Bentonite       Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
<b>Bentonite Chips</b>	Surface	<b>8</b>	<b>1/4</b>	

**6. Comments**

**GP-10**

**7. Supervision of Work**      **DNR Use Only**

Name of Person or Firm Doing Filling & Sealing: **Ayres Associates**      License #: \_\_\_\_\_      Date of Filling & Sealing or Verification (mm/dd/yyyy): **10/13/2021**      Date Received: \_\_\_\_\_      Noted By: \_\_\_\_\_

Street or Route: **3376 Packerland Dr.**      Telephone Number: **(920) 498-1200**      Comments: \_\_\_\_\_

City: **Ashwaubenon**      State: **WI**      ZIP Code: **54115**      Signature of Person Doing Work: *William Ayres*      Date Signed: **10/14/2021**

**Appendix C**  
**Laboratory Reports with Quality Control**  
**Information**



November 12, 2021

Bill Honea  
AYRES & ASSOCIATES, INC.  
3376 Packerland Avenue  
De Pere, WI 54115

RE: Project: LUDINGTON ST  
Pace Project No.: 40235054

Dear Bill Honea:


Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: LUDINGTON ST

Pace Project No.: 40235054

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### **Pace Analytical Services Green Bay**

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: LUDINGTON ST

Pace Project No.: 40235054

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40235054001	GP-1	Water	10/13/21 09:55	10/13/21 16:40
40235054002	GP-3	Water	10/13/21 11:25	10/13/21 16:40
40235054003	GP-8	Water	10/13/21 13:30	10/13/21 16:40
40235054004	GP-10	Water	10/13/21 15:05	10/13/21 16:40

## REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

### SAMPLE ANALYTE COUNT

Project: LUDINGTON ST  
Pace Project No.: 40235054

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40235054001	GP-1	EPA 6010D	TXW	2	PASI-G
		EPA 8260	LAP	64	PASI-G
40235054003	GP-8	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	LAP	64	PASI-G
40235054004	GP-10	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	LAP	64	PASI-G

PASI-G = Pace Analytical Services - Green Bay

### REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.



## ANALYTICAL RESULTS

Project: LUDINGTON ST  
Pace Project No.: 40235054

**Sample: GP-1**      **Lab ID: 40235054001**      Collected: 10/13/21 09:55      Received: 10/13/21 16:40      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP, Dissolved</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Arsenic, Dissolved	<b>15.3J</b>	ug/L	25.0	8.3	1	10/25/21 05:49	10/25/21 14:37	7440-38-2	
Lead, Dissolved	<b>9.3J</b>	ug/L	20.0	5.9	1	10/25/21 05:49	10/25/21 14:37	7439-92-1	
<b>8260 MSV</b>									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
Benzene	<b>&lt;0.30</b>	ug/L	1.0	0.30	1		10/15/21 01:04	71-43-2	
Bromobenzene	<b>&lt;0.36</b>	ug/L	1.0	0.36	1		10/15/21 01:04	108-86-1	
Bromochloromethane	<b>&lt;0.36</b>	ug/L	5.0	0.36	1		10/15/21 01:04	74-97-5	
Bromodichloromethane	<b>&lt;0.42</b>	ug/L	1.0	0.42	1		10/15/21 01:04	75-27-4	
Bromoform	<b>&lt;3.8</b>	ug/L	5.0	3.8	1		10/15/21 01:04	75-25-2	
Bromomethane	<b>&lt;1.2</b>	ug/L	5.0	1.2	1		10/15/21 01:04	74-83-9	
n-Butylbenzene	<b>&lt;0.86</b>	ug/L	1.0	0.86	1		10/15/21 01:04	104-51-8	
sec-Butylbenzene	<b>&lt;0.42</b>	ug/L	1.0	0.42	1		10/15/21 01:04	135-98-8	
tert-Butylbenzene	<b>&lt;0.59</b>	ug/L	1.0	0.59	1		10/15/21 01:04	98-06-6	
Carbon tetrachloride	<b>&lt;0.37</b>	ug/L	1.0	0.37	1		10/15/21 01:04	56-23-5	
Chlorobenzene	<b>&lt;0.86</b>	ug/L	1.0	0.86	1		10/15/21 01:04	108-90-7	
Chloroethane	<b>&lt;1.4</b>	ug/L	5.0	1.4	1		10/15/21 01:04	75-00-3	
Chloroform	<b>&lt;1.2</b>	ug/L	5.0	1.2	1		10/15/21 01:04	67-66-3	
Chloromethane	<b>&lt;1.6</b>	ug/L	5.0	1.6	1		10/15/21 01:04	74-87-3	
2-Chlorotoluene	<b>&lt;0.89</b>	ug/L	5.0	0.89	1		10/15/21 01:04	95-49-8	
4-Chlorotoluene	<b>&lt;0.89</b>	ug/L	5.0	0.89	1		10/15/21 01:04	106-43-4	
1,2-Dibromo-3-chloropropane	<b>&lt;2.4</b>	ug/L	5.0	2.4	1		10/15/21 01:04	96-12-8	
Dibromochloromethane	<b>&lt;2.6</b>	ug/L	5.0	2.6	1		10/15/21 01:04	124-48-1	
1,2-Dibromoethane (EDB)	<b>&lt;0.31</b>	ug/L	1.0	0.31	1		10/15/21 01:04	106-93-4	
Dibromomethane	<b>&lt;0.99</b>	ug/L	5.0	0.99	1		10/15/21 01:04	74-95-3	
1,2-Dichlorobenzene	<b>&lt;0.33</b>	ug/L	1.0	0.33	1		10/15/21 01:04	95-50-1	
1,3-Dichlorobenzene	<b>&lt;0.35</b>	ug/L	1.0	0.35	1		10/15/21 01:04	541-73-1	
1,4-Dichlorobenzene	<b>&lt;0.89</b>	ug/L	1.0	0.89	1		10/15/21 01:04	106-46-7	
Dichlorodifluoromethane	<b>&lt;0.46</b>	ug/L	5.0	0.46	1		10/15/21 01:04	75-71-8	
1,1-Dichloroethane	<b>&lt;0.30</b>	ug/L	1.0	0.30	1		10/15/21 01:04	75-34-3	
1,2-Dichloroethane	<b>&lt;0.29</b>	ug/L	1.0	0.29	1		10/15/21 01:04	107-06-2	
1,1-Dichloroethene	<b>&lt;0.58</b>	ug/L	1.0	0.58	1		10/15/21 01:04	75-35-4	
cis-1,2-Dichloroethene	<b>&lt;0.47</b>	ug/L	1.0	0.47	1		10/15/21 01:04	156-59-2	
trans-1,2-Dichloroethene	<b>&lt;0.53</b>	ug/L	1.0	0.53	1		10/15/21 01:04	156-60-5	
1,2-Dichloropropane	<b>&lt;0.45</b>	ug/L	1.0	0.45	1		10/15/21 01:04	78-87-5	
1,3-Dichloropropane	<b>&lt;0.30</b>	ug/L	1.0	0.30	1		10/15/21 01:04	142-28-9	
2,2-Dichloropropane	<b>&lt;4.2</b>	ug/L	5.0	4.2	1		10/15/21 01:04	594-20-7	
1,1-Dichloropropene	<b>&lt;0.41</b>	ug/L	1.0	0.41	1		10/15/21 01:04	563-58-6	
cis-1,3-Dichloropropene	<b>&lt;0.36</b>	ug/L	1.0	0.36	1		10/15/21 01:04	10061-01-5	
trans-1,3-Dichloropropene	<b>&lt;3.5</b>	ug/L	5.0	3.5	1		10/15/21 01:04	10061-02-6	
Diisopropyl ether	<b>&lt;1.1</b>	ug/L	5.0	1.1	1		10/15/21 01:04	108-20-3	
Ethylbenzene	<b>&lt;0.33</b>	ug/L	1.0	0.33	1		10/15/21 01:04	100-41-4	
Hexachloro-1,3-butadiene	<b>&lt;2.7</b>	ug/L	5.0	2.7	1		10/15/21 01:04	87-68-3	
Isopropylbenzene (Cumene)	<b>&lt;1.0</b>	ug/L	5.0	1.0	1		10/15/21 01:04	98-82-8	
p-Isopropyltoluene	<b>&lt;1.0</b>	ug/L	5.0	1.0	1		10/15/21 01:04	99-87-6	

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### ANALYTICAL RESULTS

Project: LUDINGTON ST  
Pace Project No.: 40235054

**Sample: GP-1**      **Lab ID: 40235054001**      Collected: 10/13/21 09:55      Received: 10/13/21 16:40      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
Methylene Chloride	<0.32	ug/L	5.0	0.32	1		10/15/21 01:04	75-09-2	
Methyl-tert-butyl ether	<1.1	ug/L	5.0	1.1	1		10/15/21 01:04	1634-04-4	
Naphthalene	<1.1	ug/L	5.0	1.1	1		10/15/21 01:04	91-20-3	
n-Propylbenzene	<0.35	ug/L	1.0	0.35	1		10/15/21 01:04	103-65-1	
Styrene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:04	100-42-5	
1,1,1,2-Tetrachloroethane	<0.36	ug/L	1.0	0.36	1		10/15/21 01:04	630-20-6	
1,1,2,2-Tetrachloroethane	<0.38	ug/L	1.0	0.38	1		10/15/21 01:04	79-34-5	
Tetrachloroethene	<0.41	ug/L	1.0	0.41	1		10/15/21 01:04	127-18-4	
Toluene	<0.29	ug/L	1.0	0.29	1		10/15/21 01:04	108-88-3	
1,2,3-Trichlorobenzene	<1.0	ug/L	5.0	1.0	1		10/15/21 01:04	87-61-6	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		10/15/21 01:04	120-82-1	
1,1,1-Trichloroethane	<0.30	ug/L	1.0	0.30	1		10/15/21 01:04	71-55-6	
1,1,2-Trichloroethane	<0.34	ug/L	5.0	0.34	1		10/15/21 01:04	79-00-5	
Trichloroethene	<0.32	ug/L	1.0	0.32	1		10/15/21 01:04	79-01-6	
Trichlorofluoromethane	<0.42	ug/L	1.0	0.42	1		10/15/21 01:04	75-69-4	
1,2,3-Trichloropropane	<0.56	ug/L	5.0	0.56	1		10/15/21 01:04	96-18-4	
1,2,4-Trimethylbenzene	<0.45	ug/L	1.0	0.45	1		10/15/21 01:04	95-63-6	
1,3,5-Trimethylbenzene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:04	108-67-8	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		10/15/21 01:04	75-01-4	
m&p-Xylene	<0.70	ug/L	2.0	0.70	1		10/15/21 01:04	179601-23-1	
o-Xylene	<0.35	ug/L	1.0	0.35	1		10/15/21 01:04	95-47-6	
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	95	%	70-130		1		10/15/21 01:04	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	70-130		1		10/15/21 01:04	2199-69-1	
Toluene-d8 (S)	103	%	70-130		1		10/15/21 01:04	2037-26-5	

**Sample: GP-8**      **Lab ID: 40235054003**      Collected: 10/13/21 13:30      Received: 10/13/21 16:40      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP, Dissolved</b>									
Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Arsenic, Dissolved	<8.3	ug/L	25.0	8.3	1	10/25/21 05:49	10/25/21 14:40	7440-38-2	
Lead, Dissolved	50.0	ug/L	20.0	5.9	1	10/25/21 05:49	10/25/21 14:40	7439-92-1	
<b>8270E MSSV PAH</b>									
Analytical Method: EPA 8270E by SIM      Preparation Method: EPA 3510									
Pace Analytical Services - Green Bay									
Acenaphthene	0.47	ug/L	0.048	0.013	1	10/15/21 12:34	10/18/21 16:37	83-32-9	
Acenaphthylene	<0.012	ug/L	0.048	0.012	1	10/15/21 12:34	10/18/21 16:37	208-96-8	
Anthracene	<0.018	ug/L	0.048	0.018	1	10/15/21 12:34	10/18/21 16:37	120-12-7	
Benzo(a)anthracene	0.014J	ug/L	0.048	0.013	1	10/15/21 12:34	10/18/21 16:37	56-55-3	
Benzo(a)pyrene	<0.019	ug/L	0.048	0.019	1	10/15/21 12:34	10/18/21 16:37	50-32-8	
Benzo(b)fluoranthene	<0.019	ug/L	0.048	0.019	1	10/15/21 12:34	10/18/21 16:37	205-99-2	

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### ANALYTICAL RESULTS

Project: LUDINGTON ST  
Pace Project No.: 40235054

**Sample: GP-8**      **Lab ID: 40235054003**      Collected: 10/13/21 13:30      Received: 10/13/21 16:40      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8270E MSSV PAH</b>									
Analytical Method: EPA 8270E by SIM      Preparation Method: EPA 3510									
Pace Analytical Services - Green Bay									
Benzo(g,h,i)perylene	<0.022	ug/L	0.048	0.022	1	10/15/21 12:34	10/18/21 16:37	191-24-2	
Benzo(k)fluoranthene	<0.021	ug/L	0.048	0.021	1	10/15/21 12:34	10/18/21 16:37	207-08-9	
Chrysene	0.029J	ug/L	0.048	0.025	1	10/15/21 12:34	10/18/21 16:37	218-01-9	
Dibenz(a,h)anthracene	<0.017	ug/L	0.048	0.017	1	10/15/21 12:34	10/18/21 16:37	53-70-3	
Fluoranthene	0.043J	ug/L	0.048	0.025	1	10/15/21 12:34	10/18/21 16:37	206-44-0	
Fluorene	0.024J	ug/L	0.048	0.022	1	10/15/21 12:34	10/18/21 16:37	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.015	ug/L	0.048	0.015	1	10/15/21 12:34	10/18/21 16:37	193-39-5	
1-Methylnaphthalene	0.78	ug/L	0.048	0.017	1	10/15/21 12:34	10/18/21 16:37	90-12-0	
2-Methylnaphthalene	0.47	ug/L	0.048	0.013	1	10/15/21 12:34	10/18/21 16:37	91-57-6	
Naphthalene	0.37	ug/L	0.048	0.019	1	10/15/21 12:34	10/18/21 16:37	91-20-3	B
Phenanthrene	0.093	ug/L	0.048	0.024	1	10/15/21 12:34	10/18/21 16:37	85-01-8	
Pyrene	0.035J	ug/L	0.048	0.021	1	10/15/21 12:34	10/18/21 16:37	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	73	%	10-113		1	10/15/21 12:34	10/18/21 16:37	321-60-8	
Terphenyl-d14 (S)	78	%	28-124		1	10/15/21 12:34	10/18/21 16:37	1718-51-0	
<b>8260 MSV</b>									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
Benzene	<0.30	ug/L	1.0	0.30	1		10/15/21 01:23	71-43-2	
Bromobenzene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:23	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		10/15/21 01:23	74-97-5	
Bromodichloromethane	<0.42	ug/L	1.0	0.42	1		10/15/21 01:23	75-27-4	
Bromoform	<3.8	ug/L	5.0	3.8	1		10/15/21 01:23	75-25-2	
Bromomethane	<1.2	ug/L	5.0	1.2	1		10/15/21 01:23	74-83-9	
n-Butylbenzene	<0.86	ug/L	1.0	0.86	1		10/15/21 01:23	104-51-8	
sec-Butylbenzene	<0.42	ug/L	1.0	0.42	1		10/15/21 01:23	135-98-8	
tert-Butylbenzene	<0.59	ug/L	1.0	0.59	1		10/15/21 01:23	98-06-6	
Carbon tetrachloride	<0.37	ug/L	1.0	0.37	1		10/15/21 01:23	56-23-5	
Chlorobenzene	2.8	ug/L	1.0	0.86	1		10/15/21 01:23	108-90-7	
Chloroethane	<1.4	ug/L	5.0	1.4	1		10/15/21 01:23	75-00-3	
Chloroform	<1.2	ug/L	5.0	1.2	1		10/15/21 01:23	67-66-3	
Chloromethane	<1.6	ug/L	5.0	1.6	1		10/15/21 01:23	74-87-3	
2-Chlorotoluene	<0.89	ug/L	5.0	0.89	1		10/15/21 01:23	95-49-8	
4-Chlorotoluene	<0.89	ug/L	5.0	0.89	1		10/15/21 01:23	106-43-4	
1,2-Dibromo-3-chloropropane	<2.4	ug/L	5.0	2.4	1		10/15/21 01:23	96-12-8	
Dibromochloromethane	<2.6	ug/L	5.0	2.6	1		10/15/21 01:23	124-48-1	
1,2-Dibromoethane (EDB)	<0.31	ug/L	1.0	0.31	1		10/15/21 01:23	106-93-4	
Dibromomethane	<0.99	ug/L	5.0	0.99	1		10/15/21 01:23	74-95-3	
1,2-Dichlorobenzene	<0.33	ug/L	1.0	0.33	1		10/15/21 01:23	95-50-1	
1,3-Dichlorobenzene	<0.35	ug/L	1.0	0.35	1		10/15/21 01:23	541-73-1	
1,4-Dichlorobenzene	<0.89	ug/L	1.0	0.89	1		10/15/21 01:23	106-46-7	
Dichlorodifluoromethane	<0.46	ug/L	5.0	0.46	1		10/15/21 01:23	75-71-8	
1,1-Dichloroethane	<0.30	ug/L	1.0	0.30	1		10/15/21 01:23	75-34-3	
1,2-Dichloroethane	<0.29	ug/L	1.0	0.29	1		10/15/21 01:23	107-06-2	
1,1-Dichloroethene	<0.58	ug/L	1.0	0.58	1		10/15/21 01:23	75-35-4	

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### ANALYTICAL RESULTS

Project: LUDINGTON ST  
Pace Project No.: 40235054

**Sample: GP-8**      **Lab ID: 40235054003**      Collected: 10/13/21 13:30      Received: 10/13/21 16:40      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
cis-1,2-Dichloroethene	<0.47	ug/L	1.0	0.47	1		10/15/21 01:23	156-59-2	
trans-1,2-Dichloroethene	<0.53	ug/L	1.0	0.53	1		10/15/21 01:23	156-60-5	
1,2-Dichloropropane	<0.45	ug/L	1.0	0.45	1		10/15/21 01:23	78-87-5	
1,3-Dichloropropane	<0.30	ug/L	1.0	0.30	1		10/15/21 01:23	142-28-9	
2,2-Dichloropropane	<4.2	ug/L	5.0	4.2	1		10/15/21 01:23	594-20-7	
1,1-Dichloropropene	<0.41	ug/L	1.0	0.41	1		10/15/21 01:23	563-58-6	
cis-1,3-Dichloropropene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:23	10061-01-5	
trans-1,3-Dichloropropene	<3.5	ug/L	5.0	3.5	1		10/15/21 01:23	10061-02-6	
Diisopropyl ether	<1.1	ug/L	5.0	1.1	1		10/15/21 01:23	108-20-3	
Ethylbenzene	<0.33	ug/L	1.0	0.33	1		10/15/21 01:23	100-41-4	
Hexachloro-1,3-butadiene	<2.7	ug/L	5.0	2.7	1		10/15/21 01:23	87-68-3	
Isopropylbenzene (Cumene)	<1.0	ug/L	5.0	1.0	1		10/15/21 01:23	98-82-8	
p-Isopropyltoluene	<1.0	ug/L	5.0	1.0	1		10/15/21 01:23	99-87-6	
Methylene Chloride	<0.32	ug/L	5.0	0.32	1		10/15/21 01:23	75-09-2	
Methyl-tert-butyl ether	<1.1	ug/L	5.0	1.1	1		10/15/21 01:23	1634-04-4	
Naphthalene	<1.1	ug/L	5.0	1.1	1		10/15/21 01:23	91-20-3	
n-Propylbenzene	<0.35	ug/L	1.0	0.35	1		10/15/21 01:23	103-65-1	
Styrene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:23	100-42-5	
1,1,1,2-Tetrachloroethane	<0.36	ug/L	1.0	0.36	1		10/15/21 01:23	630-20-6	
1,1,2,2-Tetrachloroethane	<0.38	ug/L	1.0	0.38	1		10/15/21 01:23	79-34-5	
Tetrachloroethene	<0.41	ug/L	1.0	0.41	1		10/15/21 01:23	127-18-4	
Toluene	<0.29	ug/L	1.0	0.29	1		10/15/21 01:23	108-88-3	
1,2,3-Trichlorobenzene	<1.0	ug/L	5.0	1.0	1		10/15/21 01:23	87-61-6	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		10/15/21 01:23	120-82-1	
1,1,1-Trichloroethane	<0.30	ug/L	1.0	0.30	1		10/15/21 01:23	71-55-6	
1,1,2-Trichloroethane	<0.34	ug/L	5.0	0.34	1		10/15/21 01:23	79-00-5	
Trichloroethene	<0.32	ug/L	1.0	0.32	1		10/15/21 01:23	79-01-6	
Trichlorofluoromethane	<0.42	ug/L	1.0	0.42	1		10/15/21 01:23	75-69-4	
1,2,3-Trichloropropane	<0.56	ug/L	5.0	0.56	1		10/15/21 01:23	96-18-4	
1,2,4-Trimethylbenzene	1.4	ug/L	1.0	0.45	1		10/15/21 01:23	95-63-6	
1,3,5-Trimethylbenzene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:23	108-67-8	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		10/15/21 01:23	75-01-4	
m&p-Xylene	<0.70	ug/L	2.0	0.70	1		10/15/21 01:23	179601-23-1	
o-Xylene	<0.35	ug/L	1.0	0.35	1		10/15/21 01:23	95-47-6	
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	95	%	70-130		1		10/15/21 01:23	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		1		10/15/21 01:23	2199-69-1	
Toluene-d8 (S)	102	%	70-130		1		10/15/21 01:23	2037-26-5	

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### ANALYTICAL RESULTS

Project: LUDINGTON ST  
Pace Project No.: 40235054

**Sample: GP-10**      **Lab ID: 40235054004**      Collected: 10/13/21 15:05      Received: 10/13/21 16:40      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP, Dissolved</b>									
Analytical Method: EPA 6010D Pace Analytical Services - Green Bay									
Arsenic, Dissolved	78.1	ug/L	25.0	13.2	1		10/22/21 12:34	7440-38-2	
Lead, Dissolved	<6.4	ug/L	20.0	6.4	1		10/22/21 12:34	7439-92-1	
<b>8270E MSSV PAH</b>									
Analytical Method: EPA 8270E by SIM      Preparation Method: EPA 3510 Pace Analytical Services - Green Bay									
Acenaphthene	0.021J	ug/L	0.047	0.013	1	10/18/21 08:16	10/19/21 14:31	83-32-9	
Acenaphthylene	<0.012	ug/L	0.047	0.012	1	10/18/21 08:16	10/19/21 14:31	208-96-8	
Anthracene	<0.017	ug/L	0.047	0.017	1	10/18/21 08:16	10/19/21 14:31	120-12-7	
Benzo(a)anthracene	<0.013	ug/L	0.047	0.013	1	10/18/21 08:16	10/19/21 14:31	56-55-3	
Benzo(a)pyrene	<0.018	ug/L	0.047	0.018	1	10/18/21 08:16	10/19/21 14:31	50-32-8	
Benzo(b)fluoranthene	<0.018	ug/L	0.047	0.018	1	10/18/21 08:16	10/19/21 14:31	205-99-2	
Benzo(g,h,i)perylene	<0.022	ug/L	0.047	0.022	1	10/18/21 08:16	10/19/21 14:31	191-24-2	
Benzo(k)fluoranthene	<0.021	ug/L	0.047	0.021	1	10/18/21 08:16	10/19/21 14:31	207-08-9	
Chrysene	<0.025	ug/L	0.047	0.025	1	10/18/21 08:16	10/19/21 14:31	218-01-9	
Dibenz(a,h)anthracene	<0.017	ug/L	0.047	0.017	1	10/18/21 08:16	10/19/21 14:31	53-70-3	
Fluoranthene	<0.025	ug/L	0.047	0.025	1	10/18/21 08:16	10/19/21 14:31	206-44-0	
Fluorene	<0.022	ug/L	0.047	0.022	1	10/18/21 08:16	10/19/21 14:31	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.015	ug/L	0.047	0.015	1	10/18/21 08:16	10/19/21 14:31	193-39-5	
1-Methylnaphthalene	<0.017	ug/L	0.047	0.017	1	10/18/21 08:16	10/19/21 14:31	90-12-0	
2-Methylnaphthalene	0.016J	ug/L	0.047	0.013	1	10/18/21 08:16	10/19/21 14:31	91-57-6	
Naphthalene	0.046J	ug/L	0.047	0.019	1	10/18/21 08:16	10/19/21 14:31	91-20-3	B
Phenanthrene	0.044J	ug/L	0.047	0.024	1	10/18/21 08:16	10/19/21 14:31	85-01-8	
Pyrene	<0.021	ug/L	0.047	0.021	1	10/18/21 08:16	10/19/21 14:31	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	74	%	10-113		1	10/18/21 08:16	10/19/21 14:31	321-60-8	
Terphenyl-d14 (S)	80	%	28-124		1	10/18/21 08:16	10/19/21 14:31	1718-51-0	
<b>8260 MSV</b>									
Analytical Method: EPA 8260 Pace Analytical Services - Green Bay									
Benzene	<0.30	ug/L	1.0	0.30	1		10/15/21 01:43	71-43-2	
Bromobenzene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:43	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		10/15/21 01:43	74-97-5	
Bromodichloromethane	<0.42	ug/L	1.0	0.42	1		10/15/21 01:43	75-27-4	
Bromoform	<3.8	ug/L	5.0	3.8	1		10/15/21 01:43	75-25-2	
Bromomethane	<1.2	ug/L	5.0	1.2	1		10/15/21 01:43	74-83-9	
n-Butylbenzene	<0.86	ug/L	1.0	0.86	1		10/15/21 01:43	104-51-8	
sec-Butylbenzene	<0.42	ug/L	1.0	0.42	1		10/15/21 01:43	135-98-8	
tert-Butylbenzene	<0.59	ug/L	1.0	0.59	1		10/15/21 01:43	98-06-6	
Carbon tetrachloride	<0.37	ug/L	1.0	0.37	1		10/15/21 01:43	56-23-5	
Chlorobenzene	<0.86	ug/L	1.0	0.86	1		10/15/21 01:43	108-90-7	
Chloroethane	<1.4	ug/L	5.0	1.4	1		10/15/21 01:43	75-00-3	
Chloroform	<1.2	ug/L	5.0	1.2	1		10/15/21 01:43	67-66-3	
Chloromethane	<1.6	ug/L	5.0	1.6	1		10/15/21 01:43	74-87-3	
2-Chlorotoluene	<0.89	ug/L	5.0	0.89	1		10/15/21 01:43	95-49-8	
4-Chlorotoluene	<0.89	ug/L	5.0	0.89	1		10/15/21 01:43	106-43-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: LUDINGTON ST

Pace Project No.: 40235054

**Sample: GP-10**      **Lab ID: 40235054004**      Collected: 10/13/21 15:05      Received: 10/13/21 16:40      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>									
Analytical Method: EPA 8260									
Pace Analytical Services - Green Bay									
1,2-Dibromo-3-chloropropane	<2.4	ug/L	5.0	2.4	1		10/15/21 01:43	96-12-8	
Dibromochloromethane	<2.6	ug/L	5.0	2.6	1		10/15/21 01:43	124-48-1	
1,2-Dibromoethane (EDB)	<0.31	ug/L	1.0	0.31	1		10/15/21 01:43	106-93-4	
Dibromomethane	<0.99	ug/L	5.0	0.99	1		10/15/21 01:43	74-95-3	
1,2-Dichlorobenzene	<0.33	ug/L	1.0	0.33	1		10/15/21 01:43	95-50-1	
1,3-Dichlorobenzene	<0.35	ug/L	1.0	0.35	1		10/15/21 01:43	541-73-1	
1,4-Dichlorobenzene	<0.89	ug/L	1.0	0.89	1		10/15/21 01:43	106-46-7	
Dichlorodifluoromethane	<0.46	ug/L	5.0	0.46	1		10/15/21 01:43	75-71-8	
1,1-Dichloroethane	<0.30	ug/L	1.0	0.30	1		10/15/21 01:43	75-34-3	
1,2-Dichloroethane	<0.29	ug/L	1.0	0.29	1		10/15/21 01:43	107-06-2	
1,1-Dichloroethene	<0.58	ug/L	1.0	0.58	1		10/15/21 01:43	75-35-4	
cis-1,2-Dichloroethene	<0.47	ug/L	1.0	0.47	1		10/15/21 01:43	156-59-2	
trans-1,2-Dichloroethene	<0.53	ug/L	1.0	0.53	1		10/15/21 01:43	156-60-5	
1,2-Dichloropropane	<0.45	ug/L	1.0	0.45	1		10/15/21 01:43	78-87-5	
1,3-Dichloropropane	<0.30	ug/L	1.0	0.30	1		10/15/21 01:43	142-28-9	
2,2-Dichloropropane	<4.2	ug/L	5.0	4.2	1		10/15/21 01:43	594-20-7	
1,1-Dichloropropene	<0.41	ug/L	1.0	0.41	1		10/15/21 01:43	563-58-6	
cis-1,3-Dichloropropene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:43	10061-01-5	
trans-1,3-Dichloropropene	<3.5	ug/L	5.0	3.5	1		10/15/21 01:43	10061-02-6	
Diisopropyl ether	<1.1	ug/L	5.0	1.1	1		10/15/21 01:43	108-20-3	
Ethylbenzene	<0.33	ug/L	1.0	0.33	1		10/15/21 01:43	100-41-4	
Hexachloro-1,3-butadiene	<2.7	ug/L	5.0	2.7	1		10/15/21 01:43	87-68-3	
Isopropylbenzene (Cumene)	<1.0	ug/L	5.0	1.0	1		10/15/21 01:43	98-82-8	
p-Isopropyltoluene	<1.0	ug/L	5.0	1.0	1		10/15/21 01:43	99-87-6	
Methylene Chloride	<0.32	ug/L	5.0	0.32	1		10/15/21 01:43	75-09-2	
Methyl-tert-butyl ether	<1.1	ug/L	5.0	1.1	1		10/15/21 01:43	1634-04-4	
Naphthalene	<1.1	ug/L	5.0	1.1	1		10/15/21 01:43	91-20-3	
n-Propylbenzene	<0.35	ug/L	1.0	0.35	1		10/15/21 01:43	103-65-1	
Styrene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:43	100-42-5	
1,1,1,2-Tetrachloroethane	<0.36	ug/L	1.0	0.36	1		10/15/21 01:43	630-20-6	
1,1,2,2-Tetrachloroethane	<0.38	ug/L	1.0	0.38	1		10/15/21 01:43	79-34-5	
Tetrachloroethene	<0.41	ug/L	1.0	0.41	1		10/15/21 01:43	127-18-4	
Toluene	<0.29	ug/L	1.0	0.29	1		10/15/21 01:43	108-88-3	
1,2,3-Trichlorobenzene	<1.0	ug/L	5.0	1.0	1		10/15/21 01:43	87-61-6	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		10/15/21 01:43	120-82-1	
1,1,1-Trichloroethane	<0.30	ug/L	1.0	0.30	1		10/15/21 01:43	71-55-6	
1,1,2-Trichloroethane	<0.34	ug/L	5.0	0.34	1		10/15/21 01:43	79-00-5	
Trichloroethene	<0.32	ug/L	1.0	0.32	1		10/15/21 01:43	79-01-6	
Trichlorofluoromethane	<0.42	ug/L	1.0	0.42	1		10/15/21 01:43	75-69-4	
1,2,3-Trichloropropane	<0.56	ug/L	5.0	0.56	1		10/15/21 01:43	96-18-4	
1,2,4-Trimethylbenzene	<0.45	ug/L	1.0	0.45	1		10/15/21 01:43	95-63-6	
1,3,5-Trimethylbenzene	<0.36	ug/L	1.0	0.36	1		10/15/21 01:43	108-67-8	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		10/15/21 01:43	75-01-4	
m&p-Xylene	<0.70	ug/L	2.0	0.70	1		10/15/21 01:43	179601-23-1	
o-Xylene	<0.35	ug/L	1.0	0.35	1		10/15/21 01:43	95-47-6	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON ST

Pace Project No.: 40235054

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**Sample: GP-10**      **Lab ID: 40235054004**    Collected: 10/13/21 15:05    Received: 10/13/21 16:40    Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260 Pace Analytical Services - Green Bay							
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	96	%	70-130		1		10/15/21 01:43	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		1		10/15/21 01:43	2199-69-1	
Toluene-d8 (S)	104	%	70-130		1		10/15/21 01:43	2037-26-5	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LUDINGTON ST  
Pace Project No.: 40235054

QC Batch: 399389	Analysis Method: EPA 6010D
QC Batch Method: EPA 6010D	Analysis Description: ICP Metals, Trace, Dissolved
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40235054004

METHOD BLANK: 2305920 Matrix: Water

Associated Lab Samples: 40235054004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	<13.2	25.0	10/22/21 11:35	
Lead, Dissolved	ug/L	<6.4	20.0	10/22/21 11:35	

LABORATORY CONTROL SAMPLE: 2305921

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	250	244	97	80-120	
Lead, Dissolved	ug/L	250	253	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2305923 2305924

Parameter	Units	40235485014		2305923		2305924		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Arsenic, Dissolved	ug/L	<25.0	250	250	248	260	97	102	75-125	5	20
Lead, Dissolved	ug/L	<20.0	250	250	250	259	98	102	75-125	4	20

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### QUALITY CONTROL DATA

Project: LUDINGTON ST  
Pace Project No.: 40235054

QC Batch: 399476      Analysis Method: EPA 6010D  
QC Batch Method: EPA 3010A      Analysis Description: 6010D MET Dissolved  
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40235054001, 40235054003

METHOD BLANK: 2306866      Matrix: Water

Associated Lab Samples: 40235054001, 40235054003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	<8.3	25.0	10/25/21 14:08	
Lead, Dissolved	ug/L	<5.9	20.0	10/25/21 14:08	

LABORATORY CONTROL SAMPLE: 2306867

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	250	248	99	80-120	
Lead, Dissolved	ug/L	250	260	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2306868      2306869

Parameter	Units	40235634001		2306869		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Arsenic, Dissolved	ug/L	<8.3	250	250	250	247	98	97	75-125	1	20
Lead, Dissolved	ug/L	<5.9	250	250	260	251	102	99	75-125	3	20

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### QUALITY CONTROL DATA

Project: LUDINGTON ST  
Pace Project No.: 40235054

QC Batch: 398518 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV  
Laboratory: Pace Analytical Services - Green Bay  
Associated Lab Samples: 40235054001, 40235054003, 40235054004

METHOD BLANK: 2300505 Matrix: Water  
Associated Lab Samples: 40235054001, 40235054003, 40235054004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.36	1.0	10/14/21 17:40	
1,1,1-Trichloroethane	ug/L	<0.30	1.0	10/14/21 17:40	
1,1,2,2-Tetrachloroethane	ug/L	<0.38	1.0	10/14/21 17:40	
1,1,2-Trichloroethane	ug/L	<0.34	5.0	10/14/21 17:40	
1,1-Dichloroethane	ug/L	<0.30	1.0	10/14/21 17:40	
1,1-Dichloroethene	ug/L	<0.58	1.0	10/14/21 17:40	
1,1-Dichloropropene	ug/L	<0.41	1.0	10/14/21 17:40	
1,2,3-Trichlorobenzene	ug/L	<1.0	5.0	10/14/21 17:40	
1,2,3-Trichloropropane	ug/L	<0.56	5.0	10/14/21 17:40	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	10/14/21 17:40	
1,2,4-Trimethylbenzene	ug/L	<0.45	1.0	10/14/21 17:40	
1,2-Dibromo-3-chloropropane	ug/L	<2.4	5.0	10/14/21 17:40	
1,2-Dibromoethane (EDB)	ug/L	<0.31	1.0	10/14/21 17:40	
1,2-Dichlorobenzene	ug/L	<0.33	1.0	10/14/21 17:40	
1,2-Dichloroethane	ug/L	<0.29	1.0	10/14/21 17:40	
1,2-Dichloropropane	ug/L	<0.45	1.0	10/14/21 17:40	
1,3,5-Trimethylbenzene	ug/L	<0.36	1.0	10/14/21 17:40	
1,3-Dichlorobenzene	ug/L	<0.35	1.0	10/14/21 17:40	
1,3-Dichloropropane	ug/L	<0.30	1.0	10/14/21 17:40	
1,4-Dichlorobenzene	ug/L	<0.89	1.0	10/14/21 17:40	
2,2-Dichloropropane	ug/L	<4.2	5.0	10/14/21 17:40	
2-Chlorotoluene	ug/L	<0.89	5.0	10/14/21 17:40	
4-Chlorotoluene	ug/L	<0.89	5.0	10/14/21 17:40	
Benzene	ug/L	<0.30	1.0	10/14/21 17:40	
Bromobenzene	ug/L	<0.36	1.0	10/14/21 17:40	
Bromochloromethane	ug/L	<0.36	5.0	10/14/21 17:40	
Bromodichloromethane	ug/L	<0.42	1.0	10/14/21 17:40	
Bromoform	ug/L	<3.8	5.0	10/14/21 17:40	
Bromomethane	ug/L	<1.2	5.0	10/14/21 17:40	
Carbon tetrachloride	ug/L	<0.37	1.0	10/14/21 17:40	
Chlorobenzene	ug/L	<0.86	1.0	10/14/21 17:40	
Chloroethane	ug/L	<1.4	5.0	10/14/21 17:40	
Chloroform	ug/L	<1.2	5.0	10/14/21 17:40	
Chloromethane	ug/L	<1.6	5.0	10/14/21 17:40	
cis-1,2-Dichloroethene	ug/L	<0.47	1.0	10/14/21 17:40	
cis-1,3-Dichloropropene	ug/L	<0.36	1.0	10/14/21 17:40	
Dibromochloromethane	ug/L	<2.6	5.0	10/14/21 17:40	
Dibromomethane	ug/L	<0.99	5.0	10/14/21 17:40	
Dichlorodifluoromethane	ug/L	<0.46	5.0	10/14/21 17:40	
Diisopropyl ether	ug/L	<1.1	5.0	10/14/21 17:40	

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### QUALITY CONTROL DATA

Project: LUDINGTON ST  
Pace Project No.: 40235054

METHOD BLANK: 2300505 Matrix: Water  
Associated Lab Samples: 40235054001, 40235054003, 40235054004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/L	<0.33	1.0	10/14/21 17:40	
Hexachloro-1,3-butadiene	ug/L	<2.7	5.0	10/14/21 17:40	
Isopropylbenzene (Cumene)	ug/L	<1.0	5.0	10/14/21 17:40	
m&p-Xylene	ug/L	<0.70	2.0	10/14/21 17:40	
Methyl-tert-butyl ether	ug/L	<1.1	5.0	10/14/21 17:40	
Methylene Chloride	ug/L	<0.32	5.0	10/14/21 17:40	
n-Butylbenzene	ug/L	<0.86	1.0	10/14/21 17:40	
n-Propylbenzene	ug/L	<0.35	1.0	10/14/21 17:40	
Naphthalene	ug/L	<1.1	5.0	10/14/21 17:40	
o-Xylene	ug/L	<0.35	1.0	10/14/21 17:40	
p-Isopropyltoluene	ug/L	<1.0	5.0	10/14/21 17:40	
sec-Butylbenzene	ug/L	<0.42	1.0	10/14/21 17:40	
Styrene	ug/L	<0.36	1.0	10/14/21 17:40	
tert-Butylbenzene	ug/L	<0.59	1.0	10/14/21 17:40	
Tetrachloroethene	ug/L	<0.41	1.0	10/14/21 17:40	
Toluene	ug/L	<0.29	1.0	10/14/21 17:40	
trans-1,2-Dichloroethene	ug/L	<0.53	1.0	10/14/21 17:40	
trans-1,3-Dichloropropene	ug/L	<3.5	5.0	10/14/21 17:40	
Trichloroethene	ug/L	<0.32	1.0	10/14/21 17:40	
Trichlorofluoromethane	ug/L	<0.42	1.0	10/14/21 17:40	
Vinyl chloride	ug/L	<0.17	1.0	10/14/21 17:40	
1,2-Dichlorobenzene-d4 (S)	%	102	70-130	10/14/21 17:40	
4-Bromofluorobenzene (S)	%	97	70-130	10/14/21 17:40	
Toluene-d8 (S)	%	102	70-130	10/14/21 17:40	

LABORATORY CONTROL SAMPLE: 2300506

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	52.9	106	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	58.8	118	66-130	
1,1,2-Trichloroethane	ug/L	50	58.4	117	70-130	
1,1-Dichloroethane	ug/L	50	60.9	122	68-132	
1,1-Dichloroethene	ug/L	50	50.8	102	85-126	
1,2,4-Trichlorobenzene	ug/L	50	50.9	102	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	47.5	95	51-126	
1,2-Dibromoethane (EDB)	ug/L	50	54.7	109	70-130	
1,2-Dichlorobenzene	ug/L	50	58.1	116	70-130	
1,2-Dichloroethane	ug/L	50	54.7	109	70-130	
1,2-Dichloropropane	ug/L	50	59.3	119	78-125	
1,3-Dichlorobenzene	ug/L	50	57.8	116	70-130	
1,4-Dichlorobenzene	ug/L	50	57.8	116	70-130	
Benzene	ug/L	50	56.1	112	70-132	
Bromodichloromethane	ug/L	50	53.3	107	70-130	
Bromoform	ug/L	50	42.5	85	65-130	

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### QUALITY CONTROL DATA

Project: LUDINGTON ST  
Pace Project No.: 40235054

LABORATORY CONTROL SAMPLE: 2300506

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/L	50	38.4	77	44-128	
Carbon tetrachloride	ug/L	50	54.1	108	70-130	
Chlorobenzene	ug/L	50	58.8	118	70-130	
Chloroethane	ug/L	50	57.2	114	73-137	
Chloroform	ug/L	50	54.9	110	80-122	
Chloromethane	ug/L	50	37.8	76	27-148	
cis-1,2-Dichloroethene	ug/L	50	52.3	105	70-130	
cis-1,3-Dichloropropene	ug/L	50	49.7	99	70-130	
Dibromochloromethane	ug/L	50	51.5	103	70-130	
Dichlorodifluoromethane	ug/L	50	22.7	45	22-151	
Ethylbenzene	ug/L	50	58.9	118	80-123	
Isopropylbenzene (Cumene)	ug/L	50	59.7	119	70-130	
m&p-Xylene	ug/L	100	116	116	70-130	
Methyl-tert-butyl ether	ug/L	50	48.1	96	66-130	
Methylene Chloride	ug/L	50	50.2	100	70-130	
o-Xylene	ug/L	50	57.8	116	70-130	
Styrene	ug/L	50	59.5	119	70-130	
Tetrachloroethene	ug/L	50	55.9	112	70-130	
Toluene	ug/L	50	57.4	115	80-121	
trans-1,2-Dichloroethene	ug/L	50	55.1	110	70-130	
trans-1,3-Dichloropropene	ug/L	50	48.4	97	58-125	
Trichloroethene	ug/L	50	54.8	110	70-130	
Trichlorofluoromethane	ug/L	50	47.2	94	84-148	
Vinyl chloride	ug/L	50	45.5	91	63-142	
1,2-Dichlorobenzene-d4 (S)	%			98	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			103	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300507 2300508

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40235044003	Result	Spike Conc.	Spike Conc.								
1,1,1-Trichloroethane	ug/L	<0.30	50	50	52.6	53.3	105	107	70-130	1	20		
1,1,2,2-Tetrachloroethane	ug/L	<0.38	50	50	57.7	57.2	115	114	66-130	1	20		
1,1,2-Trichloroethane	ug/L	<0.34	50	50	58.5	57.1	117	114	70-130	2	20		
1,1-Dichloroethane	ug/L	<0.30	50	50	60.3	60.0	121	120	68-132	1	20		
1,1-Dichloroethene	ug/L	<0.58	50	50	49.9	50.7	100	101	76-132	2	20		
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	53.0	52.5	106	105	70-130	1	20		
1,2-Dibromo-3-chloropropane	ug/L	<2.4	50	50	47.3	46.7	95	93	51-126	1	20		
1,2-Dibromoethane (EDB)	ug/L	<0.31	50	50	55.9	54.7	112	109	70-130	2	20		
1,2-Dichlorobenzene	ug/L	<0.33	50	50	58.7	57.9	117	116	70-130	1	20		
1,2-Dichloroethane	ug/L	<0.29	50	50	53.5	53.8	107	108	70-130	0	20		
1,2-Dichloropropane	ug/L	<0.45	50	50	58.7	59.3	117	119	77-125	1	20		
1,3-Dichlorobenzene	ug/L	<0.35	50	50	56.3	56.5	113	113	70-130	0	20		

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### QUALITY CONTROL DATA

Project: LUDINGTON ST

Pace Project No.: 40235054

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300507		2300508		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40235044003 Result	MS Spike Conc.	MSD Spike Conc.									
1,4-Dichlorobenzene	ug/L	<0.89	50	50	58.6	58.5	117	117	70-130	0	20		
Benzene	ug/L	<0.30	50	50	55.7	55.7	111	111	70-132	0	20		
Bromodichloromethane	ug/L	<0.42	50	50	53.4	53.6	107	107	70-130	0	20		
Bromoform	ug/L	<3.8	50	50	42.9	42.9	86	86	65-130	0	20		
Bromomethane	ug/L	<1.2	50	50	45.3	48.9	91	98	44-128	8	21		
Carbon tetrachloride	ug/L	<0.37	50	50	53.7	53.9	107	108	70-132	0	20		
Chlorobenzene	ug/L	<0.86	50	50	58.4	58.5	117	117	70-130	0	20		
Chloroethane	ug/L	<1.4	50	50	55.7	55.6	111	111	70-137	0	20		
Chloroform	ug/L	<1.2	50	50	55.4	56.3	111	113	80-122	2	20		
Chloromethane	ug/L	<1.6	50	50	36.6	36.3	73	73	17-149	1	20		
cis-1,2-Dichloroethene	ug/L	<0.47	50	50	52.9	52.4	106	105	70-130	1	20		
cis-1,3-Dichloropropene	ug/L	<0.36	50	50	50.2	49.5	100	99	70-130	1	20		
Dibromochloromethane	ug/L	<2.6	50	50	52.4	52.2	105	104	70-130	0	20		
Dichlorodifluoromethane	ug/L	<0.46	50	50	22.4	21.5	45	43	22-158	4	20		
Ethylbenzene	ug/L	<0.33	50	50	58.7	57.4	117	115	80-123	2	20		
Isopropylbenzene (Cumene)	ug/L	<1.0	50	50	59.7	59.5	119	119	70-130	0	20		
m&p-Xylene	ug/L	<0.70	100	100	116	115	116	115	70-130	0	20		
Methyl-tert-butyl ether	ug/L	<1.1	50	50	46.5	46.2	93	92	66-130	1	20		
Methylene Chloride	ug/L	<0.32	50	50	49.6	49.7	99	99	70-130	0	20		
o-Xylene	ug/L	<0.35	50	50	57.6	57.2	115	114	70-130	1	20		
Styrene	ug/L	<0.36	50	50	59.7	59.7	119	119	70-130	0	20		
Tetrachloroethene	ug/L	<0.41	50	50	56.2	55.3	112	111	70-130	2	20		
Toluene	ug/L	<0.29	50	50	57.4	56.7	115	113	80-121	1	20		
trans-1,2-Dichloroethene	ug/L	<0.53	50	50	52.1	52.9	104	106	70-134	1	20		
trans-1,3-Dichloropropene	ug/L	<3.5	50	50	49.7	49.1	99	98	58-130	1	20		
Trichloroethene	ug/L	<0.32	50	50	53.4	54.2	107	108	70-130	1	20		
Trichlorofluoromethane	ug/L	<0.42	50	50	46.2	45.6	92	91	82-151	1	20		
Vinyl chloride	ug/L	<0.17	50	50	45.3	43.8	91	88	61-143	3	20		
1,2-Dichlorobenzene-d4 (S)	%						98	96	70-130				
4-Bromofluorobenzene (S)	%						98	98	70-130				
Toluene-d8 (S)	%						103	103	70-130				

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LUDINGTON ST  
Pace Project No.: 40235054

QC Batch: 398677      Analysis Method: EPA 8270E by SIM  
QC Batch Method: EPA 3510      Analysis Description: 8270E Water PAH  
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40235054003

METHOD BLANK: 2301680      Matrix: Water  
Associated Lab Samples: 40235054003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/L	<0.018	0.050	10/18/21 08:02	
2-Methylnaphthalene	ug/L	<0.014	0.050	10/18/21 08:02	
Acenaphthene	ug/L	<0.014	0.050	10/18/21 08:02	
Acenaphthylene	ug/L	<0.013	0.050	10/18/21 08:02	
Anthracene	ug/L	<0.018	0.050	10/18/21 08:02	
Benzo(a)anthracene	ug/L	<0.014	0.050	10/18/21 08:02	
Benzo(a)pyrene	ug/L	<0.020	0.050	10/18/21 08:02	
Benzo(b)fluoranthene	ug/L	<0.020	0.050	10/18/21 08:02	
Benzo(g,h,i)perylene	ug/L	<0.023	0.050	10/18/21 08:02	
Benzo(k)fluoranthene	ug/L	<0.022	0.050	10/18/21 08:02	
Chrysene	ug/L	<0.027	0.050	10/18/21 08:02	
Dibenz(a,h)anthracene	ug/L	<0.018	0.050	10/18/21 08:02	
Fluoranthene	ug/L	<0.026	0.050	10/18/21 08:02	
Fluorene	ug/L	<0.024	0.050	10/18/21 08:02	
Indeno(1,2,3-cd)pyrene	ug/L	<0.016	0.050	10/18/21 08:02	
Naphthalene	ug/L	0.038J	0.050	10/18/21 08:02	
Phenanthrene	ug/L	<0.026	0.050	10/18/21 08:02	
Pyrene	ug/L	<0.023	0.050	10/18/21 08:02	
2-Fluorobiphenyl (S)	%	71	10-113	10/18/21 08:02	
Terphenyl-d14 (S)	%	64	28-124	10/18/21 08:02	

LABORATORY CONTROL SAMPLE: 2301681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/L	2	1.6	81	71-120	
2-Methylnaphthalene	ug/L	2	1.6	80	68-120	
Acenaphthene	ug/L	2	1.7	83	71-120	
Acenaphthylene	ug/L	2	1.7	87	68-120	
Anthracene	ug/L	2	1.5	73	51-99	
Benzo(a)anthracene	ug/L	2	1.4	71	52-92	
Benzo(a)pyrene	ug/L	2	1.8	88	61-105	
Benzo(b)fluoranthene	ug/L	2	1.5	76	57-102	
Benzo(g,h,i)perylene	ug/L	2	1.7	83	62-120	
Benzo(k)fluoranthene	ug/L	2	2.2	108	70-122	
Chrysene	ug/L	2	2.0	100	71-122	
Dibenz(a,h)anthracene	ug/L	2	1.4	72	41-101	
Fluoranthene	ug/L	2	1.7	84	67-116	
Fluorene	ug/L	2	1.7	84	71-120	
Indeno(1,2,3-cd)pyrene	ug/L	2	1.5	76	59-120	

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### QUALITY CONTROL DATA

Project: LUDINGTON ST  
Pace Project No.: 40235054

LABORATORY CONTROL SAMPLE: 2301681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	2	1.7	83	71-120	
Phenanthrene	ug/L	2	1.6	78	60-102	
Pyrene	ug/L	2	1.7	83	72-120	
2-Fluorobiphenyl (S)	%			74	10-113	
Terphenyl-d14 (S)	%			74	28-124	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2301682 2301683

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40235060008 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1-Methylnaphthalene	ug/L	<0.018	1.9	2	1.5	1.7	79	82	71-120	9	20	
2-Methylnaphthalene	ug/L	<0.014	1.9	2	1.5	1.6	77	80	68-120	8	20	
Acenaphthene	ug/L	<0.014	1.9	2	1.7	1.9	87	91	71-120	10	20	
Acenaphthylene	ug/L	<0.013	1.9	2	1.6	1.8	82	91	68-120	15	20	
Anthracene	ug/L	<0.019	1.9	2	1.5	1.6	77	80	51-99	8	20	
Benzo(a)anthracene	ug/L	<0.014	1.9	2	1.4	1.6	71	78	52-92	14	20	
Benzo(a)pyrene	ug/L	<0.020	1.9	2	1.7	2.0	87	97	61-105	16	20	
Benzo(b)fluoranthene	ug/L	<0.020	1.9	2	1.4	1.6	72	80	57-102	15	20	
Benzo(g,h,i)perylene	ug/L	<0.024	1.9	2	1.6	1.9	83	95	62-120	18	20	
Benzo(k)fluoranthene	ug/L	<0.023	1.9	2	1.9	2.2	101	110	70-122	14	20	
Chrysene	ug/L	<0.027	1.9	2	1.9	2.2	97	110	71-122	18	20	
Dibenz(a,h)anthracene	ug/L	<0.018	1.9	2	1.5	1.8	79	89	41-101	17	20	
Fluoranthene	ug/L	<0.026	1.9	2	2.0	2.3	103	111	67-116	12	20	
Fluorene	ug/L	<0.024	1.9	2	1.6	2.1	82	101	71-120	25	20	R1
Indeno(1,2,3-cd)pyrene	ug/L	<0.016	1.9	2	1.5	1.9	78	94	59-120	24	20	R1
Naphthalene	ug/L	<0.020	1.9	2	1.6	1.9	84	92	71-120	15	20	
Phenanthrene	ug/L	<0.026	1.9	2	1.6	1.8	81	89	60-102	14	20	
Pyrene	ug/L	<0.023	1.9	2	1.7	1.8	85	86	72-120	6	20	
2-Fluorobiphenyl (S)	%						73	80	10-113			
Terphenyl-d14 (S)	%						71	76	28-124			

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### QUALITY CONTROL DATA

Project: LUDINGTON ST  
Pace Project No.: 40235054

QC Batch: 398782      Analysis Method: EPA 8270E by SIM  
QC Batch Method: EPA 3510      Analysis Description: 8270E Water PAH  
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40235054004

METHOD BLANK: 2302550      Matrix: Water  
Associated Lab Samples: 40235054004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/L	<0.018	0.050	10/19/21 08:05	
2-Methylnaphthalene	ug/L	<0.014	0.050	10/19/21 08:05	
Acenaphthene	ug/L	<0.014	0.050	10/19/21 08:05	
Acenaphthylene	ug/L	<0.013	0.050	10/19/21 08:05	
Anthracene	ug/L	<0.018	0.050	10/19/21 08:05	
Benzo(a)anthracene	ug/L	<0.014	0.050	10/19/21 08:05	
Benzo(a)pyrene	ug/L	<0.020	0.050	10/19/21 08:05	
Benzo(b)fluoranthene	ug/L	<0.020	0.050	10/19/21 08:05	
Benzo(g,h,i)perylene	ug/L	<0.023	0.050	10/19/21 08:05	
Benzo(k)fluoranthene	ug/L	<0.022	0.050	10/19/21 08:05	
Chrysene	ug/L	<0.027	0.050	10/19/21 08:05	
Dibenz(a,h)anthracene	ug/L	<0.018	0.050	10/19/21 08:05	
Fluoranthene	ug/L	<0.026	0.050	10/19/21 08:05	
Fluorene	ug/L	<0.024	0.050	10/19/21 08:05	
Indeno(1,2,3-cd)pyrene	ug/L	<0.016	0.050	10/19/21 08:05	
Naphthalene	ug/L	0.022J	0.050	10/19/21 08:05	
Phenanthrene	ug/L	<0.026	0.050	10/19/21 08:05	
Pyrene	ug/L	<0.023	0.050	10/19/21 08:05	
2-Fluorobiphenyl (S)	%	73	10-113	10/19/21 08:05	
Terphenyl-d14 (S)	%	77	28-124	10/19/21 08:05	

LABORATORY CONTROL SAMPLE & LCSD: 2302551

2302552

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	ug/L	2	1.6	1.6	82	80	71-120	2	20	
2-Methylnaphthalene	ug/L	2	1.6	1.6	80	79	68-120	2	20	
Acenaphthene	ug/L	2	1.7	1.7	85	84	71-120	1	20	
Acenaphthylene	ug/L	2	1.7	1.7	84	87	68-120	3	20	
Anthracene	ug/L	2	1.6	1.7	79	83	51-99	5	20	
Benzo(a)anthracene	ug/L	2	1.6	1.7	81	83	52-92	2	20	
Benzo(a)pyrene	ug/L	2	1.7	1.8	85	90	61-105	6	20	
Benzo(b)fluoranthene	ug/L	2	1.6	1.6	81	80	57-102	1	20	
Benzo(g,h,i)perylene	ug/L	2	1.8	1.8	92	88	62-120	5	20	
Benzo(k)fluoranthene	ug/L	2	2.0	2.0	101	100	70-122	1	20	
Chrysene	ug/L	2	1.9	2.0	95	99	71-122	4	20	
Dibenz(a,h)anthracene	ug/L	2	1.8	1.8	89	90	41-101	1	20	
Fluoranthene	ug/L	2	2.0	2.0	98	100	67-116	2	20	
Fluorene	ug/L	2	1.7	1.8	87	90	71-120	3	20	
Indeno(1,2,3-cd)pyrene	ug/L	2	1.7	1.8	87	89	59-120	2	20	

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### QUALITY CONTROL DATA

Project: LUDINGTON ST  
Pace Project No.: 40235054

Parameter	Units	2302551		2302552		% Rec	LCS	LCS	% Rec	Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCS Result	LCS % Rec								
Naphthalene	ug/L	2	1.7	1.7	87	83	71-120	4	20				
Phenanthrene	ug/L	2	1.7	1.7	84	85	60-102	2	20				
Pyrene	ug/L	2	1.8	1.7	92	86	72-120	7	20				
2-Fluorobiphenyl (S)	%				75	73	10-113						
Terphenyl-d14 (S)	%				83	73	28-124						

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## QUALIFIERS

Project: LUDINGTON ST

Pace Project No.: 40235054

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### BATCH QUALIFIERS

Batch: 398829

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

R1 RPD value was outside control limits.

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: LUDINGTON ST

Pace Project No.: 40235054

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40235054001	GP-1	EPA 3010A	399476	EPA 6010D	399558
40235054003	GP-8	EPA 3010A	399476	EPA 6010D	399558
40235054004	GP-10	EPA 6010D	399389		
40235054003	GP-8	EPA 3510	398677	EPA 8270E by SIM	398712
40235054004	GP-10	EPA 3510	398782	EPA 8270E by SIM	398829
40235054001	GP-1	EPA 8260	398518		
40235054003	GP-8	EPA 8260	398518		
40235054004	GP-10	EPA 8260	398518		

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(Please Print Clearly)

Company Name: Ayres  
 Branch/Location: Green Bay  
 Project Contact: Bill Honea  
 Phone: (920) 327-7815  
 Project Number:  
 Project Name: Ludington St  
 Project State: WI  
 Sampled By (Print): William Honea  
 Sampled By (Sign): William Honea  
 PO #:  
 Regulatory Program:



UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436

40235054

### CHAIN OF CUSTODY

**\*Preservation Codes**  
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?  
(YES/NO)  
 PRESERVATION  
(CODE)\*

Y/N	Y	N	N	N														
Pick Letter	D	A	B	A														
Analyses Requested	Diss. As + Pb	PFAS	VOCS	PAHS														

Quote #:  
 Mail To Contact:  
 Mail To Company:  
 Mail To Address:  
 Invoice To Contact:  
 Invoice To Company:  
 Invoice To Address: subs@Ayresassociates.com  
 Invoice To Phone:  
 CLIENT COMMENTS  
 LAB COMMENTS (Lab Use Only)  
 Profile #

**Data Package Options** (billable)  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 Sl = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	Y/N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
		DATE	TIME																			
001	GP-1	10-13-21	9:55	GW		1	2	3														
002	GP-3	10-13-21	11:25	GW			2															
	<del>GP-4</del>																					
003	GP-8	10-13-21	13:30	GW		1	2	3	2													
004	GP-10	10-13-21	15:05	GW		1	2	3	1													

No Sample

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)  
 Date Needed: \_\_\_\_\_

Transmit Prelim Rush Results by (complete what you want):

Relinquished By: <u>William Honea</u> Date/Time: <u>10/31/21 1640</u>	Received By: <u>William Honea</u> Date/Time: <u>10/31/21 1640</u>	PACE Project No. <u>40235054</u> Receipt Temp = <u>4</u> °C Sample Receipt pH <u>OK</u> / Adjusted Cooler Custody Seal Present / Not Present <u>Present</u> Intact / Not Intact <u>Intact</u>
Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	

Samples on HOLD are subject to special pricing and release of liability







Document Name:  
**Sample Condition Upon Receipt (SCUR)**  
 Document No.:  
**ENV-FRM-GBAY-0014-Rev.00**

Document Revised: 26Mar2020  
 Author:  
 Pace Green Bay Quality Office

**Sample Condition Upon Receipt Form (SCUR)**

Project #:

Client Name: Agnes

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Waltco  
 Client  Pace Other: \_\_\_\_\_

Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR-110 Type of Ice:  Wet  Blue  Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 4 / Corr: 4

Temp Blank Present:  yes  no

Biological Tissue is Frozen:  yes  no

Temp should be above freezing to 6°C.

Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

**WO#: 40235054**



40235054

Person examining contents:

Date: 10/13/24 / Initials: [Signature]

Labeled By Initials: [Signature]

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>proj #, mail</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3. <u>09/10/13/24</u>
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>002 ID GP-4</u>
-Includes date/time/ID/Analysis Matrix: <u>W</u>		<u>09/10/13/24</u>
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

**Client Notification/ Resolution:**

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

**Report Prepared for:**

Client Services  
PACE Wisconsin  
1241 Bellevue Street  
Green Bay WI 54302

**REPORT OF  
LABORATORY  
ANALYSIS  
FOR PFAAs**

**Report Information:**

**Pace Project #: 10583478**  
**Sample Receipt Date: 10/15/2021**  
**Client Project #: 40235054 AYRES & ASSOCIA**  
**Client Sub PO #: N/A**  
**State Cert #: 999407970**

**Invoicing & Reporting Options:**

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Ashley Williams, your Pace Project Manager.

**This report has been reviewed by:**



November 12, 2021

Ashley Williams, Project Manager  
(612) 346-8158  
(612) 607-6444 (fax)  
ashley.williams@pacelabs.com



**Report of Laboratory Analysis**

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The results relate only to the samples included in this report.

**Report Prepared Date:**

November 8, 2021

## **DISCUSSION**

This report presents the results from the analyses performed on four samples submitted by a representative of Pace Wisconsin. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR Guidance for PFAS. Reporting limits were set to MDL.

Laboratory method blanks were prepared and analyzed with each sample batch as part of our routine quality control procedures. With the exception of PFOS in BLANK-93940, the results show the blanks were free of the target perfluorinated compounds at the reporting limits. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged B in the results tables and may be, at least partially, attributed to the background.

Laboratory spike samples were also prepared with each sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. These spikes indicate that extraction performed as expected. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from that analysis will be provided upon request.

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2\_PFDA, and 13C2\_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Elevated extracted internal standard (EIS) recoveries (R Flag) were present in BLANK-94205 and LCS-94206, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Values were flagged "I" where incorrect isotope ratios were obtained. Results below the calibration range were flagged "J".



## Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Missouri	10100
Alabama	40770	Montana	CERT0092
Alaska-DW	MN00064	Nebraska	NE-OS-18-06
Alaska-UST	17-009	Nevada	MN00064
Arizona	AZ0014	New Hampshire	2081
Arkansas - WW	88-0680	New Jersey	MN002
Arkansas-DW	MN00064	New York	11647
California	2929	North Carolina-	27700
Colorado	MN00064	North Carolina-	530
Connecticut	PH-0256	North Dakota	R-036
Florida	E87605	Ohio-DW	41244
Georgia	959	Ohio-VAP (170	CL101
Hawaii	MN00064	Ohio-VAP (180	CL110
Idaho	MN00064	Oklahoma	9507
Illinois	200011	Oregon- rimary	MN300001
Indiana	C-MN-01	Oregon-Second	MN200001
Iowa	368	Pennsylvania	68-00563
Kansas	E-10167	Puerto Rico	MN00064
Kentucky-DW	90062	South Carolina	74003
Kentucky-WW	90062	Tennessee	TN02818
Louisiana-DEQ	AI-84596	Texas	T104704192
Louisiana-DW	MN00064	Utah	MN00064
Maine	MN00064	Vermont	VT-027053137
Maryland	322	Virginia	460163
Michigan	9909	Washington	C486
Minnesota	027-053-137	West Virginia-D	382
Minnesota-Ag	via MN 027-053	West Virginia-D	9952C
Minnesota-Petr	1240	Wisconsin	999407970
Mississippi	MN00064	Wyoming-UST	via A2LA 2926.


## REPORT OF LABORATORY ANALYSIS

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# Appendix A

## Sample Management



	Document Name: <b>Sample Condition Upon Receipt (SCUR) - MN</b>	Document Revised: 14Apr2021 <b>Page 1 of 1</b>
	Document No.: <b>ENV-FRM-MIN4-0150 Rev.02</b>	Pace Analytical Services - <b>Minneapolis</b>

**Sample Condition Upon Receipt**

Client Name: Pace Green Bay

Project #:

**WO# : 10583478**  
 PM: AW1 Due Date: 11/03/21  
 CLIENT: PASI-WI

Courier:  Fed Ex  UPS  USPS  Client  
 Pace  SpeedDee  Commercial

Tracking Number: \_\_\_\_\_ See Exceptions   
 ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present?  Yes  No Seals Intact?  Yes  No Biological Tissue Frozen?  Yes  No  N/A

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_ Temp Blank?  Yes  No

Thermometer:  T1(0461)  T2(1336)  T3(0459)  OS418-LS Type of Ice:  Wet  Blue  None  Dry  Melted  
 T4(0254)  T5(0489)  160285052

Did Samples Originate in West Virginia? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Were All Container Temps Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: <u>1.9</u> °C	Average Corrected Temp (no temp blank only): _____ °C
Correction Factor: <u>None</u> Cooler Temp Corrected w/temp blank: <u>1.9</u> °C	<input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142 <input type="checkbox"/> 1 Container

USDA Regulated Soil: ( N/A, water sample/Other: \_\_\_\_\_) Date/Initials of Person Examining Contents: CJS 10/19/21  
 Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No  
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No  
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: See Exception <input type="checkbox"/> ENV-FRM-MIN4-0142
Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. <input type="checkbox"/> Yes <input type="checkbox"/> No See Exception <input type="checkbox"/> Chlorine? <input type="checkbox"/> No pH Paper Lot# ENV-FRM-MIN4-0142 Res. Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. See Exception <input type="checkbox"/> ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): _____

**CLIENT NOTIFICATION/RESOLUTION**

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/Resolution: \_\_\_\_\_ Field Data Required?  Yes  No

**Project Manager Review:**

Ashley Williams

Date: 10/18/21

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: CJS 10





Client Name: PLM  
 Project # 40235054

All containers needing preservation have been checked and noted below: Yes  No  N/A

Lab Lot# of pH paper: 1023004


Lab Std #/ID of preservation (if pH adjusted):

Initial when completed: [Signature]  
 Date/Time: [Signature]

Page #	Lab #	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JG9U	JG9U	WG9U	WPFU	SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)			
001											2							3																			
002											2							3																			
003											2							3																			
004											2							3																			
005																																					
006																																					
007																																					
008																																					
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014																																					
015																																					
016																																					
017																																					
018																																					
019																																					
020																																					

Exceptions to preservation check: VOA Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: \_\_\_\_\_  
 Headspace in VOA Vials (>6mm):  Yes  No  N/A \*If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9A	40 mL clear ascorbic	JG9U	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WG9U	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG5U	100 mL amber glass unpres			VG9D	40 mL clear vial DI	ZPLC	ziploc bag
AG2S	500 mL amber glass H2SO4					GN	
BG3U	250 mL clear glass unpres						

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: <b>Sample Condition Upon Receipt (SCUR)</b>	Document Revised: 26Mar2020
	Document No.: <b>ENV-FRM-GBAY-0014-Rev.00</b>	Author: Pace Green Bay Quality Office

**Sample Condition Upon Receipt Form (SCUR)**

Project #:

Client Name: Agnes

**WO# : 40235054**

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Walco  
 Client  Pace Other: \_\_\_\_\_



Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR - 110 Type of Ice: Wet Blue Dry None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 4 / Corr: 4

Temp Blank Present:  yes  no Biological Tissue is Frozen:  yes  no

Person examining contents:  
 Date: 01/31/24 / Initials: [Signature]  
 Labeled By Initials: [Signature]

Temp should be above freezing to 6°C.  
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>proj #, mail</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3. <u>01/31/24</u>
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:	8.	
For Analysis: <input type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>002 ID GP-4</u>
-Includes date/time/ID/Analysis Matrix: <u>W</u>		<u>01/31/24</u>
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

**Client Notification/ Resolution:**  If checked, see attached form for additional comments  
 Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/ Resolution: \_\_\_\_\_

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

## Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- \* = See Discussion

### REPORT OF LABORATORY ANALYSIS

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# Appendix B

## Sample Analysis Summary





**Pace Analytical Services, LLC**  
 1700 Elm Street, Suite 200  
 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444  
 www.pacelabs.com

**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Page 1 of 5

Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	2.2 J	8.9	2.0	2.0	1	375-22-4	
PFPeA	3.5 J	8.9	2.0	2.0	1	2706-90-3	
HFPO-DA	ND	8.9	2.4	2.4	1	13252-13-6	
PFBS	4.8 J	7.9	2.1	2.1	1	375-73-5	
PFHxA	ND	8.9	2.0	2.0	1	307-24-4	
4:2 FTS	ND	8.4	2.5	2.5	1	757124-72-4	
PFPeS	ND	8.4	2.1	2.1	1	2706-91-4	
PFHpA	4.0 J	8.9	2.5	2.5	1	375-85-9	
DONA	ND	8.5	2.3	2.3	1	919005-14-4	
PFHxS	ND	8.1	2.3	2.3	1	355-46-4	
PFOA	3.2 IJ	8.9	2.6	2.6	1	335-67-1	
6:2 FTS	ND	8.5	2.9	2.9	1	27619-97-2	
PFHpS	ND	8.5	1.8	1.8	1	375-92-8	
PFNA	ND	8.9	3.3	3.3	1	375-95-1	
PFOSAm	ND	8.9	3.7	3.7	1	754-91-6	
PFOS	19	8.3	2.5	2.5	1	1763-23-1	
MeFOSA	ND	8.9	2.3	2.3	1	31506-32-8	
PFDA	3.8 J	8.9	2.5	2.5	1	335-76-2	
EtFOSAm	ND	8.9	2.7	2.7	1	4151-50-2	
8:2 FTS	ND	8.6	2.9	2.9	1	39108-34-4	
9-CI-PF3ON	ND	8.3	1.4	1.4	1	756426-58-1	
PFNS	ND	8.6	2.0	2.0	1	68259-12-1	
PFUnDA	ND	8.9	2.4	2.4	1	2058-94-8	
NMeFOSAA	ND	8.9	1.9	1.9	1	2355-31-9	
NEtFOSAA	ND	8.9	2.5	2.5	1	2991-50-6	
PFDS	ND	8.6	2.0	2.0	1	335-77-3	
PFDOA	ND	8.9	2.2	2.2	1	307-55-1	
MeFOSE	ND	8.9	1.5	1.5	1	24448-09-7	
EtFOSE	ND	8.9	2.2	2.2	1	1691-99-2	
11-CI-PF3OUdS	ND	8.4	1.9	1.9	1	763051-92-9	
PFTTrDA	ND	8.9	2.8	2.8	1	72629-94-8	
PFDoS	ND	8.7	2.1	2.1	1	79780-39-5	
PFTDA	ND	8.9	2.1	2.1	1	376-06-7	

**REPORT OF LABORATORY ANALYSIS**

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	89	91	102	50-150	
13C4_PFOA	89	100	116	50-150	
13C2_PFDA	89	93	104	50-150	
13C4_PFOS	86	90	105	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	89	92	103	25-150	
13C5_PFPeA	89	90	101	25-150	
13C3_PFBS	83	82	98	25-150	
13C2_4:2FTS	84	81	97	25-150	
13C5_PFHxA	89	94	105	25-150	
13C4_PFHpA	89	89	100	25-150	
13C3_PFHxS	85	92	109	25-150	
13C2_6:2FTS	85	91	107	25-150	
13C8_PFOA	89	92	103	25-150	
13C9_PFNA	89	90	101	25-150	
13C8_PFOS	86	79	92	25-150	
13C2_8:2FTS	86	88	103	25-150	
13C6_PFDA	89	84	94	25-150	
d3-MeFOSAA	89	65	73	25-150	
13C8_PFOA	89	68	76	25-150	
d5-EtFOSAA	89	76	85	25-150	
13C7_PFUdA	89	84	94	25-150	
13C2_PFDoA	89	73	82	25-150	
13C2_PFTeDA	89	86	97	25-150	
13C3_HFPO-DA	89	84	94	25-150	
d7-N-MeFOSE	89	59	66	10-150	
d9-N-EtFOSE	89	62	69	10-150	
d3-N-MeFOSA	89	32	35	10-150	
d5-N-EtFOSA	89	31	35	10-150	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.21	6.18	
13C4 PFOA	N/A	N/A	7.54	7.51	
13C2 PFDA	N/A	N/A	8.89	8.89	
13C4 PFOS	N/A	N/A	9.36	9.34	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.78	4.77	
13C5 PFPeA	N/A	N/A	5.56	5.53	
13C3 PFBS	N/A	N/A	6.48	6.46	
13C2 4:2FTS	N/A	N/A	5.93	5.92	
13C5 PFHxA	N/A	N/A	6.21	6.20	
13C4 PFHpA	N/A	N/A	6.87	6.86	
13C3 PFHxS	N/A	N/A	7.96	7.95	
13C2 6:2FTS	N/A	N/A	7.19	7.18	
13C8 PFOA	N/A	N/A	7.54	7.53	
13C9 PFNA	N/A	N/A	8.21	8.20	
13C8 PFOS	N/A	N/A	9.37	9.36	
13C2 8:2FTS	N/A	N/A	8.50	8.50	
13C6 PFDA	N/A	N/A	8.89	8.86	
d3-MeFOSAA	N/A	N/A	8.76	8.73	
13C8 PFOSA	N/A	N/A	11.28	11.26	
d5-EtFOSAA	N/A	N/A	9.07	9.06	
13C7 PFUdA	N/A	N/A	9.56	9.54	
13C2 PFDoA	N/A	N/A	10.24	10.23	
13C2 PFTeDA	N/A	N/A	11.54	11.53	
13C3 HFPO-DA	N/A	N/A	6.49	6.47	
d7-N-MeFOSE	N/A	N/A	13.02	12.99	
d9-N-EtFOSE	N/A	N/A	13.50	13.47	
d3-N-MeFOSA	N/A	N/A	13.22	13.20	
d5-N-EtFOSA	N/A	N/A	13.67	13.65	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.79	4.80	J
PFPeA	N/A	N/A	5.56	5.57	J
HFPO-DA	0.000	0.570	0.00	6.44	
PFBS	0.310	0.370	6.48	6.52	J
PFHxA	0.000	0.0730	6.22	6.22	
4:2 FTS	0.000	1.10	0.00	5.94	
PFPeS	0.000	0.450	7.24	7.23	
PFHpA	0.680	0.510	6.88	6.85	J
DONA	0.000	0.490	0.00	7.04	
PFHxS	0.000	0.280	0.00	7.91	
PFOA	0.000	0.320	7.54	7.47	IJ
6:2 FTS	0.890	1.40	7.18	7.18	
PFHpS	0.000	0.430	0.00	8.66	
PFNA	0.260	0.260	8.22	8.19	
PFOSAm	N/A	N/A	11.29	11.26	
PFOS	0.260	0.220	9.38	9.25	
MeFOSA	0.000	0.520	0.00	13.20	
PFDA	0.190	0.190	8.90	8.88	J
EtFOSAm	0.000	0.500	0.00	13.65	
8:2 FTS	2.20	1.40	8.50	8.49	
9-Cl-PF3ON	0.000	0.0400	0.00	9.77	
PFNS	0.230	0.250	10.04	10.03	
PFUnDA	0.000	0.150	0.00	9.58	
NMeFOSAA	0.000	0.690	0.00	8.76	
NEtFOSAA	0.000	0.500	0.00	9.08	
PFDS	0.000	0.300	0.00	10.69	
PFDOA	0.000	0.180	0.00	10.17	
MeFOSE	N/A	N/A	0.00	13.03	
EtFOSE	0.000	0.000	0.00	13.51	
11-Cl-PF3OUdS	0.000	0.0290	0.00	11.15	
PFTTrDA	0.000	0.200	0.00	10.89	
PFDoS	0.000	0.250	0.00	11.91	
PFTDA	0.000	0.150	0.00	11.47	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	21	4.8	1.1	1.1	1	375-22-4	
PFPeA	30	4.8	1.1	1.1	1	2706-90-3	
HFPO-DA	ND	4.8	1.3	1.3	1	13252-13-6	
PFBS	8.3	4.3	1.1	1.1	1	375-73-5	
PFHxA	18	4.8	1.1	1.1	1	307-24-4	
4:2 FTS	ND	4.5	1.3	1.3	1	757124-72-4	
PFPeS	ND	4.5	1.1	1.1	1	2706-91-4	
PFHpA	12	4.8	1.3	1.3	1	375-85-9	
DONA	ND	4.6	1.2	1.2	1	919005-14-4	
PFHxS	2.5 J	4.4	1.2	1.2	1	355-46-4	
PFOA	15	4.8	1.4	1.4	1	335-67-1	
6:2 FTS	ND	4.6	1.6	1.6	1	27619-97-2	
PFHpS	ND	4.6	0.99	0.99	1	375-92-8	
PFNA	3.9 J	4.8	1.8	1.8	1	375-95-1	
PFOSAm	ND	4.8	2.0	2.0	1	754-91-6	
PFOS	4.5	4.5	1.3	1.3	1	1763-23-1	
MeFOSA	ND	4.8	1.2	1.2	1	31506-32-8	
PFDA	ND	4.8	1.4	1.4	1	335-76-2	
EtFOSAm	ND	4.8	1.5	1.5	1	4151-50-2	
8:2 FTS	ND	4.6	1.6	1.6	1	39108-34-4	
9-CI-PF3ON	ND	4.5	0.73	0.73	1	756426-58-1	
PFNS	ND	4.6	1.1	1.1	1	68259-12-1	
PFUnDA	ND	4.8	1.3	1.3	1	2058-94-8	
NMeFOSAA	ND	4.8	1.0	1.0	1	2355-31-9	
NEtFOSAA	ND	4.8	1.3	1.3	1	2991-50-6	
PFDS	ND	4.6	1.1	1.1	1	335-77-3	
PFDOA	ND	4.8	1.2	1.2	1	307-55-1	
MeFOSE	ND	4.8	0.79	0.79	1	24448-09-7	
EtFOSE	ND	4.8	1.2	1.2	1	1691-99-2	
11-CI-PF3OUdS	ND	4.5	1.1	1.1	1	763051-92-9	
PFTTrDA	ND	4.8	1.5	1.5	1	72629-94-8	
PFDoS	ND	4.7	1.1	1.1	1	79780-39-5	
PFTDA	ND	4.8	1.1	1.1	1	376-06-7	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	48	44	91	50-150	
13C4_PFOA	48	42	88	50-150	
13C2_PFDA	48	48	100	50-150	
13C4_PFOS	46	46	99	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	48	45	94	50-150	
13C5_PFPeA	48	44	91	50-150	
13C3_PFBs	45	41	92	50-150	
13C2_4:2FTS	45	44	98	50-150	
13C5_PFHxA	48	44	92	50-150	
13C4_PFHpA	48	44	92	50-150	
13C3_PFHxS	46	43	95	50-150	
13C2_6:2FTS	46	49	107	50-150	
13C8_PFOA	48	44	91	50-150	
13C9_PFNA	48	45	93	50-150	
13C8_PFOS	46	44	96	50-150	
13C2_8:2FTS	46	38	82	50-150	
13C6_PFDA	48	42	88	50-150	
d3-MeFOSAA	48	38	79	50-150	
13C8_PFOsA	48	35	72	50-150	
d5-EtFOSAA	48	36	74	50-150	
13C7_PFUdA	48	40	84	50-150	
13C2_PFDoA	48	37	77	50-150	
13C2_PFTeDA	48	38	80	50-150	
13C3_HFPO-DA	48	42	87	50-150	
d7-N-MeFOSE	48	29	60	10-150	
d9-N-EtFOSE	48	32	66	10-150	
d3-N-MeFOSA	48	16	34	10-150	
d5-N-EtFOSA	48	16	34	10-150	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.11	5.11	
13C4 PFOA	N/A	N/A	6.04	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.19	7.21	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.69	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.82	5.83	
13C8 PFOA	N/A	N/A	6.04	6.05	
13C9 PFNA	N/A	N/A	6.47	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.66	6.67	
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7 PFUdA	N/A	N/A	7.32	7.34	
13C2 PFDoA	N/A	N/A	7.75	7.77	
13C2 PFTeDA	N/A	N/A	8.59	8.61	
13C3 HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.460	0.00	5.33	
PFBS	0.300	0.340	5.29	5.29	
PFHxA	0.069	0.0680	5.12	5.12	
4:2 FTS	0.000	0.560	0.00	4.90	
PFPeS	0.460	0.310	5.83	5.84	
PFHpA	0.300	0.290	5.61	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.260	0.270	6.32	6.32	J
PFOA	0.410	0.390	6.05	6.06	
6:2 FTS	0.000	0.520	5.83	5.83	
PFHpS	0.000	0.220	6.76	6.78	
PFNA	0.230	0.180	6.48	6.49	J
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.170	0.210	7.17	7.17	
MeFOSA	0.000	0.860	0.00	10.34	
PFDA	0.000	0.0720	0.00	6.92	
EtFOSAm	0.000	0.710	0.00	11.03	
8:2 FTS	0.000	0.790	0.00	6.68	
9-Cl-PF3ON	0.000	0.0230	0.00	7.53	
PFNS	0.000	0.240	0.00	7.65	
PFUnDA	0.000	0.110	0.00	7.35	
NMeFOSAA	0.000	0.530	0.00	6.86	
NEtFOSAA	0.000	0.740	0.00	7.10	
PFDS	0.000	0.220	0.00	8.07	
PFDOA	0.000	0.140	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0130	0.00	8.37	
PFTTrDA	0.000	0.150	0.00	8.20	
PFDoS	0.000	0.230	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	60	5.0	1.1	1.1	1	375-22-4	
PFPeA	150	5.0	1.1	1.1	1	2706-90-3	
HFPO-DA	ND	5.0	1.3	1.3	1	13252-13-6	
PFBS	6.0	4.4	1.2	1.2	1	375-73-5	
PFHxA	120	5.0	1.1	1.1	1	307-24-4	
4:2 FTS	ND	4.7	1.4	1.4	1	757124-72-4	
PFPeS	ND	4.7	1.2	1.2	1	2706-91-4	
PFHpA	72	5.0	1.4	1.4	1	375-85-9	
DONA	ND	4.7	1.3	1.3	1	919005-14-4	
PFHxS	6.8	4.5	1.3	1.3	1	355-46-4	
PFOA	28	5.0	1.5	1.5	1	335-67-1	
6:2 FTS	4.4 J	4.7	1.6	1.6	1	27619-97-2	
PFHpS	ND	4.7	1.0	1.0	1	375-92-8	
PFNA	3.3 J	5.0	1.8	1.8	1	375-95-1	
PFOSAm	ND	5.0	2.0	2.0	1	754-91-6	
PFOS	16	4.6	1.4	1.4	1	1763-23-1	
MeFOSA	ND	5.0	1.3	1.3	1	31506-32-8	
PFDA	1.7 J	5.0	1.4	1.4	1	335-76-2	
EtFOSAm	ND	5.0	1.5	1.5	1	4151-50-2	
8:2 FTS	ND	4.8	1.6	1.6	1	39108-34-4	
9-CI-PF3ON	ND	4.6	0.76	0.76	1	756426-58-1	
PFNS	ND	4.8	1.1	1.1	1	68259-12-1	
PFUnDA	ND	5.0	1.3	1.3	1	2058-94-8	
NMeFOSAA	ND	5.0	1.1	1.1	1	2355-31-9	
NEtFOSAA	7.5	5.0	1.4	1.4	1	2991-50-6	
PFDS	ND	4.8	1.1	1.1	1	335-77-3	
PFDOA	ND	5.0	1.2	1.2	1	307-55-1	
MeFOSE	ND	5.0	0.82	0.82	1	24448-09-7	
EtFOSE	ND	5.0	1.2	1.2	1	1691-99-2	
11-CI-PF3OUdS	ND	4.7	1.1	1.1	1	763051-92-9	
PFTTrDA	ND	5.0	1.5	1.5	1	72629-94-8	
PFDoS	ND	4.8	1.1	1.1	1	79780-39-5	
PFTDA	ND	5.0	1.2	1.2	1	376-06-7	

**REPORT OF LABORATORY ANALYSIS**

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	50	51	103	50-150	
13C4_PFOA	50	53	106	50-150	
13C2_PFDA	50	47	95	50-150	
13C4_PFOS	48	50	105	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	50	49	99	50-150	
13C5_PFPeA	50	52	105	50-150	
13C3_PFBs	46	47	103	50-150	
13C2_4:2Fts	47	46	99	50-150	
13C5_PFHxA	50	48	97	50-150	
13C4_PFHpA	50	48	97	50-150	
13C3_PFHxS	47	49	103	50-150	
13C2_6:2Fts	47	49	103	50-150	
13C8_PFOA	50	51	102	50-150	
13C9_PfNA	50	51	102	50-150	
13C8_PFOs	48	46	96	50-150	
13C2_8:2Fts	48	40	85	50-150	
13C6_PFDA	50	46	92	50-150	
d3-MeFOsAA	50	42	85	50-150	
13C8_PFOsA	50	34	67	50-150	
d5-EtFOsAA	50	47	94	50-150	
13C7_PFUdA	50	43	87	50-150	
13C2_PFDoA	50	42	84	50-150	
13C2_PFTeDA	50	41	83	50-150	
13C3_HFPO-DA	50	47	95	50-150	
d7-N-MeFOSE	50	27	55	10-150	
d9-N-EtFOSE	50	26	53	10-150	
d3-N-MeFOsA	50	19	39	10-150	
d5-N-EtFOsA	50	19	39	10-150	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

**Page 3 of 5**

Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.11	5.11	
13C4 PFOA	N/A	N/A	6.04	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.19	7.21	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.68	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.82	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.47	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.66	6.67	
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7 PFUdA	N/A	N/A	7.32	7.34	
13C2 PFDoA	N/A	N/A	7.75	7.77	
13C2 PFTeDA	N/A	N/A	8.59	8.61	
13C3 HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.460	5.32	5.33	
PFBS	0.320	0.360	5.29	5.29	
PFHxA	0.064	0.0630	5.12	5.12	
4:2 FTS	0.000	0.570	4.87	4.87	
PFPeS	0.360	0.310	5.84	5.84	
PFHpA	0.300	0.300	5.61	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.260	0.270	6.32	6.32	
PFOA	0.350	0.380	6.05	6.06	
6:2 FTS	0.610	0.500	5.83	5.83	J
PFHpS	0.000	0.230	6.76	6.78	
PFNA	0.200	0.210	6.48	6.49	J
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.190	0.210	7.20	7.17	
MeFOSA	0.000	0.860	0.00	10.34	
PFDA	0.078	0.0970	6.90	6.92	J
EtFOSAm	1.00	0.680	11.05	11.03	
8:2 FTS	0.560	0.640	6.66	6.68	
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.250	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.540	0.00	6.86	
NEtFOSAA	0.680	0.720	7.06	7.10	
PFDS	0.000	0.230	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0140	8.35	8.37	
PFTTrDA	0.000	0.150	0.00	8.20	
PFDoS	0.000	0.240	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-10	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054004	Total Amount Extracted	97.3mL
Lab File ID	A211103B_031	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	49	5.1	1.1	1.1	1	375-22-4	
PFPeA	140	5.1	1.1	1.1	1	2706-90-3	
HFPO-DA	ND	5.1	1.4	1.4	1	13252-13-6	
PFBS	6.8	4.5	1.2	1.2	1	375-73-5	
PFHxA	120	5.1	1.1	1.1	1	307-24-4	
4:2 FTS	ND	4.8	1.4	1.4	1	757124-72-4	
PFPeS	6.0	4.8	1.2	1.2	1	2706-91-4	
PFHpA	130	5.1	1.4	1.4	1	375-85-9	
DONA	ND	4.9	1.3	1.3	1	919005-14-4	
PFHxS	22	4.7	1.3	1.3	1	355-46-4	
PFOA	350	5.1	1.5	1.5	1	335-67-1	
6:2 FTS	11	4.9	1.7	1.7	1	27619-97-2	
PFHpS	1.6 J	4.9	1.1	1.1	1	375-92-8	
PFNA	ND	5.1	1.9	1.9	1	375-95-1	
PFOSAm	ND	5.1	2.1	2.1	1	754-91-6	
PFOS	31	4.8	1.4	1.4	1	1763-23-1	
MeFOSA	ND	5.1	1.3	1.3	1	31506-32-8	
PFDA	ND	5.1	1.4	1.4	1	335-76-2	
EtFOSAm	ND	5.1	1.6	1.6	1	4151-50-2	
8:2 FTS	4.7 J	4.9	1.7	1.7	1	39108-34-4	
9-CI-PF3ON	ND	4.8	0.78	0.78	1	756426-58-1	
PFNS	ND	4.9	1.1	1.1	1	68259-12-1	
PFUnDA	ND	5.1	1.4	1.4	1	2058-94-8	
NMeFOSAA	ND	5.1	1.1	1.1	1	2355-31-9	
NEtFOSAA	ND	5.1	1.4	1.4	1	2991-50-6	
PFDS	ND	5.0	1.2	1.2	1	335-77-3	
PFDOA	ND	5.1	1.2	1.2	1	307-55-1	
MeFOSE	ND	5.1	0.85	0.85	1	24448-09-7	
EtFOSE	ND	5.1	1.3	1.3	1	1691-99-2	
11-CI-PF3OUdS	ND	4.8	1.1	1.1	1	763051-92-9	
PFTTrDA	ND	5.1	1.6	1.6	1	72629-94-8	
PFDoS	ND	5.0	1.2	1.2	1	79780-39-5	
PFTDA	ND	5.1	1.2	1.2	1	376-06-7	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-10	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054004	Total Amount Extracted	97.3mL
Lab File ID	A211103B_031	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	51	54	104	50-150	
13C4_PFOA	51	53	104	50-150	
13C2_PFDA	51	48	93	50-150	
13C4_PFOS	49	48	97	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	51	51	100	50-150	
13C5_PFPeA	51	53	103	50-150	
13C3_PFBS	48	48	101	50-150	
13C2_4:2FTS	48	57	118	50-150	
13C5_PFHxA	51	53	103	50-150	
13C4_PFHpA	51	50	98	50-150	
13C3_PFHxS	49	52	107	50-150	
13C2_6:2FTS	49	53	108	50-150	
13C8_PFOA	51	53	103	50-150	
13C9_PFNA	51	53	103	50-150	
13C8_PFOS	49	48	98	50-150	
13C2_8:2FTS	49	40	80	50-150	
13C6_PFDA	51	49	96	50-150	
d3-MeFOSAA	51	42	82	50-150	
13C8_PFOA	51	34	67	50-150	
d5-EtFOSAA	51	40	78	50-150	
13C7_PFUdA	51	44	86	50-150	
13C2_PFDoA	51	37	73	50-150	
13C2_PFTeDA	51	35	69	50-150	
13C3_HFPO-DA	51	50	96	50-150	
d7-N-MeFOSE	51	23	46	10-150	
d9-N-EtFOSE	51	22	44	10-150	
d3-N-MeFOSA	51	6.6	13	10-150	
d5-N-EtFOSA	51	6.1	12	10-150	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	GP-10	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054004	Total Amount Extracted	97.3mL
Lab File ID	A211103B_031	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.20	7.21	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-10	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054004	Total Amount Extracted	97.3mL
Lab File ID	A211103B_031	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.68	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.83	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.48	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.66	6.67	
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7 PFUdA	N/A	N/A	7.32	7.34	
13C2 PFDoA	N/A	N/A	7.75	7.77	
13C2 PFTeDA	N/A	N/A	8.59	8.61	
13C3 HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-10	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054004	Total Amount Extracted	97.3mL
Lab File ID	A211103B_031	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.460	5.33	5.33	
PFBS	0.360	0.360	5.30	5.29	
PFHxA	0.068	0.0630	5.12	5.12	
4:2 FTS	0.000	0.570	4.91	4.90	
PFPeS	0.320	0.310	5.84	5.84	
PFHpA	0.300	0.300	5.61	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.250	0.270	6.32	6.32	
PFOA	0.390	0.380	6.05	6.06	
6:2 FTS	0.470	0.500	5.83	5.83	
PFHpS	0.270	0.230	6.77	6.78	J
PFNA	0.220	0.210	6.48	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.130	0.210	7.06	7.17	
MeFOSA	0.000	0.860	0.00	10.34	
PFDA	0.000	0.0970	0.00	6.92	
EtFOSAm	0.000	0.680	0.00	11.03	
8:2 FTS	0.600	0.640	6.67	6.68	J
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.250	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.540	0.00	6.86	
NEtFOSAA	0.000	0.720	0.00	7.10	
PFDS	0.000	0.230	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0140	0.00	8.37	
PFTTrDA	0.000	0.150	0.00	8.20	
PFDoS	0.000	0.240	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	ND	1.9	0.42	0.42	1	375-22-4	
PFPeA	ND	1.9	0.42	0.42	1	2706-90-3	
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6	
PFBS	ND	1.7	0.45	0.45	1	375-73-5	
PFHxA	ND	1.9	0.42	0.42	1	307-24-4	
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4	
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4	
PFHpA	ND	1.9	0.52	0.52	1	375-85-9	
DONA	ND	1.8	0.49	0.49	1	919005-14-4	
PFHxS	ND	1.7	0.48	0.48	1	355-46-4	
PFOA	ND	1.9	0.56	0.56	1	335-67-1	
6:2 FTS	ND	1.8	0.61	0.61	1	27619-97-2	
PFHpS	ND	1.8	0.39	0.39	1	375-92-8	
PFNA	ND	1.9	0.71	0.71	1	375-95-1	
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6	
PFOS	1.7 J	1.8	0.52	0.52	1	1763-23-1	
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8	
PFDA	ND	1.9	0.54	0.54	1	335-76-2	
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2	
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4	
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1	
PFNS	ND	1.8	0.43	0.43	1	68259-12-1	
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8	
NMeFOSAA	ND	1.9	0.41	0.41	1	2355-31-9	
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6	
PFDS	ND	1.8	0.43	0.43	1	335-77-3	
PFDOA	ND	1.9	0.46	0.46	1	307-55-1	
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7	
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2	
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9	
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8	
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5	
PFTDA	ND	1.9	0.45	0.45	1	376-06-7	

**REPORT OF LABORATORY ANALYSIS**

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	18	92	50-150	
13C4_PFOA	19	17	88	50-150	
13C2_PFDA	19	20	106	50-150	
13C4_PFOS	18	18	96	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	19	18	96	50-150	
13C5_PFPeA	19	18	96	50-150	
13C3_PFBs	18	17	97	50-150	
13C2_4:2FTS	18	18	101	50-150	
13C5_PFHxA	19	18	94	50-150	
13C4_PFHpA	19	17	88	50-150	
13C3_PFHxS	18	17	92	50-150	
13C2_6:2FTS	18	17	95	50-150	
13C8_PFOA	19	18	97	50-150	
13C9_PFNA	19	19	97	50-150	
13C8_PFOS	18	16	90	50-150	
13C2_8:2FTS	18	16	87	50-150	
13C6_PFDA	19	20	105	50-150	
d3-MeFOSAA	19	15	78	50-150	
13C8_PFOsA	19	16	83	50-150	
d5-EtFOSAA	19	16	83	50-150	
13C7_PFUdA	19	18	94	50-150	
13C2_PFDoA	19	17	90	50-150	
13C2_PFTeDA	19	20	105	50-150	
13C3_HFPO-DA	19	17	91	50-150	
d7-N-MeFOSE	19	14	73	20-150	
d9-N-EtFOSE	19	15	77	20-150	
d3-N-MeFOSA	19	9.4	49	20-150	
d5-N-EtFOSA	19	10.0	52	20-150	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

**Page 3 of 5**

Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.22	6.19	
13C4 PFOA	N/A	N/A	7.56	7.52	
13C2 PFDA	N/A	N/A	8.91	8.87	
13C4 PFOS	N/A	N/A	9.39	9.34	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.78	4.77	
13C5 PFPeA	N/A	N/A	5.56	5.53	
13C3 PFBS	N/A	N/A	6.49	6.45	
13C2 4:2FTS	N/A	N/A	5.94	5.91	
13C5 PFHxA	N/A	N/A	6.22	6.19	
13C4 PFHpA	N/A	N/A	6.90	6.85	
13C3 PFHxS	N/A	N/A	7.99	7.94	
13C2 6:2FTS	N/A	N/A	7.21	7.17	
13C8 PFOA	N/A	N/A	7.57	7.52	
13C9 PFNA	N/A	N/A	8.24	8.19	
13C8 PFOS	N/A	N/A	9.39	9.34	
13C2 8:2FTS	N/A	N/A	8.53	8.48	
13C6 PFDA	N/A	N/A	8.92	8.87	
d3-MeFOSAA	N/A	N/A	8.79	8.74	
13C8 PFOSA	N/A	N/A	11.30	11.24	
d5-EtFOSAA	N/A	N/A	9.10	9.05	
13C7 PFUdA	N/A	N/A	9.59	9.55	
13C2 PFDoA	N/A	N/A	10.26	10.22	
13C2 PFTeDA	N/A	N/A	11.55	11.52	
13C3 HFPO-DA	N/A	N/A	6.50	6.46	
d7-N-MeFOSE	N/A	N/A	13.02	12.97	
d9-N-EtFOSE	N/A	N/A	13.51	13.46	
d3-N-MeFOSA	N/A	N/A	13.23	13.18	
d5-N-EtFOSA	N/A	N/A	13.68	13.63	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	0.00	4.77	
PFPeA	N/A	N/A	0.00	5.54	
HFPO-DA	0.000	0.660	0.00	6.48	
PFBS	0.230	0.360	6.50	6.46	
PFHxA	0.000	0.0790	0.00	6.22	
4:2 FTS	0.000	0.950	0.00	5.91	
PFPeS	0.000	0.380	7.25	7.22	
PFHpA	0.000	0.590	0.00	6.85	
DONA	0.000	0.470	0.00	7.10	
PFHxS	0.460	0.290	7.99	7.91	
PFOA	0.000	0.300	0.00	7.53	
6:2 FTS	1.10	1.50	7.21	7.17	
PFHpS	0.000	0.460	0.00	8.66	
PFNA	0.000	0.260	0.00	8.20	
PFOSAm	N/A	N/A	11.30	11.25	
PFOS	0.280	0.220	9.40	9.25	J
MeFOSA	0.000	0.540	0.00	13.20	
PFDA	0.000	0.160	8.92	8.88	
EtFOSAm	0.000	0.480	0.00	13.65	
8:2 FTS	0.000	1.30	0.00	8.49	
9-Cl-PF3ON	0.000	0.0440	0.00	9.84	
PFNS	0.000	0.240	0.00	10.03	
PFUnDA	0.000	0.130	0.00	9.55	
NMeFOSAA	0.000	0.640	0.00	8.76	
NEtFOSAA	0.000	0.540	0.00	9.08	
PFDS	0.000	0.300	0.00	10.69	
PFDOA	0.000	0.170	0.00	10.22	
MeFOSE	N/A	N/A	0.00	13.02	
EtFOSE	0.000	0.000	0.00	13.50	
11-Cl-PF3OUdS	0.000	0.0240	0.00	11.15	
PFTTrDA	0.000	0.180	0.00	10.89	
PFDoS	0.000	0.230	0.00	11.91	
PFTDA	0.000	0.140	0.00	11.52	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKKK	Extraction Date	10/29/2021 10:08
Lab Sample ID	BLANK-94161	Total Amount Extracted	250mL
Lab File ID	A211101C_008	Ical ID	211026A03
Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	ND	2.0	0.44	0.44	1	375-22-4	
PFPeA	ND	2.0	0.44	0.44	1	2706-90-3	
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6	
PFBS	ND	1.8	0.47	0.47	1	375-73-5	
PFHxA	ND	2.0	0.44	0.44	1	307-24-4	
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4	
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4	
PFHpA	ND	2.0	0.55	0.55	1	375-85-9	
DONA	ND	1.9	0.51	0.51	1	919005-14-4	
PFHxS	ND	1.8	0.51	0.51	1	355-46-4	
PFOA	ND	2.0	0.59	0.59	1	335-67-1	
6:2 FTS	ND	1.9	0.65	0.65	1	27619-97-2	
PFHpS	ND	1.9	0.41	0.41	1	375-92-8	
PFNA	ND	2.0	0.74	0.74	1	375-95-1	
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6	
PFOS	ND	1.9	0.55	0.55	1	1763-23-1	
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8	
PFDA	ND	2.0	0.56	0.56	1	335-76-2	
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2	
8:2 FTS	ND	1.9	0.65	0.65	1	39108-34-4	
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1	
PFNS	ND	1.9	0.45	0.45	1	68259-12-1	
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8	
NMeFOSAA	ND	2.0	0.43	0.43	1	2355-31-9	
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6	
PFDS	ND	1.9	0.45	0.45	1	335-77-3	
PFDOA	ND	2.0	0.48	0.48	1	307-55-1	
MeFOSE	ND	2.0	0.33	0.33	1	24448-09-7	
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2	
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9	
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8	
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5	
PFTDA	ND	2.0	0.48	0.48	1	376-06-7	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKKK	Extraction Date	10/29/2021 10:08
Lab Sample ID	BLANK-94161	Total Amount Extracted	250mL
Lab File ID	A211101C_008	Ical ID	211026A03
Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	19	95	50-150	
13C4_PFOA	20	18	92	50-150	
13C2_PFDA	20	19	96	50-150	
13C4_PFOS	19	17	91	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	20	19	96	50-150	
13C5_PFPeA	20	20	100	50-150	
13C3_PFBs	19	18	97	50-150	
13C2_4:2Fts	19	17	93	50-150	
13C5_PFHxA	20	20	99	50-150	
13C4_PFHpA	20	19	96	50-150	
13C3_PFHxS	19	19	100	50-150	
13C2_6:2Fts	19	21	111	50-150	
13C8_PFOA	20	20	102	50-150	
13C9_PFNA	20	21	106	50-150	
13C8_PFOS	19	18	96	50-150	
13C2_8:2Fts	19	18	92	50-150	
13C6_PFDA	20	19	93	50-150	
d3-MeFOSAA	20	18	90	50-150	
13C8_PFOsA	20	15	76	50-150	
d5-EtFOSAA	20	15	75	50-150	
13C7_PFUdA	20	19	93	50-150	
13C2_PFDoA	20	16	78	50-150	
13C2_PFTeDA	20	16	82	50-150	
13C3_HFPO-DA	20	19	95	50-150	
d7-N-MeFOSE	20	13	64	10-150	
d9-N-EtFOSE	20	13	63	10-150	
d3-N-MeFOSA	20	9.7	48	10-150	
d5-N-EtFOSA	20	9.2	46	10-150	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

**Page 3 of 5**

Client Sample ID	BLKKK	Extraction Date	10/29/2021 10:08
Lab Sample ID	BLANK-94161	Total Amount Extracted	250mL
Lab File ID	A211101C_008	Ical ID	211026A03
Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.91	6.91	
13C4 PFOS	N/A	N/A	7.20	7.21	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKKK	Extraction Date	10/29/2021 10:08
Lab Sample ID	BLANK-94161	Total Amount Extracted	250mL
Lab File ID	A211101C_008	Ical ID	211026A03
Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.69	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.32	6.32	
13C2 6:2FTS	N/A	N/A	5.83	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.48	6.48	
13C8 PFOS	N/A	N/A	7.21	7.21	
13C2 8:2FTS	N/A	N/A	6.67	6.67	
13C6 PFDA	N/A	N/A	6.91	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7 PFUdA	N/A	N/A	7.33	7.34	
13C2 PFDoA	N/A	N/A	7.76	7.77	
13C2 PFTeDA	N/A	N/A	8.60	8.61	
13C3 HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKKK	Extraction Date	10/29/2021 10:08
Lab Sample ID	BLANK-94161	Total Amount Extracted	250mL
Lab File ID	A211101C_008	Ical ID	211026A03
Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	0.00	4.54	
HFPO-DA	0.000	0.460	0.00	5.33	
PFBS	0.780	0.290	5.30	5.29	
PFHxA	0.000	0.0760	5.12	5.12	
4:2 FTS	0.000	0.660	0.00	4.90	
PFPeS	0.000	0.330	0.00	5.84	
PFHpA	0.000	0.300	0.00	5.61	
DONA	0.000	0.540	0.00	5.78	
PFHxS	0.000	0.250	6.32	6.32	
PFOA	0.000	0.370	0.00	6.06	
6:2 FTS	0.000	0.600	0.00	5.83	
PFHpS	0.000	0.230	0.00	6.78	
PFNA	0.000	0.170	0.00	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.340	0.240	7.22	7.17	
MeFOSA	0.000	0.860	0.00	10.34	
PFDA	0.000	0.0940	0.00	6.92	
EtFOSAm	0.000	0.680	0.00	11.03	
8:2 FTS	0.000	0.630	0.00	6.68	
9-Cl-PF3ON	0.000	0.0220	0.00	7.53	
PFNS	0.000	0.240	0.00	7.65	
PFUnDA	0.000	0.0800	0.00	7.35	
NMeFOSAA	0.000	0.450	0.00	6.86	
NEtFOSAA	0.000	0.630	7.14	7.10	
PFDS	0.000	0.250	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0100	0.00	8.37	
PFTTrDA	0.000	0.140	0.00	8.20	
PFDoS	0.000	0.220	0.00	8.87	
PFTDA	0.000	0.170	0.00	8.61	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKLA	Extraction Date	11/02/2021 11:46
Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
Lab File ID	A211104A_019	Ical ID	211103A03
Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	ND	1.9	0.42	0.42	1	375-22-4	
PFPeA	ND	1.9	0.42	0.42	1	2706-90-3	
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6	
PFBS	ND	1.7	0.45	0.45	1	375-73-5	
PFHxA	ND	1.9	0.42	0.42	1	307-24-4	
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4	
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4	
PFHpA	ND	1.9	0.52	0.52	1	375-85-9	
DONA	ND	1.8	0.49	0.49	1	919005-14-4	
PFHxS	ND	1.7	0.48	0.48	1	355-46-4	
PFOA	ND	1.9	0.56	0.56	1	335-67-1	
6:2 FTS	ND	1.8	0.62	0.62	1	27619-97-2	
PFHpS	ND	1.8	0.39	0.39	1	375-92-8	
PFNA	ND	1.9	0.71	0.71	1	375-95-1	
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6	
PFOS	ND	1.8	0.52	0.52	1	1763-23-1	
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8	
PFDA	ND	1.9	0.54	0.54	1	335-76-2	
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2	
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4	
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1	
PFNS	ND	1.8	0.43	0.43	1	68259-12-1	
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8	
NMeFOSAA	ND	1.9	0.41	0.41	1	2355-31-9	
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6	
PFDS	ND	1.8	0.43	0.43	1	335-77-3	
PFDOA	ND	1.9	0.46	0.46	1	307-55-1	
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7	
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2	
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9	
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8	
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5	
PFTDA	ND	1.9	0.45	0.45	1	376-06-7	

**REPORT OF LABORATORY ANALYSIS**

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKLA	Extraction Date	11/02/2021 11:46
Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
Lab File ID	A211104A_019	Ical ID	211103A03
Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	20	106	50-150	
13C4_PFOA	19	26	134	50-150	
13C2_PFDA	19	26	135	50-150	
13C4_PFOS	18	14	74	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	19	19	97	50-150	
13C5_PFPeA	19	20	104	50-150	
13C3_PFBs	18	20	114	50-150	
13C2_4:2Fts	18	23	127	50-150	
13C5_PFHxA	19	20	107	50-150	
13C4_PFHpA	19	22	113	50-150	
13C3_PFHxS	18	17	95	50-150	
13C2_6:2Fts	18	28	154	50-150	R
13C8_PFOA	19	24	124	50-150	
13C9_PFNA	19	24	127	50-150	
13C8_PFOS	18	11	62	50-150	
13C2_8:2Fts	18	31	170	50-150	R
13C6_PFDA	19	23	122	50-150	
d3-MeFOSAA	19	27	142	50-150	
13C8_PFOA	19	17	91	50-150	
d5-EtFOSAA	19	26	136	50-150	
13C7_PFUdA	19	22	113	50-150	
13C2_PFDoA	19	24	125	50-150	
13C2_PFTeDA	19	26	137	50-150	
13C3_HFPO-DA	19	20	105	50-150	
d7-N-MeFOSE	19	16	85	20-150	
d9-N-EtFOSE	19	16	85	20-150	
d3-N-MeFOSA	19	11	56	20-150	
d5-N-EtFOSA	19	11	56	20-150	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	BLKLA	Extraction Date	11/02/2021 11:46
Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
Lab File ID	A211104A_019	Ical ID	211103A03
Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.20	7.21	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKLA	Extraction Date	11/02/2021 11:46
Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
Lab File ID	A211104A_019	Ical ID	211103A03
Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.69	3.69	
13C5 PFPeA	N/A	N/A	4.55	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.61	5.61	
13C3 PFHxS	N/A	N/A	6.32	6.32	
13C2 6:2FTS	N/A	N/A	5.83	5.83	R
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.48	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.67	6.67	R
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7 PFUdA	N/A	N/A	7.33	7.34	
13C2 PFDoA	N/A	N/A	7.76	7.77	
13C2 PFTeDA	N/A	N/A	8.59	8.61	
13C3 HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKLA	Extraction Date	11/02/2021 11:46
Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
Lab File ID	A211104A_019	Ical ID	211103A03
Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.430	0.00	5.33	
PFBS	0.420	0.340	5.30	5.29	
PFHxA	0.000	0.0670	5.13	5.12	
4:2 FTS	0.000	0.580	5.10	4.90	
PFPeS	0.000	0.310	5.84	5.84	
PFHpA	0.000	0.290	5.62	5.61	
DONA	0.000	0.490	0.00	5.78	
PFHxS	0.370	0.240	6.32	6.32	
PFOA	0.150	0.370	6.05	6.06	
6:2 FTS	0.000	0.450	5.83	5.83	
PFHpS	0.000	0.210	0.00	6.78	
PFNA	0.000	0.200	6.48	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.360	0.230	7.21	7.17	
MeFOSA	0.000	0.910	0.00	10.34	
PFDA	0.000	0.0910	0.00	6.92	
EtFOSAm	0.000	0.680	0.00	11.03	
8:2 FTS	0.000	0.510	0.00	6.68	
9-Cl-PF3ON	0.000	0.0240	0.00	7.53	
PFNS	0.000	0.230	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.560	0.00	6.86	
NEtFOSAA	0.000	0.680	0.00	7.10	
PFDS	0.000	0.260	0.00	8.07	
PFDOA	0.000	0.140	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0130	0.00	8.37	
PFTTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.210	0.00	8.87	
PFTDA	0.000	0.130	0.00	8.61	

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID	LCS-93941	Instrument ID	10LCMS01
Run File Name	Q211027B_006	Column ID	118AB10133
Analyzed	10/27/2021 14:16	Ical ID	211027A01
Injected By	NH	Level	L

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	16	83	50-150	
13C4_PFOA	19	15	81	50-150	
13C2_PFDA	19	16	83	50-150	
13C4_PFOS	18	15	80	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	19	16	82	50-150	
13C5_PFPeA	19	15	82	50-150	
13C3_PFBFS	18	15	86	50-150	
13C2_4:2FTS	18	14	81	50-150	
13C5_PFHxA	19	15	80	50-150	
13C4_PFHpA	19	15	77	50-150	
13C3_PFHxS	18	15	85	50-150	
13C2_6:2FTS	18	16	87	50-150	
13C8_PFOA	19	15	77	50-150	
13C9_PFNA	19	15	80	50-150	
13C8_PFOS	18	14	78	50-150	
13C2_8:2FTS	18	14	76	50-150	
13C6_PFDA	19	15	82	50-150	
d3-MeFOSAA	19	13	71	50-150	
13C8_PFOA	19	13	67	50-150	
d5-EtFOSAA	19	15	78	50-150	
13C7_PFUdA	19	14	72	50-150	
13C2_PFDaA	19	14	73	50-150	
13C2_PFTeDA	19	15	79	50-150	
13C3_HFPO-DA	19	15	81	50-150	
d7-N-MeFOSE	19	12	64	20-150	
d9-N-EtFOSE	19	12	64	20-150	
d3-N-MeFOSA	19	9.4	50	20-150	
d5-N-EtFOSA	19	9.9	52	20-150	

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

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Lab Sample ID LCS-93941  
 Run File Name Q211027B\_006  
 Analyzed 10/27/2021 14:16  
 Injected By NH

Instrument ID 10LCMS01  
 Column ID 118AB10133  
 Ical ID 211027A01  
 Level L

**Native Analytes**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	3.8	3.8	101	50-150		375-22-4
PFPeA	3.8	4.0	106	50-150		2706-90-3
HFPO-DA	3.8	3.3	87	50-150		13252-13-6
PFBS	3.3	3.3	98	50-150		375-73-5
PFHxA	3.8	4.2	110	50-150		307-24-4
4:2 FTS	3.5	3.0	86	50-150		757124-72-4
PFPeS	3.5	3.5	100	50-150		2706-91-4
PFHpA	3.8	4.0	107	50-150		375-85-9
DONA	3.6	3.4	97	50-150		919005-14-4
PFHxS	3.4	3.7	107	50-150		355-46-4
PFOA	3.8	4.2	112	50-150		335-67-1
6:2 FTS	3.6	3.2	88	50-150		27619-97-2
PFHpS	3.6	3.7	102	50-150		375-92-8
PFNA	3.8	3.5	93	50-150		375-95-1
PFOSAm	3.8	4.2	112	50-150		754-91-6
PFOS	3.5	4.3	124	50-150	B	1763-23-1
MeFOSA	3.8	3.5	93	50-150		31506-32-8
PFDA	3.8	3.6	96	50-150		335-76-2
EtFOSAm	3.8	3.5	93	50-150		4151-50-2
8:2 FTS	3.6	3.1	85	50-150		39108-34-4
9-CI-PF3ON	3.5	3.5	99	50-150		756426-58-1
PFNS	3.6	3.5	96	50-150		68259-12-1
PFUnDA	3.8	3.8	101	50-150		2058-94-8
NMeFOSAA	3.8	3.4	90	50-150		2355-31-9
NEtFOSAA	3.8	3.0	78	50-150		2991-50-6
PFDS	3.6	3.3	91	50-150		335-77-3
PFDOA	3.8	3.9	103	50-150		307-55-1
MeFOSE	3.8	3.9	103	50-150		24448-09-7
EtFOSE	3.8	3.5	93	50-150		1691-99-2
11-CI-PF3OUdS	3.6	3.1	88	50-150		763051-92-9
PFTrDA	3.8	3.5	92	50-150		72629-94-8
PFDoS	3.7	3.7	102	50-150		79780-39-5
PFTDA	3.8	3.0	79	50-150		376-06-7

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID LCS-93941  
 Run File Name Q211027B\_006  
 Analyzed 10/27/2021 14:16  
 Injected By NH

Instrument ID 10LCMS01  
 Column ID 118AB10133  
 Ical ID 211027A01  
 Level L

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.19	6.18	
13C4 PFOA	N/A	N/A	7.52	7.51	
13C2 PFDA	N/A	N/A	8.88	8.89	
13C4 PFOS	N/A	N/A	9.35	9.34	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.78	4.77	
13C5 PFPeA	N/A	N/A	5.54	5.53	
13C3 PFBS	N/A	N/A	6.46	6.46	
13C2 4:2FTS	N/A	N/A	5.91	5.92	
13C5 PFHxA	N/A	N/A	6.20	6.20	
13C4 PFHpA	N/A	N/A	6.86	6.86	
13C3 PFHxS	N/A	N/A	7.95	7.95	
13C2 6:2FTS	N/A	N/A	7.17	7.18	
13C8 PFOA	N/A	N/A	7.52	7.53	
13C9 PFNA	N/A	N/A	8.20	8.20	
13C8 PFOS	N/A	N/A	9.35	9.36	
13C2 8:2FTS	N/A	N/A	8.49	8.50	
13C6 PFDA	N/A	N/A	8.88	8.86	
d3-MeFOSAA	N/A	N/A	8.75	8.73	
13C8 PFOSA	N/A	N/A	11.26	11.26	
d5-EtFOSAA	N/A	N/A	9.06	9.06	
13C7 PFUdA	N/A	N/A	9.55	9.54	
13C2 PFDoA	N/A	N/A	10.23	10.23	
13C2 PFTeDA	N/A	N/A	11.53	11.53	
13C3 HFPO-DA	N/A	N/A	6.47	6.47	
d7-N-MeFOSE	N/A	N/A	12.99	12.99	
d9-N-EtFOSE	N/A	N/A	13.47	13.47	
d3-N-MeFOSA	N/A	N/A	13.19	13.20	
d5-N-EtFOSA	N/A	N/A	13.64	13.65	

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID LCS-93941  
 Run File Name Q211027B\_006  
 Analyzed 10/27/2021 14:16  
 Injected By NH

Instrument ID 10LCMS01  
 Column ID 118AB10133  
 Ical ID 211027A01  
 Level L

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.78	4.80	
PFPeA	N/A	N/A	5.54	5.57	
HFPO-DA	0.74	0.62	6.48	6.44	
PFBS	0.35	0.34	6.46	6.52	
PFHxA	0.06	0.09	6.20	6.22	
4:2 FTS	1.00	0.90	5.92	5.94	
PFPeS	0.43	0.45	7.23	7.23	
PFHpA	0.52	0.56	6.87	6.85	
DONA	0.52	0.49	7.11	7.04	
PFHxS	0.25	0.31	7.96	7.91	
PFOA	0.28	0.27	7.53	7.47	
6:2 FTS	1.30	1.10	7.18	7.18	
PFHpS	0.37	0.49	8.67	8.66	
PFNA	0.27	0.23	8.21	8.19	
PFOSAm	N/A	N/A	11.27	11.26	
PFOS	0.26	0.25	9.37	9.25	B
MeFOSA	0.48	0.46	13.22	13.20	
PFDA	0.16	0.16	8.89	8.88	
EtFOSAm	0.48	0.45	13.66	13.65	
8:2 FTS	1.60	1.50	8.50	8.49	
9-CI-PF3ON	0.03	0.03	9.85	9.77	
PFNS	0.24	0.24	10.04	10.03	
PFUnDA	0.15	0.15	9.56	9.58	
NMeFOSAA	0.55	0.86	8.77	8.76	
NEtFOSAA	0.52	0.59	9.08	9.08	
PFDS	0.29	0.29	10.70	10.69	
PFDOA	0.20	0.17	10.23	10.17	
MeFOSE	N/A	N/A	13.03	13.03	
EtFOSE	0.00	0.00	13.52	13.51	
11-CI-PF3OUdS	0.02	0.02	11.17	11.15	
PFTrDA	0.18	0.20	10.90	10.89	
PFDoS	0.24	0.23	11.92	11.91	
PFTDA	0.16	0.15	11.54	11.47	

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID	LCS-94162	Instrument ID	10LCMS03
Run File Name	A211101C_009	Column ID	118AB10133
Analyzed	11/01/2021 19:50	Ical ID	211026A03
Injected By	NH	Level	L

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	19	97	50-150	
13C4_PFOA	19	19	96	50-150	
13C2_PFDA	19	18	94	50-150	
13C4_PFOS	18	17	94	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	19	18	95	50-150	
13C5_PFPeA	19	18	96	50-150	
13C3_PFBFS	18	17	97	50-150	
13C2_4:2FTS	18	16	92	50-150	
13C5_PFHxA	19	18	94	50-150	
13C4_PFHpA	19	18	92	50-150	
13C3_PFHxS	18	18	97	50-150	
13C2_6:2FTS	18	18	97	50-150	
13C8_PFOA	19	18	95	50-150	
13C9_PFNA	19	19	96	50-150	
13C8_PFOS	18	17	92	50-150	
13C2_8:2FTS	18	19	101	50-150	
13C6_PFDA	19	17	89	50-150	
d3-MeFOSAA	19	15	80	50-150	
13C8_PFOA	19	15	76	50-150	
d5-EtFOSAA	19	14	74	50-150	
13C7_PFUdA	19	17	88	50-150	
13C2_PFDaA	19	16	85	50-150	
13C2_PFTeDA	19	15	79	50-150	
13C3_HFPO-DA	19	18	94	50-150	
d7-N-MeFOSE	19	14	74	20-150	
d9-N-EtFOSE	19	17	90	20-150	
d3-N-MeFOSA	19	10	53	20-150	
d5-N-EtFOSA	19	10	54	20-150	

**REPORT OF LABORATORY ANALYSIS**

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**Pace Analytical Services, LLC**  
 1700 Elm Street, Suite 200  
 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444  
 www.pacelabs.com

**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Page 2 of 4

Lab Sample ID LCS-94162  
 Run File Name A211101C\_009  
 Analyzed 11/01/2021 19:50  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level L

**Native Analytes**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	3.9	4.0	103	50-150		375-22-4
PFPeA	3.9	3.9	101	50-150		2706-90-3
HFPO-DA	3.9	3.9	100	50-150		13252-13-6
PFBS	3.4	3.7	108	50-150		375-73-5
PFHxA	3.9	4.3	112	50-150		307-24-4
4:2 FTS	3.6	3.9	109	50-150		757124-72-4
PFPeS	3.6	3.8	105	50-150		2706-91-4
PFHpA	3.9	4.3	110	50-150		375-85-9
DONA	3.6	3.9	107	50-150		919005-14-4
PFHxS	3.5	3.7	105	50-150		355-46-4
PFOA	3.9	3.9	102	50-150		335-67-1
6:2 FTS	3.7	4.3	117	50-150		27619-97-2
PFHpS	3.7	3.3	91	50-150		375-92-8
PFNA	3.9	3.8	99	50-150		375-95-1
PFOSAm	3.9	3.8	100	50-150		754-91-6
PFOS	3.6	3.4	94	50-150		1763-23-1
MeFOSA	3.9	3.8	98	50-150		31506-32-8
PFDA	3.9	3.6	93	50-150		335-76-2
EtFOSAm	3.9	3.8	98	50-150		4151-50-2
8:2 FTS	3.7	4.1	110	50-150		39108-34-4
9-CI-PF3ON	3.6	3.5	98	50-150		756426-58-1
PFNS	3.7	3.6	98	50-150		68259-12-1
PFUnDA	3.9	4.2	109	50-150		2058-94-8
NMeFOSAA	3.9	3.7	96	50-150		2355-31-9
NEtFOSAA	3.9	4.5	117	50-150		2991-50-6
PFDS	3.7	3.5	95	50-150		335-77-3
PFDOA	3.9	4.0	105	50-150		307-55-1
MeFOSE	3.9	4.0	104	50-150		24448-09-7
EtFOSE	3.9	3.0	79	50-150		1691-99-2
11-CI-PF3OUdS	3.6	3.3	90	50-150	I	763051-92-9
PFTrDA	3.9	4.1	107	50-150		72629-94-8
PFDoS	3.7	3.1	83	50-150		79780-39-5
PFTDA	3.9	3.9	100	50-150		376-06-7

**REPORT OF LABORATORY ANALYSIS**

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID LCS-94162  
 Run File Name A211101C\_009  
 Analyzed 11/01/2021 19:50  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level L

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFOA	N/A	N/A	6.06	6.05	
13C2 PFDA	N/A	N/A	6.91	6.91	
13C4 PFOS	N/A	N/A	7.21	7.21	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.69	3.69	
13C5 PFPeA	N/A	N/A	4.55	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.61	5.61	
13C3 PFHxS	N/A	N/A	6.32	6.32	
13C2 6:2FTS	N/A	N/A	5.83	5.83	
13C8 PFOA	N/A	N/A	6.06	6.05	
13C9 PFNA	N/A	N/A	6.49	6.48	
13C8 PFOS	N/A	N/A	7.21	7.21	
13C2 8:2FTS	N/A	N/A	6.67	6.67	
13C6 PFDA	N/A	N/A	6.91	6.91	
d3-MeFOSAA	N/A	N/A	6.86	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7 PFUdA	N/A	N/A	7.34	7.34	
13C2 PFDoA	N/A	N/A	7.76	7.77	
13C2 PFTeDA	N/A	N/A	8.60	8.61	
13C3 HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID LCS-94162  
 Run File Name A211101C\_009  
 Analyzed 11/01/2021 19:50  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level L

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.70	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.46	0.46	5.33	5.33	
PFBS	0.32	0.29	5.30	5.29	
PFHxA	0.07	0.07	5.13	5.12	
4:2 FTS	0.53	0.66	4.92	4.90	
PFPeS	0.30	0.33	5.85	5.84	
PFHpA	0.26	0.30	5.62	5.61	
DONA	0.49	0.54	5.78	5.78	
PFHxS	0.26	0.25	6.33	6.32	
PFOA	0.44	0.37	6.06	6.06	
6:2 FTS	0.43	0.60	5.84	5.83	
PFHpS	0.23	0.23	6.78	6.78	
PFNA	0.20	0.17	6.49	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.24	0.24	7.22	7.17	
MeFOSA	0.92	0.86	10.35	10.34	
PFDA	0.09	0.09	6.92	6.92	
EtFOSAm	0.68	0.68	11.04	11.03	
8:2 FTS	0.59	0.63	6.68	6.68	
9-CI-PF3ON	0.01	0.02	7.53	7.53	
PFNS	0.24	0.24	7.65	7.65	
PFUnDA	0.12	0.08	7.34	7.35	
NMeFOSAA	0.61	0.45	6.86	6.86	
NEtFOSAA	0.61	0.63	7.06	7.10	
PFDS	0.25	0.25	8.06	8.07	
PFDOA	0.11	0.13	7.77	7.77	
MeFOSE	N/A	N/A	10.13	10.12	
EtFOSE	0.00	0.00	10.77	10.76	
11-CI-PF3OUdS	0.01	0.01	8.37	8.37	I
PFTrDA	0.13	0.14	8.19	8.20	
PFDoS	0.24	0.22	8.86	8.87	
PFTDA	0.15	0.17	8.61	8.61	

**REPORT OF LABORATORY ANALYSIS**

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID	LCS-94206	Instrument ID	10LCMS03
Run File Name	A211104A_020	Column ID	118AB10133
Analyzed	11/04/2021 14:12	Ical ID	211103A03
Injected By	NH	Level	L

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	23	115	50-150	
13C4_PFOA	20	25	125	50-150	
13C2_PFDA	20	30	150	50-150	
13C4_PFOS	19	20	106	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	20	18	93	50-150	
13C5_PFPeA	20	19	99	50-150	
13C3_PFBFS	18	20	110	50-150	
13C2_4:2FTS	18	21	113	50-150	
13C5_PFHxA	20	20	103	50-150	
13C4_PFHpA	20	21	108	50-150	
13C3_PFHxS	19	20	106	50-150	
13C2_6:2FTS	19	23	125	50-150	
13C8_PFOA	20	22	113	50-150	
13C9_PFNA	20	23	118	50-150	
13C8_PFOS	19	17	92	50-150	
13C2_8:2FTS	19	30	159	50-150	R
13C6_PFDA	20	24	122	50-150	
d3-MeFOSAA	20	22	110	50-150	
13C8_PFOA	20	14	74	50-150	
d5-EtFOSAA	20	21	107	50-150	
13C7_PFUdA	20	23	116	50-150	
13C2_PFDaA	20	20	100	50-150	
13C2_PFTeDA	20	19	97	50-150	
13C3_HFPO-DA	20	19	99	50-150	
d7-N-MeFOSE	20	15	77	20-150	
d9-N-EtFOSE	20	15	75	20-150	
d3-N-MeFOSA	20	8.4	43	20-150	
d5-N-EtFOSA	20	8.1	41	20-150	

**REPORT OF LABORATORY ANALYSIS**

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID      LCS-94206  
 Run File Name      A211104A\_020  
 Analyzed            11/04/2021 14:12  
 Injected By         NH

Instrument ID      10LCMS03  
 Column ID          118AB10133  
 Ical ID              211103A03  
 Level                L

**Native Analytes**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	3.9	4.7	119	50-150		375-22-4
PFPeA	3.9	4.6	117	50-150		2706-90-3
HFPO-DA	3.9	4.2	108	50-150		13252-13-6
PFBS	3.5	4.2	120	50-150		375-73-5
PFHxA	3.9	4.6	116	50-150		307-24-4
4:2 FTS	3.7	4.3	118	50-150		757124-72-4
PFPeS	3.7	3.8	103	50-150		2706-91-4
PFHpA	3.9	4.6	117	50-150		375-85-9
DONA	3.7	4.0	107	50-150		919005-14-4
PFHxS	3.6	4.3	120	50-150		355-46-4
PFOA	3.9	4.6	116	50-150		335-67-1
6:2 FTS	3.7	4.5	120	50-150		27619-97-2
PFHpS	3.7	4.9	130	50-150		375-92-8
PFNA	3.9	4.5	115	50-150		375-95-1
PFOSAm	3.9	4.4	112	50-150		754-91-6
PFOS	3.6	4.2	114	50-150		1763-23-1
MeFOSA	3.9	4.6	116	50-150		31506-32-8
PFDA	3.9	4.3	108	50-150		335-76-2
EtFOSAm	3.9	4.2	106	50-150		4151-50-2
8:2 FTS	3.8	4.2	111	50-150		39108-34-4
9-CI-PF3ON	3.7	3.9	105	50-150		756426-58-1
PFNS	3.8	3.1	83	50-150		68259-12-1
PFUnDA	3.9	4.2	107	50-150		2058-94-8
NMeFOSAA	3.9	4.3	109	50-150		2355-31-9
NEtFOSAA	3.9	3.6	90	50-150		2991-50-6
PFDS	3.8	2.2	59	50-150		335-77-3
PFDOA	3.9	4.3	109	50-150		307-55-1
MeFOSE	3.9	3.8	97	50-150		24448-09-7
EtFOSE	3.9	3.9	100	50-150		1691-99-2
11-CI-PF3OUdS	3.7	2.7	74	50-150		763051-92-9
PFTrDA	3.9	4.1	103	50-150		72629-94-8
PFDoS	3.8	2.6	67	50-150		79780-39-5
PFTDA	3.9	4.5	115	50-150		376-06-7

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID LCS-94206  
 Run File Name A211104A\_020  
 Analyzed 11/04/2021 14:12  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211103A03  
 Level L

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.11	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.19	7.21	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.69	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.83	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.47	6.48	
13C8 PFOS	N/A	N/A	7.19	7.21	
13C2 8:2FTS	N/A	N/A	6.66	6.67	R
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7 PFUdA	N/A	N/A	7.32	7.34	
13C2 PFDoA	N/A	N/A	7.75	7.77	
13C2 PFTeDA	N/A	N/A	8.59	8.61	
13C3 HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID LCS-94206  
 Run File Name A211104A\_020  
 Analyzed 11/04/2021 14:12  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211103A03  
 Level L

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.46	0.43	5.32	5.33	
PFBS	0.32	0.34	5.30	5.29	
PFHxA	0.06	0.06	5.12	5.12	
4:2 FTS	0.54	0.58	4.91	4.90	
PFPeS	0.33	0.31	5.84	5.84	
PFHpA	0.28	0.29	5.61	5.61	
DONA	0.50	0.49	5.77	5.78	
PFHxS	0.24	0.24	6.32	6.32	
PFOA	0.34	0.37	6.05	6.06	
6:2 FTS	0.59	0.45	5.83	5.83	
PFHpS	0.22	0.21	6.77	6.78	
PFNA	0.19	0.20	6.48	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.20	0.23	7.20	7.17	
MeFOSA	0.82	0.91	10.34	10.34	
PFDA	0.08	0.09	6.90	6.92	
EtFOSAm	0.74	0.68	11.03	11.03	
8:2 FTS	0.60	0.51	6.66	6.68	
9-Cl-PF3ON	0.02	0.02	7.51	7.53	
PFNS	0.23	0.23	7.63	7.65	
PFUnDA	0.09	0.10	7.33	7.35	
NMeFOSAA	0.49	0.56	6.85	6.86	
NEtFOSAA	0.78	0.68	7.05	7.10	
PFDS	0.23	0.26	8.05	8.07	
PFDOA	0.13	0.14	7.75	7.77	
MeFOSE	N/A	N/A	10.13	10.12	
EtFOSE	0.00	0.00	10.76	10.76	
11-Cl-PF3OUdS	0.01	0.01	8.35	8.37	
PFTrDA	0.15	0.16	8.17	8.20	
PFDoS	0.21	0.21	8.85	8.87	
PFTDA	0.13	0.13	8.59	8.61	

**REPORT OF LABORATORY ANALYSIS**

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November 18, 2021

Bill Honea  
AYRES & ASSOCIATES, INC.  
3376 Packerland Avenue  
De Pere, WI 54115

RE: Project: LUDINGTON  
Pace Project No.: 40235057

Dear Bill Honea:

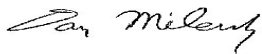
Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: LUDINGTON

Pace Project No.: 40235057

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### **Pace Analytical Services Green Bay**

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: LUDINGTON

Pace Project No.: 40235057

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40235057001	GP-1 (2-4)	Solid	10/13/21 09:35	10/13/21 16:40
40235057002	GP-1 (9-11)	Solid	10/13/21 09:45	10/13/21 16:40
40235057003	GP-2 (2-4)	Solid	10/13/21 10:15	10/13/21 16:40
40235057004	GP-2 (9-11)	Solid	10/13/21 10:20	10/13/21 16:40
40235057005	GP-3 (1.5-2.5)	Solid	10/13/21 10:45	10/13/21 16:40
40235057006	GP-3 (8-10)	Solid	10/13/21 10:50	10/13/21 16:40
40235057007	GP-5 (1.5-2.5)	Solid	10/13/21 12:00	10/13/21 16:40
40235057008	GP-6 (2-4)	Solid	10/13/21 12:20	10/13/21 16:40
40235057009	GP-7 (2-4)	Solid	10/13/21 12:35	10/13/21 16:40
40235057010	GP-8 (2-4)	Solid	10/13/21 13:05	10/13/21 16:40
40235057011	GP-8 (7-8)	Solid	10/13/21 13:10	10/13/21 16:40
40235057012	GP-9 (1.5-3.5)	Solid	10/13/21 14:05	10/13/21 16:40
40235057013	GP-9 (5.5-7.5)	Solid	10/13/21 14:10	10/13/21 16:40
40235057014	GP-10 (2-4)	Solid	10/13/21 14:40	10/13/21 16:40
40235057015	GP-10 (6.5-8)	Solid	10/13/21 14:45	10/13/21 16:40
40235057016	GP-4 (1.5-2.5)	Solid	10/13/21 11:15	10/13/21 16:40
40235057017	GP-4 (8-10)	Solid	10/13/21 11:20	10/13/21 16:40

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### SAMPLE ANALYTE COUNT

Project: LUDINGTON

Pace Project No.: 40235057

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40235057001	GP-1 (2-4)	EPA 6010D	TXW	2	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057002	GP-1 (9-11)	EPA 6010D	TXW	2	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057003	GP-2 (2-4)	EPA 6010D	TXW	2	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057004	GP-2 (9-11)	EPA 6010D	TXW	2	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057005	GP-3 (1.5-2.5)	EPA 6010D	TXW	2	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057006	GP-3 (8-10)	EPA 6010D	TXW	2	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057007	GP-5 (1.5-2.5)	EPA 8082	BLM	10	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057008	GP-6 (2-4)	EPA 9012B	DAW	1	PASI-G
		EPA 8082	BLM	10	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
40235057009	GP-7 (2-4)	ASTM D2974-87	K1S	1	PASI-G
		EPA 9012B	DAW	1	PASI-G
		EPA 8082	BLM	10	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
40235057010	GP-8 (2-4)	EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
		EPA 8260	ALD	64	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G

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### SAMPLE ANALYTE COUNT

Project: LUDINGTON  
Pace Project No.: 40235057

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40235057011	GP-8 (7-8)	ASTM D2974-87	K1S	1	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
40235057012	GP-9 (1.5-3.5)	ASTM D2974-87	K1S	1	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
40235057013	GP-9 (5.5-7.5)	ASTM D2974-87	K1S	1	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
40235057014	GP-10 (2-4)	ASTM D2974-87	K1S	1	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
40235057015	GP-10 (6.5-8)	ASTM D2974-87	SKW	1	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
40235057016	GP-4 (1.5-2.5)	ASTM D2974-87	SKW	1	PASI-G
		EPA 6010D	TXW	2	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40235057017	GP-4 (8-10)	EPA 6010D	TXW	2	PASI-G
		ASTM D2974-87	SKW	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-1 (2-4)**      **Lab ID: 40235057001**      Collected: 10/13/21 09:35      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B									
Pace Analytical Services - Green Bay									
Arsenic	<b>2.4J</b>	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 21:24	7440-38-2	
Lead	<b>1.0J</b>	mg/kg	2.1	0.61	1	10/19/21 06:21	10/19/21 21:24	7439-92-1	
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Benzene	< <b>12.6</b>	ug/kg	21.2	12.6	1	10/21/21 08:15	10/22/21 12:50	71-43-2	
Bromobenzene	< <b>20.6</b>	ug/kg	52.9	20.6	1	10/21/21 08:15	10/22/21 12:50	108-86-1	
Bromochloromethane	< <b>14.5</b>	ug/kg	52.9	14.5	1	10/21/21 08:15	10/22/21 12:50	74-97-5	
Bromodichloromethane	< <b>12.6</b>	ug/kg	52.9	12.6	1	10/21/21 08:15	10/22/21 12:50	75-27-4	
Bromoform	< <b>233</b>	ug/kg	265	233	1	10/21/21 08:15	10/22/21 12:50	75-25-2	
Bromomethane	< <b>74.2</b>	ug/kg	265	74.2	1	10/21/21 08:15	10/22/21 12:50	74-83-9	
n-Butylbenzene	< <b>24.2</b>	ug/kg	52.9	24.2	1	10/21/21 08:15	10/22/21 12:50	104-51-8	
sec-Butylbenzene	< <b>12.9</b>	ug/kg	52.9	12.9	1	10/21/21 08:15	10/22/21 12:50	135-98-8	
tert-Butylbenzene	< <b>16.6</b>	ug/kg	52.9	16.6	1	10/21/21 08:15	10/22/21 12:50	98-06-6	
Carbon tetrachloride	< <b>11.6</b>	ug/kg	52.9	11.6	1	10/21/21 08:15	10/22/21 12:50	56-23-5	
Chlorobenzene	< <b>6.3</b>	ug/kg	52.9	6.3	1	10/21/21 08:15	10/22/21 12:50	108-90-7	
Chloroethane	< <b>22.3</b>	ug/kg	265	22.3	1	10/21/21 08:15	10/22/21 12:50	75-00-3	
Chloroform	< <b>37.9</b>	ug/kg	265	37.9	1	10/21/21 08:15	10/22/21 12:50	67-66-3	
Chloromethane	< <b>20.1</b>	ug/kg	52.9	20.1	1	10/21/21 08:15	10/22/21 12:50	74-87-3	
2-Chlorotoluene	< <b>17.2</b>	ug/kg	52.9	17.2	1	10/21/21 08:15	10/22/21 12:50	95-49-8	
4-Chlorotoluene	< <b>20.1</b>	ug/kg	52.9	20.1	1	10/21/21 08:15	10/22/21 12:50	106-43-4	
1,2-Dibromo-3-chloropropane	< <b>41.1</b>	ug/kg	265	41.1	1	10/21/21 08:15	10/22/21 12:50	96-12-8	
Dibromochloromethane	< <b>181</b>	ug/kg	265	181	1	10/21/21 08:15	10/22/21 12:50	124-48-1	
1,2-Dibromoethane (EDB)	< <b>14.5</b>	ug/kg	52.9	14.5	1	10/21/21 08:15	10/22/21 12:50	106-93-4	
Dibromomethane	< <b>15.7</b>	ug/kg	52.9	15.7	1	10/21/21 08:15	10/22/21 12:50	74-95-3	
1,2-Dichlorobenzene	< <b>16.4</b>	ug/kg	52.9	16.4	1	10/21/21 08:15	10/22/21 12:50	95-50-1	
1,3-Dichlorobenzene	< <b>14.5</b>	ug/kg	52.9	14.5	1	10/21/21 08:15	10/22/21 12:50	541-73-1	
1,4-Dichlorobenzene	< <b>14.5</b>	ug/kg	52.9	14.5	1	10/21/21 08:15	10/22/21 12:50	106-46-7	
Dichlorodifluoromethane	< <b>22.8</b>	ug/kg	52.9	22.8	1	10/21/21 08:15	10/22/21 12:50	75-71-8	
1,1-Dichloroethane	< <b>13.6</b>	ug/kg	52.9	13.6	1	10/21/21 08:15	10/22/21 12:50	75-34-3	
1,2-Dichloroethane	< <b>12.2</b>	ug/kg	52.9	12.2	1	10/21/21 08:15	10/22/21 12:50	107-06-2	
1,1-Dichloroethene	< <b>17.6</b>	ug/kg	52.9	17.6	1	10/21/21 08:15	10/22/21 12:50	75-35-4	
cis-1,2-Dichloroethene	< <b>11.3</b>	ug/kg	52.9	11.3	1	10/21/21 08:15	10/22/21 12:50	156-59-2	
trans-1,2-Dichloroethene	< <b>11.4</b>	ug/kg	52.9	11.4	1	10/21/21 08:15	10/22/21 12:50	156-60-5	
1,2-Dichloropropane	< <b>12.6</b>	ug/kg	52.9	12.6	1	10/21/21 08:15	10/22/21 12:50	78-87-5	
1,3-Dichloropropane	< <b>11.5</b>	ug/kg	52.9	11.5	1	10/21/21 08:15	10/22/21 12:50	142-28-9	
2,2-Dichloropropane	< <b>14.3</b>	ug/kg	52.9	14.3	1	10/21/21 08:15	10/22/21 12:50	594-20-7	
1,1-Dichloropropene	< <b>17.2</b>	ug/kg	52.9	17.2	1	10/21/21 08:15	10/22/21 12:50	563-58-6	
cis-1,3-Dichloropropene	< <b>34.9</b>	ug/kg	265	34.9	1	10/21/21 08:15	10/22/21 12:50	10061-01-5	
trans-1,3-Dichloropropene	< <b>151</b>	ug/kg	265	151	1	10/21/21 08:15	10/22/21 12:50	10061-02-6	
Diisopropyl ether	< <b>13.1</b>	ug/kg	52.9	13.1	1	10/21/21 08:15	10/22/21 12:50	108-20-3	
Ethylbenzene	< <b>12.6</b>	ug/kg	52.9	12.6	1	10/21/21 08:15	10/22/21 12:50	100-41-4	
Hexachloro-1,3-butadiene	< <b>105</b>	ug/kg	265	105	1	10/21/21 08:15	10/22/21 12:50	87-68-3	
Isopropylbenzene (Cumene)	< <b>14.3</b>	ug/kg	52.9	14.3	1	10/21/21 08:15	10/22/21 12:50	98-82-8	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-1 (2-4)**      **Lab ID: 40235057001**      Collected: 10/13/21 09:35      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
p-Isopropyltoluene	<16.1	ug/kg	52.9	16.1	1	10/21/21 08:15	10/22/21 12:50	99-87-6	
Methylene Chloride	<14.7	ug/kg	52.9	14.7	1	10/21/21 08:15	10/22/21 12:50	75-09-2	
Methyl-tert-butyl ether	<15.6	ug/kg	52.9	15.6	1	10/21/21 08:15	10/22/21 12:50	1634-04-4	
Naphthalene	<16.5	ug/kg	265	16.5	1	10/21/21 08:15	10/22/21 12:50	91-20-3	
n-Propylbenzene	<12.7	ug/kg	52.9	12.7	1	10/21/21 08:15	10/22/21 12:50	103-65-1	
Styrene	<13.6	ug/kg	52.9	13.6	1	10/21/21 08:15	10/22/21 12:50	100-42-5	
1,1,1,2-Tetrachloroethane	<12.7	ug/kg	52.9	12.7	1	10/21/21 08:15	10/22/21 12:50	630-20-6	
1,1,2,2-Tetrachloroethane	<19.2	ug/kg	52.9	19.2	1	10/21/21 08:15	10/22/21 12:50	79-34-5	
Tetrachloroethene	<20.5	ug/kg	52.9	20.5	1	10/21/21 08:15	10/22/21 12:50	127-18-4	
Toluene	<13.3	ug/kg	52.9	13.3	1	10/21/21 08:15	10/22/21 12:50	108-88-3	
1,2,3-Trichlorobenzene	<59.0	ug/kg	265	59.0	1	10/21/21 08:15	10/22/21 12:50	87-61-6	
1,2,4-Trichlorobenzene	<43.6	ug/kg	265	43.6	1	10/21/21 08:15	10/22/21 12:50	120-82-1	
1,1,1-Trichloroethane	<13.6	ug/kg	52.9	13.6	1	10/21/21 08:15	10/22/21 12:50	71-55-6	
1,1,2-Trichloroethane	<19.3	ug/kg	52.9	19.3	1	10/21/21 08:15	10/22/21 12:50	79-00-5	
Trichloroethene	<19.8	ug/kg	52.9	19.8	1	10/21/21 08:15	10/22/21 12:50	79-01-6	
Trichlorofluoromethane	<15.4	ug/kg	52.9	15.4	1	10/21/21 08:15	10/22/21 12:50	75-69-4	
1,2,3-Trichloropropane	<25.7	ug/kg	52.9	25.7	1	10/21/21 08:15	10/22/21 12:50	96-18-4	
1,2,4-Trimethylbenzene	<15.8	ug/kg	52.9	15.8	1	10/21/21 08:15	10/22/21 12:50	95-63-6	
1,3,5-Trimethylbenzene	<17.0	ug/kg	52.9	17.0	1	10/21/21 08:15	10/22/21 12:50	108-67-8	
Vinyl chloride	<10.7	ug/kg	52.9	10.7	1	10/21/21 08:15	10/22/21 12:50	75-01-4	
m&p-Xylene	<22.3	ug/kg	106	22.3	1	10/21/21 08:15	10/22/21 12:50	179601-23-1	
o-Xylene	<15.9	ug/kg	52.9	15.9	1	10/21/21 08:15	10/22/21 12:50	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	122	%	67-159		1	10/21/21 08:15	10/22/21 12:50	2037-26-5	
4-Bromofluorobenzene (S)	127	%	66-153		1	10/21/21 08:15	10/22/21 12:50	460-00-4	
1,2-Dichlorobenzene-d4 (S)	119	%	82-158		1	10/21/21 08:15	10/22/21 12:50	2199-69-1	

**Percent Moisture**

Analytical Method: ASTM D2974-87  
Pace Analytical Services - Green Bay

Percent Moisture	<b>2.9</b>	%	0.10	0.10	1		10/14/21 13:23		
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**Sample: GP-1 (9-11)**      **Lab ID: 40235057002**      Collected: 10/13/21 09:45      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B									
Pace Analytical Services - Green Bay									
Arsenic	<b>1.9J</b>	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 21:38	7440-38-2	
Lead	<b>0.64J</b>	mg/kg	2.1	0.63	1	10/19/21 06:21	10/19/21 21:38	7439-92-1	

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

Sample: GP-1 (9-11) Lab ID: 40235057002 Collected: 10/13/21 09:45 Received: 10/13/21 16:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Benzene	<13.4	ug/kg	22.6	13.4	1	10/21/21 08:15	10/22/21 13:09	71-43-2	
Bromobenzene	<22.0	ug/kg	56.4	22.0	1	10/21/21 08:15	10/22/21 13:09	108-86-1	
Bromochloromethane	<15.5	ug/kg	56.4	15.5	1	10/21/21 08:15	10/22/21 13:09	74-97-5	
Bromodichloromethane	<13.4	ug/kg	56.4	13.4	1	10/21/21 08:15	10/22/21 13:09	75-27-4	
Bromoform	<248	ug/kg	282	248	1	10/21/21 08:15	10/22/21 13:09	75-25-2	
Bromomethane	<79.1	ug/kg	282	79.1	1	10/21/21 08:15	10/22/21 13:09	74-83-9	
n-Butylbenzene	<25.8	ug/kg	56.4	25.8	1	10/21/21 08:15	10/22/21 13:09	104-51-8	
sec-Butylbenzene	<13.8	ug/kg	56.4	13.8	1	10/21/21 08:15	10/22/21 13:09	135-98-8	
tert-Butylbenzene	<17.7	ug/kg	56.4	17.7	1	10/21/21 08:15	10/22/21 13:09	98-06-6	
Carbon tetrachloride	<12.4	ug/kg	56.4	12.4	1	10/21/21 08:15	10/22/21 13:09	56-23-5	
Chlorobenzene	<6.8	ug/kg	56.4	6.8	1	10/21/21 08:15	10/22/21 13:09	108-90-7	
Chloroethane	<23.8	ug/kg	282	23.8	1	10/21/21 08:15	10/22/21 13:09	75-00-3	
Chloroform	<40.4	ug/kg	282	40.4	1	10/21/21 08:15	10/22/21 13:09	67-66-3	
Chloromethane	<21.4	ug/kg	56.4	21.4	1	10/21/21 08:15	10/22/21 13:09	74-87-3	
2-Chlorotoluene	<18.3	ug/kg	56.4	18.3	1	10/21/21 08:15	10/22/21 13:09	95-49-8	
4-Chlorotoluene	<21.4	ug/kg	56.4	21.4	1	10/21/21 08:15	10/22/21 13:09	106-43-4	
1,2-Dibromo-3-chloropropane	<43.8	ug/kg	282	43.8	1	10/21/21 08:15	10/22/21 13:09	96-12-8	
Dibromochloromethane	<193	ug/kg	282	193	1	10/21/21 08:15	10/22/21 13:09	124-48-1	
1,2-Dibromoethane (EDB)	<15.5	ug/kg	56.4	15.5	1	10/21/21 08:15	10/22/21 13:09	106-93-4	
Dibromomethane	<16.7	ug/kg	56.4	16.7	1	10/21/21 08:15	10/22/21 13:09	74-95-3	
1,2-Dichlorobenzene	<17.5	ug/kg	56.4	17.5	1	10/21/21 08:15	10/22/21 13:09	95-50-1	
1,3-Dichlorobenzene	<15.5	ug/kg	56.4	15.5	1	10/21/21 08:15	10/22/21 13:09	541-73-1	
1,4-Dichlorobenzene	<15.5	ug/kg	56.4	15.5	1	10/21/21 08:15	10/22/21 13:09	106-46-7	
Dichlorodifluoromethane	<24.3	ug/kg	56.4	24.3	1	10/21/21 08:15	10/22/21 13:09	75-71-8	
1,1-Dichloroethane	<14.4	ug/kg	56.4	14.4	1	10/21/21 08:15	10/22/21 13:09	75-34-3	
1,2-Dichloroethane	<13.0	ug/kg	56.4	13.0	1	10/21/21 08:15	10/22/21 13:09	107-06-2	
1,1-Dichloroethene	<18.7	ug/kg	56.4	18.7	1	10/21/21 08:15	10/22/21 13:09	75-35-4	
cis-1,2-Dichloroethene	<12.1	ug/kg	56.4	12.1	1	10/21/21 08:15	10/22/21 13:09	156-59-2	
trans-1,2-Dichloroethene	<12.2	ug/kg	56.4	12.2	1	10/21/21 08:15	10/22/21 13:09	156-60-5	
1,2-Dichloropropane	<13.4	ug/kg	56.4	13.4	1	10/21/21 08:15	10/22/21 13:09	78-87-5	
1,3-Dichloropropane	<12.3	ug/kg	56.4	12.3	1	10/21/21 08:15	10/22/21 13:09	142-28-9	
2,2-Dichloropropane	<15.2	ug/kg	56.4	15.2	1	10/21/21 08:15	10/22/21 13:09	594-20-7	
1,1-Dichloropropene	<18.3	ug/kg	56.4	18.3	1	10/21/21 08:15	10/22/21 13:09	563-58-6	
cis-1,3-Dichloropropene	<37.2	ug/kg	282	37.2	1	10/21/21 08:15	10/22/21 13:09	10061-01-5	
trans-1,3-Dichloropropene	<161	ug/kg	282	161	1	10/21/21 08:15	10/22/21 13:09	10061-02-6	
Diisopropyl ether	<14.0	ug/kg	56.4	14.0	1	10/21/21 08:15	10/22/21 13:09	108-20-3	
Ethylbenzene	<13.4	ug/kg	56.4	13.4	1	10/21/21 08:15	10/22/21 13:09	100-41-4	
Hexachloro-1,3-butadiene	<112	ug/kg	282	112	1	10/21/21 08:15	10/22/21 13:09	87-68-3	
Isopropylbenzene (Cumene)	<15.2	ug/kg	56.4	15.2	1	10/21/21 08:15	10/22/21 13:09	98-82-8	
p-Isopropyltoluene	<17.2	ug/kg	56.4	17.2	1	10/21/21 08:15	10/22/21 13:09	99-87-6	
Methylene Chloride	<15.7	ug/kg	56.4	15.7	1	10/21/21 08:15	10/22/21 13:09	75-09-2	
Methyl-tert-butyl ether	<16.6	ug/kg	56.4	16.6	1	10/21/21 08:15	10/22/21 13:09	1634-04-4	
Naphthalene	<17.6	ug/kg	282	17.6	1	10/21/21 08:15	10/22/21 13:09	91-20-3	
n-Propylbenzene	<13.5	ug/kg	56.4	13.5	1	10/21/21 08:15	10/22/21 13:09	103-65-1	

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-1 (9-11)**      **Lab ID: 40235057002**      Collected: 10/13/21 09:45      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay									
Styrene	<14.4	ug/kg	56.4	14.4	1	10/21/21 08:15	10/22/21 13:09	100-42-5	
1,1,1,2-Tetrachloroethane	<13.5	ug/kg	56.4	13.5	1	10/21/21 08:15	10/22/21 13:09	630-20-6	
1,1,2,2-Tetrachloroethane	<20.4	ug/kg	56.4	20.4	1	10/21/21 08:15	10/22/21 13:09	79-34-5	
Tetrachloroethene	<21.9	ug/kg	56.4	21.9	1	10/21/21 08:15	10/22/21 13:09	127-18-4	
Toluene	<14.2	ug/kg	56.4	14.2	1	10/21/21 08:15	10/22/21 13:09	108-88-3	
1,2,3-Trichlorobenzene	<62.9	ug/kg	282	62.9	1	10/21/21 08:15	10/22/21 13:09	87-61-6	
1,2,4-Trichlorobenzene	<46.5	ug/kg	282	46.5	1	10/21/21 08:15	10/22/21 13:09	120-82-1	
1,1,1-Trichloroethane	<14.4	ug/kg	56.4	14.4	1	10/21/21 08:15	10/22/21 13:09	71-55-6	
1,1,2-Trichloroethane	<20.5	ug/kg	56.4	20.5	1	10/21/21 08:15	10/22/21 13:09	79-00-5	
Trichloroethene	<21.1	ug/kg	56.4	21.1	1	10/21/21 08:15	10/22/21 13:09	79-01-6	
Trichlorofluoromethane	<16.4	ug/kg	56.4	16.4	1	10/21/21 08:15	10/22/21 13:09	75-69-4	
1,2,3-Trichloropropane	<27.4	ug/kg	56.4	27.4	1	10/21/21 08:15	10/22/21 13:09	96-18-4	
1,2,4-Trimethylbenzene	<16.8	ug/kg	56.4	16.8	1	10/21/21 08:15	10/22/21 13:09	95-63-6	
1,3,5-Trimethylbenzene	<18.2	ug/kg	56.4	18.2	1	10/21/21 08:15	10/22/21 13:09	108-67-8	
Vinyl chloride	<11.4	ug/kg	56.4	11.4	1	10/21/21 08:15	10/22/21 13:09	75-01-4	
m&p-Xylene	<23.8	ug/kg	113	23.8	1	10/21/21 08:15	10/22/21 13:09	179601-23-1	
o-Xylene	<16.9	ug/kg	56.4	16.9	1	10/21/21 08:15	10/22/21 13:09	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	124	%	67-159		1	10/21/21 08:15	10/22/21 13:09	2037-26-5	
4-Bromofluorobenzene (S)	126	%	66-153		1	10/21/21 08:15	10/22/21 13:09	460-00-4	
1,2-Dichlorobenzene-d4 (S)	124	%	82-158		1	10/21/21 08:15	10/22/21 13:09	2199-69-1	

**Percent Moisture**

Analytical Method: ASTM D2974-87  
Pace Analytical Services - Green Bay

Percent Moisture	<b>6.0</b>	%	0.10	0.10	1		10/14/21 13:24		
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**Sample: GP-2 (2-4)**      **Lab ID: 40235057003**      Collected: 10/13/21 10:15      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B Pace Analytical Services - Green Bay									
Arsenic	<1.4	mg/kg	2.4	1.4	1	10/19/21 06:21	10/19/21 21:43	7440-38-2	
Lead	<b>0.74J</b>	mg/kg	2.0	0.59	1	10/19/21 06:21	10/19/21 21:43	7439-92-1	
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay									
Benzene	<12.4	ug/kg	20.9	12.4	1	10/21/21 08:15	10/22/21 13:29	71-43-2	
Bromobenzene	<20.3	ug/kg	52.2	20.3	1	10/21/21 08:15	10/22/21 13:29	108-86-1	
Bromochloromethane	<14.3	ug/kg	52.2	14.3	1	10/21/21 08:15	10/22/21 13:29	74-97-5	
Bromodichloromethane	<12.4	ug/kg	52.2	12.4	1	10/21/21 08:15	10/22/21 13:29	75-27-4	

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

Sample: GP-2 (2-4) Lab ID: 40235057003 Collected: 10/13/21 10:15 Received: 10/13/21 16:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Bromoform	<229	ug/kg	261	229	1	10/21/21 08:15	10/22/21 13:29	75-25-2	
Bromomethane	<73.1	ug/kg	261	73.1	1	10/21/21 08:15	10/22/21 13:29	74-83-9	
n-Butylbenzene	<23.9	ug/kg	52.2	23.9	1	10/21/21 08:15	10/22/21 13:29	104-51-8	
sec-Butylbenzene	<12.7	ug/kg	52.2	12.7	1	10/21/21 08:15	10/22/21 13:29	135-98-8	
tert-Butylbenzene	<16.4	ug/kg	52.2	16.4	1	10/21/21 08:15	10/22/21 13:29	98-06-6	
Carbon tetrachloride	<11.5	ug/kg	52.2	11.5	1	10/21/21 08:15	10/22/21 13:29	56-23-5	
Chlorobenzene	<6.2	ug/kg	52.2	6.2	1	10/21/21 08:15	10/22/21 13:29	108-90-7	
Chloroethane	<22.0	ug/kg	261	22.0	1	10/21/21 08:15	10/22/21 13:29	75-00-3	
Chloroform	<37.3	ug/kg	261	37.3	1	10/21/21 08:15	10/22/21 13:29	67-66-3	
Chloromethane	<19.8	ug/kg	52.2	19.8	1	10/21/21 08:15	10/22/21 13:29	74-87-3	
2-Chlorotoluene	<16.9	ug/kg	52.2	16.9	1	10/21/21 08:15	10/22/21 13:29	95-49-8	
4-Chlorotoluene	<19.8	ug/kg	52.2	19.8	1	10/21/21 08:15	10/22/21 13:29	106-43-4	
1,2-Dibromo-3-chloropropane	<40.5	ug/kg	261	40.5	1	10/21/21 08:15	10/22/21 13:29	96-12-8	
Dibromochloromethane	<178	ug/kg	261	178	1	10/21/21 08:15	10/22/21 13:29	124-48-1	
1,2-Dibromoethane (EDB)	<14.3	ug/kg	52.2	14.3	1	10/21/21 08:15	10/22/21 13:29	106-93-4	
Dibromomethane	<15.4	ug/kg	52.2	15.4	1	10/21/21 08:15	10/22/21 13:29	74-95-3	
1,2-Dichlorobenzene	<16.2	ug/kg	52.2	16.2	1	10/21/21 08:15	10/22/21 13:29	95-50-1	
1,3-Dichlorobenzene	<14.3	ug/kg	52.2	14.3	1	10/21/21 08:15	10/22/21 13:29	541-73-1	
1,4-Dichlorobenzene	<14.3	ug/kg	52.2	14.3	1	10/21/21 08:15	10/22/21 13:29	106-46-7	
Dichlorodifluoromethane	<22.4	ug/kg	52.2	22.4	1	10/21/21 08:15	10/22/21 13:29	75-71-8	
1,1-Dichloroethane	<13.4	ug/kg	52.2	13.4	1	10/21/21 08:15	10/22/21 13:29	75-34-3	
1,2-Dichloroethane	<12.0	ug/kg	52.2	12.0	1	10/21/21 08:15	10/22/21 13:29	107-06-2	
1,1-Dichloroethene	<17.3	ug/kg	52.2	17.3	1	10/21/21 08:15	10/22/21 13:29	75-35-4	
cis-1,2-Dichloroethene	<11.2	ug/kg	52.2	11.2	1	10/21/21 08:15	10/22/21 13:29	156-59-2	
trans-1,2-Dichloroethene	<11.3	ug/kg	52.2	11.3	1	10/21/21 08:15	10/22/21 13:29	156-60-5	
1,2-Dichloropropane	<12.4	ug/kg	52.2	12.4	1	10/21/21 08:15	10/22/21 13:29	78-87-5	
1,3-Dichloropropane	<11.4	ug/kg	52.2	11.4	1	10/21/21 08:15	10/22/21 13:29	142-28-9	
2,2-Dichloropropane	<14.1	ug/kg	52.2	14.1	1	10/21/21 08:15	10/22/21 13:29	594-20-7	
1,1-Dichloropropene	<16.9	ug/kg	52.2	16.9	1	10/21/21 08:15	10/22/21 13:29	563-58-6	
cis-1,3-Dichloropropene	<34.4	ug/kg	261	34.4	1	10/21/21 08:15	10/22/21 13:29	10061-01-5	
trans-1,3-Dichloropropene	<149	ug/kg	261	149	1	10/21/21 08:15	10/22/21 13:29	10061-02-6	
Diisopropyl ether	<12.9	ug/kg	52.2	12.9	1	10/21/21 08:15	10/22/21 13:29	108-20-3	
Ethylbenzene	<12.4	ug/kg	52.2	12.4	1	10/21/21 08:15	10/22/21 13:29	100-41-4	
Hexachloro-1,3-butadiene	<104	ug/kg	261	104	1	10/21/21 08:15	10/22/21 13:29	87-68-3	
Isopropylbenzene (Cumene)	<14.1	ug/kg	52.2	14.1	1	10/21/21 08:15	10/22/21 13:29	98-82-8	
p-Isopropyltoluene	<15.9	ug/kg	52.2	15.9	1	10/21/21 08:15	10/22/21 13:29	99-87-6	
Methylene Chloride	<14.5	ug/kg	52.2	14.5	1	10/21/21 08:15	10/22/21 13:29	75-09-2	
Methyl-tert-butyl ether	<15.3	ug/kg	52.2	15.3	1	10/21/21 08:15	10/22/21 13:29	1634-04-4	
Naphthalene	<16.3	ug/kg	261	16.3	1	10/21/21 08:15	10/22/21 13:29	91-20-3	
n-Propylbenzene	<12.5	ug/kg	52.2	12.5	1	10/21/21 08:15	10/22/21 13:29	103-65-1	
Styrene	<13.4	ug/kg	52.2	13.4	1	10/21/21 08:15	10/22/21 13:29	100-42-5	
1,1,1,2-Tetrachloroethane	<12.5	ug/kg	52.2	12.5	1	10/21/21 08:15	10/22/21 13:29	630-20-6	
1,1,2,2-Tetrachloroethane	<18.9	ug/kg	52.2	18.9	1	10/21/21 08:15	10/22/21 13:29	79-34-5	
Tetrachloroethene	<20.2	ug/kg	52.2	20.2	1	10/21/21 08:15	10/22/21 13:29	127-18-4	

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-2 (2-4)**      **Lab ID: 40235057003**      Collected: 10/13/21 10:15      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay									
Toluene	<13.1	ug/kg	52.2	13.1	1	10/21/21 08:15	10/22/21 13:29	108-88-3	
1,2,3-Trichlorobenzene	<58.1	ug/kg	261	58.1	1	10/21/21 08:15	10/22/21 13:29	87-61-6	
1,2,4-Trichlorobenzene	<43.0	ug/kg	261	43.0	1	10/21/21 08:15	10/22/21 13:29	120-82-1	
1,1,1-Trichloroethane	<13.4	ug/kg	52.2	13.4	1	10/21/21 08:15	10/22/21 13:29	71-55-6	
1,1,2-Trichloroethane	<19.0	ug/kg	52.2	19.0	1	10/21/21 08:15	10/22/21 13:29	79-00-5	
Trichloroethene	<19.5	ug/kg	52.2	19.5	1	10/21/21 08:15	10/22/21 13:29	79-01-6	
Trichlorofluoromethane	<15.1	ug/kg	52.2	15.1	1	10/21/21 08:15	10/22/21 13:29	75-69-4	
1,2,3-Trichloropropane	<25.3	ug/kg	52.2	25.3	1	10/21/21 08:15	10/22/21 13:29	96-18-4	
1,2,4-Trimethylbenzene	<15.5	ug/kg	52.2	15.5	1	10/21/21 08:15	10/22/21 13:29	95-63-6	
1,3,5-Trimethylbenzene	<16.8	ug/kg	52.2	16.8	1	10/21/21 08:15	10/22/21 13:29	108-67-8	
Vinyl chloride	<10.5	ug/kg	52.2	10.5	1	10/21/21 08:15	10/22/21 13:29	75-01-4	
m&p-Xylene	<22.0	ug/kg	104	22.0	1	10/21/21 08:15	10/22/21 13:29	179601-23-1	
o-Xylene	<15.6	ug/kg	52.2	15.6	1	10/21/21 08:15	10/22/21 13:29	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	120	%	67-159		1	10/21/21 08:15	10/22/21 13:29	2037-26-5	
4-Bromofluorobenzene (S)	122	%	66-153		1	10/21/21 08:15	10/22/21 13:29	460-00-4	
1,2-Dichlorobenzene-d4 (S)	118	%	82-158		1	10/21/21 08:15	10/22/21 13:29	2199-69-1	

**Percent Moisture**

Analytical Method: ASTM D2974-87  
Pace Analytical Services - Green Bay

Percent Moisture	2.1	%	0.10	0.10	1		10/14/21 13:24		
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**Sample: GP-2 (9-11)**      **Lab ID: 40235057004**      Collected: 10/13/21 10:20      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B Pace Analytical Services - Green Bay									
Arsenic	3.4	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 21:45	7440-38-2	
Lead	1.2J	mg/kg	2.1	0.62	1	10/19/21 06:21	10/19/21 21:45	7439-92-1	
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay									
Benzene	<13.0	ug/kg	21.9	13.0	1	10/21/21 08:15	10/22/21 13:49	71-43-2	
Bromobenzene	<21.3	ug/kg	54.7	21.3	1	10/21/21 08:15	10/22/21 13:49	108-86-1	
Bromochloromethane	<15.0	ug/kg	54.7	15.0	1	10/21/21 08:15	10/22/21 13:49	74-97-5	
Bromodichloromethane	<13.0	ug/kg	54.7	13.0	1	10/21/21 08:15	10/22/21 13:49	75-27-4	
Bromoform	<241	ug/kg	273	241	1	10/21/21 08:15	10/22/21 13:49	75-25-2	
Bromomethane	<76.6	ug/kg	273	76.6	1	10/21/21 08:15	10/22/21 13:49	74-83-9	
n-Butylbenzene	<25.0	ug/kg	54.7	25.0	1	10/21/21 08:15	10/22/21 13:49	104-51-8	
sec-Butylbenzene	<13.3	ug/kg	54.7	13.3	1	10/21/21 08:15	10/22/21 13:49	135-98-8	

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-2 (9-11)**      **Lab ID: 40235057004**      Collected: 10/13/21 10:20      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
tert-Butylbenzene	<17.2	ug/kg	54.7	17.2	1	10/21/21 08:15	10/22/21 13:49	98-06-6	
Carbon tetrachloride	<12.0	ug/kg	54.7	12.0	1	10/21/21 08:15	10/22/21 13:49	56-23-5	
Chlorobenzene	<6.5	ug/kg	54.7	6.5	1	10/21/21 08:15	10/22/21 13:49	108-90-7	
Chloroethane	<23.1	ug/kg	273	23.1	1	10/21/21 08:15	10/22/21 13:49	75-00-3	
Chloroform	<39.1	ug/kg	273	39.1	1	10/21/21 08:15	10/22/21 13:49	67-66-3	
Chloromethane	<20.8	ug/kg	54.7	20.8	1	10/21/21 08:15	10/22/21 13:49	74-87-3	
2-Chlorotoluene	<17.7	ug/kg	54.7	17.7	1	10/21/21 08:15	10/22/21 13:49	95-49-8	
4-Chlorotoluene	<20.8	ug/kg	54.7	20.8	1	10/21/21 08:15	10/22/21 13:49	106-43-4	
1,2-Dibromo-3-chloropropane	<42.4	ug/kg	273	42.4	1	10/21/21 08:15	10/22/21 13:49	96-12-8	
Dibromochloromethane	<187	ug/kg	273	187	1	10/21/21 08:15	10/22/21 13:49	124-48-1	
1,2-Dibromoethane (EDB)	<15.0	ug/kg	54.7	15.0	1	10/21/21 08:15	10/22/21 13:49	106-93-4	
Dibromomethane	<16.2	ug/kg	54.7	16.2	1	10/21/21 08:15	10/22/21 13:49	74-95-3	
1,2-Dichlorobenzene	<16.9	ug/kg	54.7	16.9	1	10/21/21 08:15	10/22/21 13:49	95-50-1	
1,3-Dichlorobenzene	<15.0	ug/kg	54.7	15.0	1	10/21/21 08:15	10/22/21 13:49	541-73-1	
1,4-Dichlorobenzene	<15.0	ug/kg	54.7	15.0	1	10/21/21 08:15	10/22/21 13:49	106-46-7	
Dichlorodifluoromethane	<23.5	ug/kg	54.7	23.5	1	10/21/21 08:15	10/22/21 13:49	75-71-8	
1,1-Dichloroethane	<14.0	ug/kg	54.7	14.0	1	10/21/21 08:15	10/22/21 13:49	75-34-3	
1,2-Dichloroethane	<12.6	ug/kg	54.7	12.6	1	10/21/21 08:15	10/22/21 13:49	107-06-2	
1,1-Dichloroethene	<18.1	ug/kg	54.7	18.1	1	10/21/21 08:15	10/22/21 13:49	75-35-4	
cis-1,2-Dichloroethene	<11.7	ug/kg	54.7	11.7	1	10/21/21 08:15	10/22/21 13:49	156-59-2	
trans-1,2-Dichloroethene	<11.8	ug/kg	54.7	11.8	1	10/21/21 08:15	10/22/21 13:49	156-60-5	
1,2-Dichloropropane	<13.0	ug/kg	54.7	13.0	1	10/21/21 08:15	10/22/21 13:49	78-87-5	
1,3-Dichloropropane	<11.9	ug/kg	54.7	11.9	1	10/21/21 08:15	10/22/21 13:49	142-28-9	
2,2-Dichloropropane	<14.8	ug/kg	54.7	14.8	1	10/21/21 08:15	10/22/21 13:49	594-20-7	
1,1-Dichloropropene	<17.7	ug/kg	54.7	17.7	1	10/21/21 08:15	10/22/21 13:49	563-58-6	
cis-1,3-Dichloropropene	<36.1	ug/kg	273	36.1	1	10/21/21 08:15	10/22/21 13:49	10061-01-5	
trans-1,3-Dichloropropene	<156	ug/kg	273	156	1	10/21/21 08:15	10/22/21 13:49	10061-02-6	
Diisopropyl ether	<13.6	ug/kg	54.7	13.6	1	10/21/21 08:15	10/22/21 13:49	108-20-3	
Ethylbenzene	<13.0	ug/kg	54.7	13.0	1	10/21/21 08:15	10/22/21 13:49	100-41-4	
Hexachloro-1,3-butadiene	<109	ug/kg	273	109	1	10/21/21 08:15	10/22/21 13:49	87-68-3	
Isopropylbenzene (Cumene)	<14.8	ug/kg	54.7	14.8	1	10/21/21 08:15	10/22/21 13:49	98-82-8	
p-Isopropyltoluene	<16.6	ug/kg	54.7	16.6	1	10/21/21 08:15	10/22/21 13:49	99-87-6	
Methylene Chloride	<15.2	ug/kg	54.7	15.2	1	10/21/21 08:15	10/22/21 13:49	75-09-2	
Methyl-tert-butyl ether	<16.1	ug/kg	54.7	16.1	1	10/21/21 08:15	10/22/21 13:49	1634-04-4	
Naphthalene	<17.1	ug/kg	273	17.1	1	10/21/21 08:15	10/22/21 13:49	91-20-3	
n-Propylbenzene	<13.1	ug/kg	54.7	13.1	1	10/21/21 08:15	10/22/21 13:49	103-65-1	
Styrene	<14.0	ug/kg	54.7	14.0	1	10/21/21 08:15	10/22/21 13:49	100-42-5	
1,1,1,2-Tetrachloroethane	<13.1	ug/kg	54.7	13.1	1	10/21/21 08:15	10/22/21 13:49	630-20-6	
1,1,2,2-Tetrachloroethane	<19.8	ug/kg	54.7	19.8	1	10/21/21 08:15	10/22/21 13:49	79-34-5	
Tetrachloroethene	<21.2	ug/kg	54.7	21.2	1	10/21/21 08:15	10/22/21 13:49	127-18-4	
Toluene	<13.8	ug/kg	54.7	13.8	1	10/21/21 08:15	10/22/21 13:49	108-88-3	
1,2,3-Trichlorobenzene	<60.9	ug/kg	273	60.9	1	10/21/21 08:15	10/22/21 13:49	87-61-6	
1,2,4-Trichlorobenzene	<45.0	ug/kg	273	45.0	1	10/21/21 08:15	10/22/21 13:49	120-82-1	
1,1,1-Trichloroethane	<14.0	ug/kg	54.7	14.0	1	10/21/21 08:15	10/22/21 13:49	71-55-6	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-2 (9-11)**      **Lab ID: 40235057004**      Collected: 10/13/21 10:20      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay									
1,1,2-Trichloroethane	<19.9	ug/kg	54.7	19.9	1	10/21/21 08:15	10/22/21 13:49	79-00-5	
Trichloroethene	<20.4	ug/kg	54.7	20.4	1	10/21/21 08:15	10/22/21 13:49	79-01-6	
Trichlorofluoromethane	<15.9	ug/kg	54.7	15.9	1	10/21/21 08:15	10/22/21 13:49	75-69-4	
1,2,3-Trichloropropane	<26.6	ug/kg	54.7	26.6	1	10/21/21 08:15	10/22/21 13:49	96-18-4	
1,2,4-Trimethylbenzene	<16.3	ug/kg	54.7	16.3	1	10/21/21 08:15	10/22/21 13:49	95-63-6	
1,3,5-Trimethylbenzene	<17.6	ug/kg	54.7	17.6	1	10/21/21 08:15	10/22/21 13:49	108-67-8	
Vinyl chloride	<11.0	ug/kg	54.7	11.0	1	10/21/21 08:15	10/22/21 13:49	75-01-4	
m&p-Xylene	<23.1	ug/kg	109	23.1	1	10/21/21 08:15	10/22/21 13:49	179601-23-1	
o-Xylene	<16.4	ug/kg	54.7	16.4	1	10/21/21 08:15	10/22/21 13:49	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	113	%	67-159		1	10/21/21 08:15	10/22/21 13:49	2037-26-5	
4-Bromofluorobenzene (S)	121	%	66-153		1	10/21/21 08:15	10/22/21 13:49	460-00-4	
1,2-Dichlorobenzene-d4 (S)	112	%	82-158		1	10/21/21 08:15	10/22/21 13:49	2199-69-1	

**Percent Moisture**

Analytical Method: ASTM D2974-87  
Pace Analytical Services - Green Bay

Percent Moisture	4.5	%	0.10	0.10	1		10/14/21 13:24		
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**Sample: GP-3 (1.5-2.5)**      **Lab ID: 40235057005**      Collected: 10/13/21 10:45      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B Pace Analytical Services - Green Bay									
Arsenic	2.6	mg/kg	2.4	1.4	1	10/19/21 06:21	10/19/21 21:48	7440-38-2	
Lead	11.9	mg/kg	1.9	0.58	1	10/19/21 06:21	10/19/21 21:48	7439-92-1	
<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay									
Percent Moisture	3.3	%	0.10	0.10	1		10/14/21 13:24		

**Sample: GP-3 (8-10)**      **Lab ID: 40235057006**      Collected: 10/13/21 10:50      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B Pace Analytical Services - Green Bay									
Arsenic	<1.5	mg/kg	2.5	1.5	1	10/19/21 06:21	10/19/21 21:50	7440-38-2	
Lead	0.88J	mg/kg	2.0	0.60	1	10/19/21 06:21	10/19/21 21:50	7439-92-1	

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-3 (8-10)**      **Lab ID: 40235057006**      Collected: 10/13/21 10:50      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay									
Percent Moisture	4.1	%	0.10	0.10	1		10/14/21 13:24		

**Sample: GP-5 (1.5-2.5)**      **Lab ID: 40235057007**      Collected: 10/13/21 12:00      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082 GCS PCB</b>									
Analytical Method: EPA 8082      Preparation Method: EPA 3541 Pace Analytical Services - Green Bay									
PCB-1016 (Aroclor 1016)	<15.9	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	12674-11-2	
PCB-1221 (Aroclor 1221)	<15.9	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	11104-28-2	
PCB-1232 (Aroclor 1232)	<15.9	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	11141-16-5	
PCB-1242 (Aroclor 1242)	<15.9	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	53469-21-9	
PCB-1248 (Aroclor 1248)	<15.9	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	12672-29-6	
PCB-1254 (Aroclor 1254)	<15.9	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	11097-69-1	
PCB-1260 (Aroclor 1260)	<15.9	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	11096-82-5	
PCB, Total	<15.9	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	1336-36-3	
<b>Surrogates</b>									
Tetrachloro-m-xylene (S)	90	%	67-102		1	10/14/21 16:03	10/16/21 00:34	877-09-8	
Decachlorobiphenyl (S)	88	%	47-114		1	10/14/21 16:03	10/16/21 00:34	2051-24-3	

**6010D MET ICP**      Analytical Method: EPA 6010D      Preparation Method: EPA 3050B  
Pace Analytical Services - Green Bay

Arsenic	2.3J	mg/kg	2.5	1.5	1	10/19/21 06:21	10/19/21 21:52	7440-38-2	
Lead	84.6	mg/kg	2.0	0.61	1	10/19/21 06:21	10/19/21 21:52	7439-92-1	

**8270E MSSV PAH by SIM**      Analytical Method: EPA 8270E by SIM      Preparation Method: EPA 3546  
Pace Analytical Services - Green Bay

Acenaphthene	<45.2	ug/kg	348	45.2	20	10/21/21 07:37	10/21/21 18:33	83-32-9	
Acenaphthylene	780	ug/kg	348	43.9	20	10/21/21 07:37	10/21/21 18:33	208-96-8	
Anthracene	317J	ug/kg	348	43.2	20	10/21/21 07:37	10/21/21 18:33	120-12-7	
Benzo(a)anthracene	867	ug/kg	348	45.0	20	10/21/21 07:37	10/21/21 18:33	56-55-3	
Benzo(a)pyrene	996	ug/kg	348	39.6	20	10/21/21 07:37	10/21/21 18:33	50-32-8	
Benzo(b)fluoranthene	1530	ug/kg	348	48.4	20	10/21/21 07:37	10/21/21 18:33	205-99-2	
Benzo(g,h,i)perylene	1090	ug/kg	348	61.1	20	10/21/21 07:37	10/21/21 18:33	191-24-2	
Benzo(k)fluoranthene	597	ug/kg	348	44.5	20	10/21/21 07:37	10/21/21 18:33	207-08-9	
Chrysene	1030	ug/kg	348	65.7	20	10/21/21 07:37	10/21/21 18:33	218-01-9	
Dibenz(a,h)anthracene	301J	ug/kg	348	48.2	20	10/21/21 07:37	10/21/21 18:33	53-70-3	
Fluoranthene	1160	ug/kg	348	41.2	20	10/21/21 07:37	10/21/21 18:33	206-44-0	
Fluorene	66.7J	ug/kg	348	41.8	20	10/21/21 07:37	10/21/21 18:33	86-73-7	
Indeno(1,2,3-cd)pyrene	893	ug/kg	348	72.6	20	10/21/21 07:37	10/21/21 18:33	193-39-5	
1-Methylnaphthalene	71.8J	ug/kg	348	50.9	20	10/21/21 07:37	10/21/21 18:33	90-12-0	

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-5 (1.5-2.5)**      **Lab ID: 40235057007**      Collected: 10/13/21 12:00      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM    Preparation Method: EPA 3546									
Pace Analytical Services - Green Bay									
2-Methylnaphthalene	<b>109J</b>	ug/kg	348	50.9	20	10/21/21 07:37	10/21/21 18:33	91-57-6	
Naphthalene	<b>388</b>	ug/kg	348	33.9	20	10/21/21 07:37	10/21/21 18:33	91-20-3	
Phenanthrene	<b>519</b>	ug/kg	348	39.9	20	10/21/21 07:37	10/21/21 18:33	85-01-8	
Pyrene	<b>1310</b>	ug/kg	348	51.2	20	10/21/21 07:37	10/21/21 18:33	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	49	%	36-86		20	10/21/21 07:37	10/21/21 18:33	321-60-8	
Terphenyl-d14 (S)	57	%	41-97		20	10/21/21 07:37	10/21/21 18:33	1718-51-0	
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Benzene	<b>28.7</b>	ug/kg	21.8	13.0	1	10/21/21 08:15	10/22/21 14:08	71-43-2	
Bromobenzene	<b>&lt;21.2</b>	ug/kg	54.4	21.2	1	10/21/21 08:15	10/22/21 14:08	108-86-1	
Bromochloromethane	<b>&lt;14.9</b>	ug/kg	54.4	14.9	1	10/21/21 08:15	10/22/21 14:08	74-97-5	
Bromodichloromethane	<b>&lt;13.0</b>	ug/kg	54.4	13.0	1	10/21/21 08:15	10/22/21 14:08	75-27-4	
Bromoform	<b>&lt;240</b>	ug/kg	272	240	1	10/21/21 08:15	10/22/21 14:08	75-25-2	
Bromomethane	<b>&lt;76.3</b>	ug/kg	272	76.3	1	10/21/21 08:15	10/22/21 14:08	74-83-9	
n-Butylbenzene	<b>&lt;24.9</b>	ug/kg	54.4	24.9	1	10/21/21 08:15	10/22/21 14:08	104-51-8	
sec-Butylbenzene	<b>&lt;13.3</b>	ug/kg	54.4	13.3	1	10/21/21 08:15	10/22/21 14:08	135-98-8	
tert-Butylbenzene	<b>&lt;17.1</b>	ug/kg	54.4	17.1	1	10/21/21 08:15	10/22/21 14:08	98-06-6	
Carbon tetrachloride	<b>&lt;12.0</b>	ug/kg	54.4	12.0	1	10/21/21 08:15	10/22/21 14:08	56-23-5	
Chlorobenzene	<b>&lt;6.5</b>	ug/kg	54.4	6.5	1	10/21/21 08:15	10/22/21 14:08	108-90-7	
Chloroethane	<b>&lt;23.0</b>	ug/kg	272	23.0	1	10/21/21 08:15	10/22/21 14:08	75-00-3	
Chloroform	<b>&lt;39.0</b>	ug/kg	272	39.0	1	10/21/21 08:15	10/22/21 14:08	67-66-3	
Chloromethane	<b>&lt;20.7</b>	ug/kg	54.4	20.7	1	10/21/21 08:15	10/22/21 14:08	74-87-3	
2-Chlorotoluene	<b>&lt;17.6</b>	ug/kg	54.4	17.6	1	10/21/21 08:15	10/22/21 14:08	95-49-8	
4-Chlorotoluene	<b>&lt;20.7</b>	ug/kg	54.4	20.7	1	10/21/21 08:15	10/22/21 14:08	106-43-4	
1,2-Dibromo-3-chloropropane	<b>&lt;42.2</b>	ug/kg	272	42.2	1	10/21/21 08:15	10/22/21 14:08	96-12-8	
Dibromochloromethane	<b>&lt;186</b>	ug/kg	272	186	1	10/21/21 08:15	10/22/21 14:08	124-48-1	
1,2-Dibromoethane (EDB)	<b>&lt;14.9</b>	ug/kg	54.4	14.9	1	10/21/21 08:15	10/22/21 14:08	106-93-4	
Dibromomethane	<b>&lt;16.1</b>	ug/kg	54.4	16.1	1	10/21/21 08:15	10/22/21 14:08	74-95-3	
1,2-Dichlorobenzene	<b>&lt;16.9</b>	ug/kg	54.4	16.9	1	10/21/21 08:15	10/22/21 14:08	95-50-1	
1,3-Dichlorobenzene	<b>&lt;14.9</b>	ug/kg	54.4	14.9	1	10/21/21 08:15	10/22/21 14:08	541-73-1	
1,4-Dichlorobenzene	<b>&lt;14.9</b>	ug/kg	54.4	14.9	1	10/21/21 08:15	10/22/21 14:08	106-46-7	
Dichlorodifluoromethane	<b>&lt;23.4</b>	ug/kg	54.4	23.4	1	10/21/21 08:15	10/22/21 14:08	75-71-8	
1,1-Dichloroethane	<b>&lt;13.9</b>	ug/kg	54.4	13.9	1	10/21/21 08:15	10/22/21 14:08	75-34-3	
1,2-Dichloroethane	<b>&lt;12.5</b>	ug/kg	54.4	12.5	1	10/21/21 08:15	10/22/21 14:08	107-06-2	
1,1-Dichloroethene	<b>&lt;18.1</b>	ug/kg	54.4	18.1	1	10/21/21 08:15	10/22/21 14:08	75-35-4	
cis-1,2-Dichloroethene	<b>&lt;11.6</b>	ug/kg	54.4	11.6	1	10/21/21 08:15	10/22/21 14:08	156-59-2	
trans-1,2-Dichloroethene	<b>&lt;11.8</b>	ug/kg	54.4	11.8	1	10/21/21 08:15	10/22/21 14:08	156-60-5	
1,2-Dichloropropane	<b>&lt;13.0</b>	ug/kg	54.4	13.0	1	10/21/21 08:15	10/22/21 14:08	78-87-5	
1,3-Dichloropropane	<b>&lt;11.9</b>	ug/kg	54.4	11.9	1	10/21/21 08:15	10/22/21 14:08	142-28-9	
2,2-Dichloropropane	<b>&lt;14.7</b>	ug/kg	54.4	14.7	1	10/21/21 08:15	10/22/21 14:08	594-20-7	
1,1-Dichloropropene	<b>&lt;17.6</b>	ug/kg	54.4	17.6	1	10/21/21 08:15	10/22/21 14:08	563-58-6	
cis-1,3-Dichloropropene	<b>&lt;35.9</b>	ug/kg	272	35.9	1	10/21/21 08:15	10/22/21 14:08	10061-01-5	

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-5 (1.5-2.5)**      **Lab ID: 40235057007**      Collected: 10/13/21 12:00      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
trans-1,3-Dichloropropene	<156	ug/kg	272	156	1	10/21/21 08:15	10/22/21 14:08	10061-02-6	
Diisopropyl ether	<13.5	ug/kg	54.4	13.5	1	10/21/21 08:15	10/22/21 14:08	108-20-3	
Ethylbenzene	<13.0	ug/kg	54.4	13.0	1	10/21/21 08:15	10/22/21 14:08	100-41-4	
Hexachloro-1,3-butadiene	<108	ug/kg	272	108	1	10/21/21 08:15	10/22/21 14:08	87-68-3	
Isopropylbenzene (Cumene)	<14.7	ug/kg	54.4	14.7	1	10/21/21 08:15	10/22/21 14:08	98-82-8	
p-Isopropyltoluene	<16.5	ug/kg	54.4	16.5	1	10/21/21 08:15	10/22/21 14:08	99-87-6	
Methylene Chloride	<15.1	ug/kg	54.4	15.1	1	10/21/21 08:15	10/22/21 14:08	75-09-2	
Methyl-tert-butyl ether	<16.0	ug/kg	54.4	16.0	1	10/21/21 08:15	10/22/21 14:08	1634-04-4	
Naphthalene	240J	ug/kg	272	17.0	1	10/21/21 08:15	10/22/21 14:08	91-20-3	
n-Propylbenzene	<13.1	ug/kg	54.4	13.1	1	10/21/21 08:15	10/22/21 14:08	103-65-1	
Styrene	14.3J	ug/kg	54.4	13.9	1	10/21/21 08:15	10/22/21 14:08	100-42-5	
1,1,1,2-Tetrachloroethane	<13.1	ug/kg	54.4	13.1	1	10/21/21 08:15	10/22/21 14:08	630-20-6	
1,1,2,2-Tetrachloroethane	<19.7	ug/kg	54.4	19.7	1	10/21/21 08:15	10/22/21 14:08	79-34-5	
Tetrachloroethene	<21.1	ug/kg	54.4	21.1	1	10/21/21 08:15	10/22/21 14:08	127-18-4	
Toluene	45.8J	ug/kg	54.4	13.7	1	10/21/21 08:15	10/22/21 14:08	108-88-3	
1,2,3-Trichlorobenzene	<60.6	ug/kg	272	60.6	1	10/21/21 08:15	10/22/21 14:08	87-61-6	
1,2,4-Trichlorobenzene	<44.9	ug/kg	272	44.9	1	10/21/21 08:15	10/22/21 14:08	120-82-1	
1,1,1-Trichloroethane	<13.9	ug/kg	54.4	13.9	1	10/21/21 08:15	10/22/21 14:08	71-55-6	
1,1,2-Trichloroethane	<19.8	ug/kg	54.4	19.8	1	10/21/21 08:15	10/22/21 14:08	79-00-5	
Trichloroethene	<20.4	ug/kg	54.4	20.4	1	10/21/21 08:15	10/22/21 14:08	79-01-6	
Trichlorofluoromethane	<15.8	ug/kg	54.4	15.8	1	10/21/21 08:15	10/22/21 14:08	75-69-4	
1,2,3-Trichloropropane	<26.5	ug/kg	54.4	26.5	1	10/21/21 08:15	10/22/21 14:08	96-18-4	
1,2,4-Trimethylbenzene	<16.2	ug/kg	54.4	16.2	1	10/21/21 08:15	10/22/21 14:08	95-63-6	
1,3,5-Trimethylbenzene	<17.5	ug/kg	54.4	17.5	1	10/21/21 08:15	10/22/21 14:08	108-67-8	
Vinyl chloride	<11.0	ug/kg	54.4	11.0	1	10/21/21 08:15	10/22/21 14:08	75-01-4	
m&p-Xylene	24.3J	ug/kg	109	23.0	1	10/21/21 08:15	10/22/21 14:08	179601-23-1	
o-Xylene	<16.3	ug/kg	54.4	16.3	1	10/21/21 08:15	10/22/21 14:08	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	116	%	67-159		1	10/21/21 08:15	10/22/21 14:08	2037-26-5	
4-Bromofluorobenzene (S)	125	%	66-153		1	10/21/21 08:15	10/22/21 14:08	460-00-4	
1,2-Dichlorobenzene-d4 (S)	116	%	82-158		1	10/21/21 08:15	10/22/21 14:08	2199-69-1	

**Percent Moisture**

Analytical Method: ASTM D2974-87  
Pace Analytical Services - Green Bay

Percent Moisture	4.2	%	0.10	0.10	1		10/14/21 13:24		
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**9012 Cyanide, Total**

Analytical Method: EPA 9012B    Preparation Method: EPA 9012B  
Pace Analytical Services - Green Bay

Cyanide	7.0	mg/kg	0.86	0.29	1	10/21/21 12:15	10/21/21 15:06	57-12-5	
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## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-6 (2-4)**      **Lab ID: 40235057008**      Collected: 10/13/21 12:20      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082 GCS PCB</b>									
Analytical Method: EPA 8082 Preparation Method: EPA 3541									
Pace Analytical Services - Green Bay									
PCB-1016 (Aroclor 1016)	<8310	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	12674-11-2	D3
PCB-1221 (Aroclor 1221)	<8310	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	11104-28-2	
PCB-1232 (Aroclor 1232)	<8310	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	11141-16-5	
PCB-1242 (Aroclor 1242)	<8310	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	53469-21-9	
PCB-1248 (Aroclor 1248)	<8310	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	12672-29-6	
PCB-1254 (Aroclor 1254)	<8310	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	11097-69-1	
PCB-1260 (Aroclor 1260)	<8310	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	11096-82-5	
PCB, Total	<8310	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	1336-36-3	
<b>Surrogates</b>									
Tetrachloro-m-xylene (S)	0	%	67-102		500	10/14/21 16:03	10/16/21 02:01	877-09-8	S4
Decachlorobiphenyl (S)	0	%	47-114		500	10/14/21 16:03	10/16/21 02:01	2051-24-3	S4
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Green Bay									
Arsenic	2.8	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 21:55	7440-38-2	
Lead	47.1	mg/kg	2.1	0.63	1	10/19/21 06:21	10/19/21 21:55	7439-92-1	
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546									
Pace Analytical Services - Green Bay									
Acenaphthene	<47.2	ug/kg	364	47.2	20	10/20/21 06:47	10/20/21 17:12	83-32-9	
Acenaphthylene	2000	ug/kg	364	45.8	20	10/20/21 06:47	10/20/21 17:12	208-96-8	
Anthracene	456	ug/kg	364	45.1	20	10/20/21 06:47	10/20/21 17:12	120-12-7	
Benzo(a)anthracene	2090	ug/kg	364	47.0	20	10/20/21 06:47	10/20/21 17:12	56-55-3	
Benzo(a)pyrene	1030	ug/kg	364	41.3	20	10/20/21 06:47	10/20/21 17:12	50-32-8	
Benzo(b)fluoranthene	3670	ug/kg	364	50.5	20	10/20/21 06:47	10/20/21 17:12	205-99-2	
Benzo(g,h,i)perylene	1600	ug/kg	364	63.8	20	10/20/21 06:47	10/20/21 17:12	191-24-2	
Benzo(k)fluoranthene	1740	ug/kg	364	46.5	20	10/20/21 06:47	10/20/21 17:12	207-08-9	
Chrysene	3060	ug/kg	364	68.6	20	10/20/21 06:47	10/20/21 17:12	218-01-9	
Dibenz(a,h)anthracene	624	ug/kg	364	50.3	20	10/20/21 06:47	10/20/21 17:12	53-70-3	
Fluoranthene	1010	ug/kg	364	43.0	20	10/20/21 06:47	10/20/21 17:12	206-44-0	
Fluorene	100J	ug/kg	364	43.6	20	10/20/21 06:47	10/20/21 17:12	86-73-7	
Indeno(1,2,3-cd)pyrene	1460	ug/kg	364	75.8	20	10/20/21 06:47	10/20/21 17:12	193-39-5	
1-Methylnaphthalene	282J	ug/kg	364	53.1	20	10/20/21 06:47	10/20/21 17:12	90-12-0	
2-Methylnaphthalene	665	ug/kg	364	53.2	20	10/20/21 06:47	10/20/21 17:12	91-57-6	
Naphthalene	1620	ug/kg	364	35.4	20	10/20/21 06:47	10/20/21 17:12	91-20-3	
Phenanthrene	372	ug/kg	364	41.6	20	10/20/21 06:47	10/20/21 17:12	85-01-8	
Pyrene	1090	ug/kg	364	53.4	20	10/20/21 06:47	10/20/21 17:12	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	55	%	36-86		20	10/20/21 06:47	10/20/21 17:12	321-60-8	
Terphenyl-d14 (S)	64	%	41-97		20	10/20/21 06:47	10/20/21 17:12	1718-51-0	
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Benzene	68.3	ug/kg	23.6	14.0	1	10/21/21 08:15	10/22/21 14:28	71-43-2	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

Sample: GP-6 (2-4) Lab ID: 40235057008 Collected: 10/13/21 12:20 Received: 10/13/21 16:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Bromobenzene	<23.0	ug/kg	58.9	23.0	1	10/21/21 08:15	10/22/21 14:28	108-86-1	
Bromochloromethane	<16.1	ug/kg	58.9	16.1	1	10/21/21 08:15	10/22/21 14:28	74-97-5	
Bromodichloromethane	<14.0	ug/kg	58.9	14.0	1	10/21/21 08:15	10/22/21 14:28	75-27-4	
Bromoform	<259	ug/kg	294	259	1	10/21/21 08:15	10/22/21 14:28	75-25-2	
Bromomethane	<82.5	ug/kg	294	82.5	1	10/21/21 08:15	10/22/21 14:28	74-83-9	
n-Butylbenzene	<27.0	ug/kg	58.9	27.0	1	10/21/21 08:15	10/22/21 14:28	104-51-8	
sec-Butylbenzene	<14.4	ug/kg	58.9	14.4	1	10/21/21 08:15	10/22/21 14:28	135-98-8	
tert-Butylbenzene	<18.5	ug/kg	58.9	18.5	1	10/21/21 08:15	10/22/21 14:28	98-06-6	
Carbon tetrachloride	<13.0	ug/kg	58.9	13.0	1	10/21/21 08:15	10/22/21 14:28	56-23-5	
Chlorobenzene	<7.1	ug/kg	58.9	7.1	1	10/21/21 08:15	10/22/21 14:28	108-90-7	
Chloroethane	<24.8	ug/kg	294	24.8	1	10/21/21 08:15	10/22/21 14:28	75-00-3	
Chloroform	<42.2	ug/kg	294	42.2	1	10/21/21 08:15	10/22/21 14:28	67-66-3	
Chloromethane	<22.4	ug/kg	58.9	22.4	1	10/21/21 08:15	10/22/21 14:28	74-87-3	
2-Chlorotoluene	<19.1	ug/kg	58.9	19.1	1	10/21/21 08:15	10/22/21 14:28	95-49-8	
4-Chlorotoluene	<22.4	ug/kg	58.9	22.4	1	10/21/21 08:15	10/22/21 14:28	106-43-4	
1,2-Dibromo-3-chloropropane	<45.7	ug/kg	294	45.7	1	10/21/21 08:15	10/22/21 14:28	96-12-8	
Dibromochloromethane	<201	ug/kg	294	201	1	10/21/21 08:15	10/22/21 14:28	124-48-1	
1,2-Dibromoethane (EDB)	<16.1	ug/kg	58.9	16.1	1	10/21/21 08:15	10/22/21 14:28	106-93-4	
Dibromomethane	<17.4	ug/kg	58.9	17.4	1	10/21/21 08:15	10/22/21 14:28	74-95-3	
1,2-Dichlorobenzene	<18.3	ug/kg	58.9	18.3	1	10/21/21 08:15	10/22/21 14:28	95-50-1	
1,3-Dichlorobenzene	<16.1	ug/kg	58.9	16.1	1	10/21/21 08:15	10/22/21 14:28	541-73-1	
1,4-Dichlorobenzene	<16.1	ug/kg	58.9	16.1	1	10/21/21 08:15	10/22/21 14:28	106-46-7	
Dichlorodifluoromethane	<25.3	ug/kg	58.9	25.3	1	10/21/21 08:15	10/22/21 14:28	75-71-8	
1,1-Dichloroethane	<15.1	ug/kg	58.9	15.1	1	10/21/21 08:15	10/22/21 14:28	75-34-3	
1,2-Dichloroethane	<13.5	ug/kg	58.9	13.5	1	10/21/21 08:15	10/22/21 14:28	107-06-2	
1,1-Dichloroethene	<19.5	ug/kg	58.9	19.5	1	10/21/21 08:15	10/22/21 14:28	75-35-4	
cis-1,2-Dichloroethene	<12.6	ug/kg	58.9	12.6	1	10/21/21 08:15	10/22/21 14:28	156-59-2	
trans-1,2-Dichloroethene	<12.7	ug/kg	58.9	12.7	1	10/21/21 08:15	10/22/21 14:28	156-60-5	
1,2-Dichloropropane	<14.0	ug/kg	58.9	14.0	1	10/21/21 08:15	10/22/21 14:28	78-87-5	
1,3-Dichloropropane	<12.8	ug/kg	58.9	12.8	1	10/21/21 08:15	10/22/21 14:28	142-28-9	
2,2-Dichloropropane	<15.9	ug/kg	58.9	15.9	1	10/21/21 08:15	10/22/21 14:28	594-20-7	
1,1-Dichloropropene	<19.1	ug/kg	58.9	19.1	1	10/21/21 08:15	10/22/21 14:28	563-58-6	
cis-1,3-Dichloropropene	<38.9	ug/kg	294	38.9	1	10/21/21 08:15	10/22/21 14:28	10061-01-5	
trans-1,3-Dichloropropene	<168	ug/kg	294	168	1	10/21/21 08:15	10/22/21 14:28	10061-02-6	
Diisopropyl ether	<14.6	ug/kg	58.9	14.6	1	10/21/21 08:15	10/22/21 14:28	108-20-3	
Ethylbenzene	<14.0	ug/kg	58.9	14.0	1	10/21/21 08:15	10/22/21 14:28	100-41-4	
Hexachloro-1,3-butadiene	<117	ug/kg	294	117	1	10/21/21 08:15	10/22/21 14:28	87-68-3	
Isopropylbenzene (Cumene)	<15.9	ug/kg	58.9	15.9	1	10/21/21 08:15	10/22/21 14:28	98-82-8	
p-Isopropyltoluene	<17.9	ug/kg	58.9	17.9	1	10/21/21 08:15	10/22/21 14:28	99-87-6	
Methylene Chloride	<16.4	ug/kg	58.9	16.4	1	10/21/21 08:15	10/22/21 14:28	75-09-2	
Methyl-tert-butyl ether	<17.3	ug/kg	58.9	17.3	1	10/21/21 08:15	10/22/21 14:28	1634-04-4	
Naphthalene	819	ug/kg	294	18.4	1	10/21/21 08:15	10/22/21 14:28	91-20-3	
n-Propylbenzene	<14.1	ug/kg	58.9	14.1	1	10/21/21 08:15	10/22/21 14:28	103-65-1	
Styrene	32.8J	ug/kg	58.9	15.1	1	10/21/21 08:15	10/22/21 14:28	100-42-5	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-6 (2-4)**      **Lab ID: 40235057008**      Collected: 10/13/21 12:20      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
1,1,1,2-Tetrachloroethane	<14.1	ug/kg	58.9	14.1	1	10/21/21 08:15	10/22/21 14:28	630-20-6	
1,1,2,2-Tetrachloroethane	<21.3	ug/kg	58.9	21.3	1	10/21/21 08:15	10/22/21 14:28	79-34-5	
Tetrachloroethene	<22.8	ug/kg	58.9	22.8	1	10/21/21 08:15	10/22/21 14:28	127-18-4	
Toluene	95.9	ug/kg	58.9	14.8	1	10/21/21 08:15	10/22/21 14:28	108-88-3	
1,2,3-Trichlorobenzene	<65.6	ug/kg	294	65.6	1	10/21/21 08:15	10/22/21 14:28	87-61-6	
1,2,4-Trichlorobenzene	<48.5	ug/kg	294	48.5	1	10/21/21 08:15	10/22/21 14:28	120-82-1	
1,1,1-Trichloroethane	<15.1	ug/kg	58.9	15.1	1	10/21/21 08:15	10/22/21 14:28	71-55-6	
1,1,2-Trichloroethane	<21.4	ug/kg	58.9	21.4	1	10/21/21 08:15	10/22/21 14:28	79-00-5	
Trichloroethene	<22.0	ug/kg	58.9	22.0	1	10/21/21 08:15	10/22/21 14:28	79-01-6	
Trichlorofluoromethane	<17.1	ug/kg	58.9	17.1	1	10/21/21 08:15	10/22/21 14:28	75-69-4	
1,2,3-Trichloropropane	<28.6	ug/kg	58.9	28.6	1	10/21/21 08:15	10/22/21 14:28	96-18-4	
1,2,4-Trimethylbenzene	<17.5	ug/kg	58.9	17.5	1	10/21/21 08:15	10/22/21 14:28	95-63-6	
1,3,5-Trimethylbenzene	<19.0	ug/kg	58.9	19.0	1	10/21/21 08:15	10/22/21 14:28	108-67-8	
Vinyl chloride	<11.9	ug/kg	58.9	11.9	1	10/21/21 08:15	10/22/21 14:28	75-01-4	
m&p-Xylene	46.7J	ug/kg	118	24.8	1	10/21/21 08:15	10/22/21 14:28	179601-23-1	
o-Xylene	19.4J	ug/kg	58.9	17.7	1	10/21/21 08:15	10/22/21 14:28	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	127	%	67-159		1	10/21/21 08:15	10/22/21 14:28	2037-26-5	
4-Bromofluorobenzene (S)	130	%	66-153		1	10/21/21 08:15	10/22/21 14:28	460-00-4	
1,2-Dichlorobenzene-d4 (S)	122	%	82-158		1	10/21/21 08:15	10/22/21 14:28	2199-69-1	

**Percent Moisture**

Analytical Method: ASTM D2974-87  
Pace Analytical Services - Green Bay

Percent Moisture	8.2	%	0.10	0.10	1		10/14/21 13:24		
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**9012 Cyanide, Total**

Analytical Method: EPA 9012B Preparation Method: EPA 9012B  
Pace Analytical Services - Green Bay

Cyanide	9.4	mg/kg	0.85	0.28	1	10/21/21 12:15	10/21/21 15:07	57-12-5	
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**Sample: GP-7 (2-4)**      **Lab ID: 40235057009**      Collected: 10/13/21 12:35      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082 GCS PCB</b>									
Analytical Method: EPA 8082 Preparation Method: EPA 3541									
Pace Analytical Services - Green Bay									
PCB-1016 (Aroclor 1016)	<16.3	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	12674-11-2	
PCB-1221 (Aroclor 1221)	<16.3	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	11104-28-2	
PCB-1232 (Aroclor 1232)	<16.3	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	11141-16-5	
PCB-1242 (Aroclor 1242)	<16.3	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	53469-21-9	
PCB-1248 (Aroclor 1248)	<16.3	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	12672-29-6	
PCB-1254 (Aroclor 1254)	<16.3	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	11097-69-1	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON

Pace Project No.: 40235057

**Sample: GP-7 (2-4)**      **Lab ID: 40235057009**      Collected: 10/13/21 12:35      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082 GCS PCB</b>									
Analytical Method: EPA 8082 Preparation Method: EPA 3541									
Pace Analytical Services - Green Bay									
PCB-1260 (Aroclor 1260)	<16.3	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	11096-82-5	
PCB, Total	<16.3	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	1336-36-3	
<b>Surrogates</b>									
Tetrachloro-m-xylene (S)	97	%	67-102		1	10/14/21 16:03	10/16/21 01:17	877-09-8	
Decachlorobiphenyl (S)	90	%	47-114		1	10/14/21 16:03	10/16/21 01:17	2051-24-3	
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Green Bay									
Arsenic	2.7	mg/kg	2.7	1.6	1	10/19/21 06:21	10/19/21 21:57	7440-38-2	
Lead	4.6	mg/kg	2.1	0.64	1	10/19/21 06:21	10/19/21 21:57	7439-92-1	
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546									
Pace Analytical Services - Green Bay									
Acenaphthene	<2.3	ug/kg	17.9	2.3	1	10/20/21 06:47	10/20/21 17:29	83-32-9	
Acenaphthylene	3.0J	ug/kg	17.9	2.3	1	10/20/21 06:47	10/20/21 17:29	208-96-8	
Anthracene	3.2J	ug/kg	17.9	2.2	1	10/20/21 06:47	10/20/21 17:29	120-12-7	
Benzo(a)anthracene	18.5	ug/kg	17.9	2.3	1	10/20/21 06:47	10/20/21 17:29	56-55-3	
Benzo(a)pyrene	25.1	ug/kg	17.9	2.0	1	10/20/21 06:47	10/20/21 17:29	50-32-8	
Benzo(b)fluoranthene	37.5	ug/kg	17.9	2.5	1	10/20/21 06:47	10/20/21 17:29	205-99-2	
Benzo(g,h,i)perylene	15.7J	ug/kg	17.9	3.1	1	10/20/21 06:47	10/20/21 17:29	191-24-2	
Benzo(k)fluoranthene	14.4J	ug/kg	17.9	2.3	1	10/20/21 06:47	10/20/21 17:29	207-08-9	
Chrysene	30.7	ug/kg	17.9	3.4	1	10/20/21 06:47	10/20/21 17:29	218-01-9	
Dibenz(a,h)anthracene	4.6J	ug/kg	17.9	2.5	1	10/20/21 06:47	10/20/21 17:29	53-70-3	
Fluoranthene	43.1	ug/kg	17.9	2.1	1	10/20/21 06:47	10/20/21 17:29	206-44-0	
Fluorene	<2.1	ug/kg	17.9	2.1	1	10/20/21 06:47	10/20/21 17:29	86-73-7	
Indeno(1,2,3-cd)pyrene	10.4J	ug/kg	17.9	3.7	1	10/20/21 06:47	10/20/21 17:29	193-39-5	
1-Methylnaphthalene	<2.6	ug/kg	17.9	2.6	1	10/20/21 06:47	10/20/21 17:29	90-12-0	
2-Methylnaphthalene	<2.6	ug/kg	17.9	2.6	1	10/20/21 06:47	10/20/21 17:29	91-57-6	
Naphthalene	1.9J	ug/kg	17.9	1.7	1	10/20/21 06:47	10/20/21 17:29	91-20-3	
Phenanthrene	13.0J	ug/kg	17.9	2.0	1	10/20/21 06:47	10/20/21 17:29	85-01-8	
Pyrene	35.1	ug/kg	17.9	2.6	1	10/20/21 06:47	10/20/21 17:29	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	68	%	36-86		1	10/20/21 06:47	10/20/21 17:29	321-60-8	
Terphenyl-d14 (S)	79	%	41-97		1	10/20/21 06:47	10/20/21 17:29	1718-51-0	
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Benzene	<13.6	ug/kg	22.8	13.6	1	10/21/21 08:15	10/22/21 09:15	71-43-2	
Bromobenzene	<22.2	ug/kg	57.0	22.2	1	10/21/21 08:15	10/22/21 09:15	108-86-1	
Bromochloromethane	<15.6	ug/kg	57.0	15.6	1	10/21/21 08:15	10/22/21 09:15	74-97-5	
Bromodichloromethane	<13.6	ug/kg	57.0	13.6	1	10/21/21 08:15	10/22/21 09:15	75-27-4	
Bromoform	<251	ug/kg	285	251	1	10/21/21 08:15	10/22/21 09:15	75-25-2	
Bromomethane	<79.9	ug/kg	285	79.9	1	10/21/21 08:15	10/22/21 09:15	74-83-9	
n-Butylbenzene	<26.1	ug/kg	57.0	26.1	1	10/21/21 08:15	10/22/21 09:15	104-51-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-7 (2-4)**      **Lab ID: 40235057009**      Collected: 10/13/21 12:35      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
sec-Butylbenzene	<13.9	ug/kg	57.0	13.9	1	10/21/21 08:15	10/22/21 09:15	135-98-8	
tert-Butylbenzene	<17.9	ug/kg	57.0	17.9	1	10/21/21 08:15	10/22/21 09:15	98-06-6	
Carbon tetrachloride	<12.5	ug/kg	57.0	12.5	1	10/21/21 08:15	10/22/21 09:15	56-23-5	
Chlorobenzene	<6.8	ug/kg	57.0	6.8	1	10/21/21 08:15	10/22/21 09:15	108-90-7	
Chloroethane	<24.1	ug/kg	285	24.1	1	10/21/21 08:15	10/22/21 09:15	75-00-3	
Chloroform	<40.8	ug/kg	285	40.8	1	10/21/21 08:15	10/22/21 09:15	67-66-3	
Chloromethane	<21.7	ug/kg	57.0	21.7	1	10/21/21 08:15	10/22/21 09:15	74-87-3	
2-Chlorotoluene	<18.5	ug/kg	57.0	18.5	1	10/21/21 08:15	10/22/21 09:15	95-49-8	
4-Chlorotoluene	<21.7	ug/kg	57.0	21.7	1	10/21/21 08:15	10/22/21 09:15	106-43-4	
1,2-Dibromo-3-chloropropane	<44.2	ug/kg	285	44.2	1	10/21/21 08:15	10/22/21 09:15	96-12-8	
Dibromochloromethane	<195	ug/kg	285	195	1	10/21/21 08:15	10/22/21 09:15	124-48-1	
1,2-Dibromoethane (EDB)	<15.6	ug/kg	57.0	15.6	1	10/21/21 08:15	10/22/21 09:15	106-93-4	
Dibromomethane	<16.9	ug/kg	57.0	16.9	1	10/21/21 08:15	10/22/21 09:15	74-95-3	
1,2-Dichlorobenzene	<17.7	ug/kg	57.0	17.7	1	10/21/21 08:15	10/22/21 09:15	95-50-1	
1,3-Dichlorobenzene	<15.6	ug/kg	57.0	15.6	1	10/21/21 08:15	10/22/21 09:15	541-73-1	
1,4-Dichlorobenzene	<15.6	ug/kg	57.0	15.6	1	10/21/21 08:15	10/22/21 09:15	106-46-7	
Dichlorodifluoromethane	<24.5	ug/kg	57.0	24.5	1	10/21/21 08:15	10/22/21 09:15	75-71-8	
1,1-Dichloroethane	<14.6	ug/kg	57.0	14.6	1	10/21/21 08:15	10/22/21 09:15	75-34-3	
1,2-Dichloroethane	<13.1	ug/kg	57.0	13.1	1	10/21/21 08:15	10/22/21 09:15	107-06-2	
1,1-Dichloroethene	<18.9	ug/kg	57.0	18.9	1	10/21/21 08:15	10/22/21 09:15	75-35-4	
cis-1,2-Dichloroethene	<12.2	ug/kg	57.0	12.2	1	10/21/21 08:15	10/22/21 09:15	156-59-2	
trans-1,2-Dichloroethene	<12.3	ug/kg	57.0	12.3	1	10/21/21 08:15	10/22/21 09:15	156-60-5	
1,2-Dichloropropane	<13.6	ug/kg	57.0	13.6	1	10/21/21 08:15	10/22/21 09:15	78-87-5	
1,3-Dichloropropane	<12.4	ug/kg	57.0	12.4	1	10/21/21 08:15	10/22/21 09:15	142-28-9	
2,2-Dichloropropane	<15.4	ug/kg	57.0	15.4	1	10/21/21 08:15	10/22/21 09:15	594-20-7	
1,1-Dichloropropene	<18.5	ug/kg	57.0	18.5	1	10/21/21 08:15	10/22/21 09:15	563-58-6	
cis-1,3-Dichloropropene	<37.6	ug/kg	285	37.6	1	10/21/21 08:15	10/22/21 09:15	10061-01-5	
trans-1,3-Dichloropropene	<163	ug/kg	285	163	1	10/21/21 08:15	10/22/21 09:15	10061-02-6	
Diisopropyl ether	<14.1	ug/kg	57.0	14.1	1	10/21/21 08:15	10/22/21 09:15	108-20-3	
Ethylbenzene	<13.6	ug/kg	57.0	13.6	1	10/21/21 08:15	10/22/21 09:15	100-41-4	
Hexachloro-1,3-butadiene	<113	ug/kg	285	113	1	10/21/21 08:15	10/22/21 09:15	87-68-3	
Isopropylbenzene (Cumene)	<15.4	ug/kg	57.0	15.4	1	10/21/21 08:15	10/22/21 09:15	98-82-8	
p-Isopropyltoluene	<17.3	ug/kg	57.0	17.3	1	10/21/21 08:15	10/22/21 09:15	99-87-6	
Methylene Chloride	<15.8	ug/kg	57.0	15.8	1	10/21/21 08:15	10/22/21 09:15	75-09-2	
Methyl-tert-butyl ether	<16.8	ug/kg	57.0	16.8	1	10/21/21 08:15	10/22/21 09:15	1634-04-4	
Naphthalene	<17.8	ug/kg	285	17.8	1	10/21/21 08:15	10/22/21 09:15	91-20-3	
n-Propylbenzene	<13.7	ug/kg	57.0	13.7	1	10/21/21 08:15	10/22/21 09:15	103-65-1	
Styrene	<14.6	ug/kg	57.0	14.6	1	10/21/21 08:15	10/22/21 09:15	100-42-5	
1,1,1,2-Tetrachloroethane	<13.7	ug/kg	57.0	13.7	1	10/21/21 08:15	10/22/21 09:15	630-20-6	
1,1,1,2,2-Tetrachloroethane	<20.6	ug/kg	57.0	20.6	1	10/21/21 08:15	10/22/21 09:15	79-34-5	
Tetrachloroethene	<22.1	ug/kg	57.0	22.1	1	10/21/21 08:15	10/22/21 09:15	127-18-4	
Toluene	<14.4	ug/kg	57.0	14.4	1	10/21/21 08:15	10/22/21 09:15	108-88-3	
1,2,3-Trichlorobenzene	<63.5	ug/kg	285	63.5	1	10/21/21 08:15	10/22/21 09:15	87-61-6	
1,2,4-Trichlorobenzene	<47.0	ug/kg	285	47.0	1	10/21/21 08:15	10/22/21 09:15	120-82-1	

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-7 (2-4)**      **Lab ID: 40235057009**      Collected: 10/13/21 12:35      Received: 10/13/21 16:40      Matrix: Solid  
*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay									
1,1,1-Trichloroethane	<14.6	ug/kg	57.0	14.6	1	10/21/21 08:15	10/22/21 09:15	71-55-6	
1,1,2-Trichloroethane	<20.8	ug/kg	57.0	20.8	1	10/21/21 08:15	10/22/21 09:15	79-00-5	
Trichloroethene	<21.3	ug/kg	57.0	21.3	1	10/21/21 08:15	10/22/21 09:15	79-01-6	
Trichlorofluoromethane	<16.5	ug/kg	57.0	16.5	1	10/21/21 08:15	10/22/21 09:15	75-69-4	
1,2,3-Trichloropropane	<27.7	ug/kg	57.0	27.7	1	10/21/21 08:15	10/22/21 09:15	96-18-4	
1,2,4-Trimethylbenzene	<17.0	ug/kg	57.0	17.0	1	10/21/21 08:15	10/22/21 09:15	95-63-6	
1,3,5-Trimethylbenzene	<18.4	ug/kg	57.0	18.4	1	10/21/21 08:15	10/22/21 09:15	108-67-8	
Vinyl chloride	<11.5	ug/kg	57.0	11.5	1	10/21/21 08:15	10/22/21 09:15	75-01-4	
m&p-Xylene	<24.1	ug/kg	114	24.1	1	10/21/21 08:15	10/22/21 09:15	179601-23-1	
o-Xylene	<17.1	ug/kg	57.0	17.1	1	10/21/21 08:15	10/22/21 09:15	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	113	%	67-159		1	10/21/21 08:15	10/22/21 09:15	2037-26-5	
4-Bromofluorobenzene (S)	116	%	66-153		1	10/21/21 08:15	10/22/21 09:15	460-00-4	
1,2-Dichlorobenzene-d4 (S)	111	%	82-158		1	10/21/21 08:15	10/22/21 09:15	2199-69-1	

<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay									
Percent Moisture	6.5	%	0.10	0.10	1		10/14/21 13:24		

<b>9012 Cyanide, Total</b>									
Analytical Method: EPA 9012B    Preparation Method: EPA 9012B Pace Analytical Services - Green Bay									
Cyanide	<0.18	mg/kg	0.53	0.18	1	10/21/21 12:15	10/21/21 15:07	57-12-5	

**Sample: GP-8 (2-4)**      **Lab ID: 40235057010**      Collected: 10/13/21 13:05      Received: 10/13/21 16:40      Matrix: Solid  
*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B Pace Analytical Services - Green Bay									
Arsenic	6.3	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 22:04	7440-38-2	
Lead	104	mg/kg	2.1	0.63	1	10/19/21 06:21	10/19/21 22:04	7439-92-1	
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM    Preparation Method: EPA 3546 Pace Analytical Services - Green Bay									
Acenaphthene	58.5J	ug/kg	356	46.2	20	10/20/21 06:47	10/20/21 17:46	83-32-9	
Acenaphthylene	339J	ug/kg	356	44.9	20	10/20/21 06:47	10/20/21 17:46	208-96-8	
Anthracene	352J	ug/kg	356	44.2	20	10/20/21 06:47	10/20/21 17:46	120-12-7	
Benzo(a)anthracene	1680	ug/kg	356	46.0	20	10/20/21 06:47	10/20/21 17:46	56-55-3	
Benzo(a)pyrene	1790	ug/kg	356	40.4	20	10/20/21 06:47	10/20/21 17:46	50-32-8	
Benzo(b)fluoranthene	2420	ug/kg	356	49.4	20	10/20/21 06:47	10/20/21 17:46	205-99-2	
Benzo(g,h,i)perylene	949	ug/kg	356	62.5	20	10/20/21 06:47	10/20/21 17:46	191-24-2	

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-8 (2-4)**      **Lab ID: 40235057010**      Collected: 10/13/21 13:05      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM    Preparation Method: EPA 3546									
Pace Analytical Services - Green Bay									
Benzo(k)fluoranthene	1210	ug/kg	356	45.5	20	10/20/21 06:47	10/20/21 17:46	207-08-9	
Chrysene	1770	ug/kg	356	67.1	20	10/20/21 06:47	10/20/21 17:46	218-01-9	
Dibenz(a,h)anthracene	292J	ug/kg	356	49.3	20	10/20/21 06:47	10/20/21 17:46	53-70-3	
Fluoranthene	3350	ug/kg	356	42.1	20	10/20/21 06:47	10/20/21 17:46	206-44-0	
Fluorene	117J	ug/kg	356	42.7	20	10/20/21 06:47	10/20/21 17:46	86-73-7	
Indeno(1,2,3-cd)pyrene	858	ug/kg	356	74.2	20	10/20/21 06:47	10/20/21 17:46	193-39-5	
1-Methylnaphthalene	54.3J	ug/kg	356	52.0	20	10/20/21 06:47	10/20/21 17:46	90-12-0	
2-Methylnaphthalene	75.2J	ug/kg	356	52.1	20	10/20/21 06:47	10/20/21 17:46	91-57-6	
Naphthalene	111J	ug/kg	356	34.7	20	10/20/21 06:47	10/20/21 17:46	91-20-3	
Phenanthrene	1040	ug/kg	356	40.8	20	10/20/21 06:47	10/20/21 17:46	85-01-8	
Pyrene	2760	ug/kg	356	52.3	20	10/20/21 06:47	10/20/21 17:46	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	61	%	36-86		20	10/20/21 06:47	10/20/21 17:46	321-60-8	
Terphenyl-d14 (S)	71	%	41-97		20	10/20/21 06:47	10/20/21 17:46	1718-51-0	

**8260 MSV Med Level Normal List**      Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B  
Pace Analytical Services - Green Bay

Benzene	<13.5	ug/kg	22.7	13.5	1	10/21/21 08:15	10/22/21 15:46	71-43-2	
Bromobenzene	<22.1	ug/kg	56.7	22.1	1	10/21/21 08:15	10/22/21 15:46	108-86-1	
Bromochloromethane	<15.5	ug/kg	56.7	15.5	1	10/21/21 08:15	10/22/21 15:46	74-97-5	
Bromodichloromethane	<13.5	ug/kg	56.7	13.5	1	10/21/21 08:15	10/22/21 15:46	75-27-4	
Bromoform	<249	ug/kg	283	249	1	10/21/21 08:15	10/22/21 15:46	75-25-2	
Bromomethane	<79.5	ug/kg	283	79.5	1	10/21/21 08:15	10/22/21 15:46	74-83-9	
n-Butylbenzene	<26.0	ug/kg	56.7	26.0	1	10/21/21 08:15	10/22/21 15:46	104-51-8	
sec-Butylbenzene	<13.8	ug/kg	56.7	13.8	1	10/21/21 08:15	10/22/21 15:46	135-98-8	
tert-Butylbenzene	<17.8	ug/kg	56.7	17.8	1	10/21/21 08:15	10/22/21 15:46	98-06-6	
Carbon tetrachloride	<12.5	ug/kg	56.7	12.5	1	10/21/21 08:15	10/22/21 15:46	56-23-5	
Chlorobenzene	<6.8	ug/kg	56.7	6.8	1	10/21/21 08:15	10/22/21 15:46	108-90-7	
Chloroethane	<23.9	ug/kg	283	23.9	1	10/21/21 08:15	10/22/21 15:46	75-00-3	
Chloroform	<40.6	ug/kg	283	40.6	1	10/21/21 08:15	10/22/21 15:46	67-66-3	
Chloromethane	<21.5	ug/kg	56.7	21.5	1	10/21/21 08:15	10/22/21 15:46	74-87-3	
2-Chlorotoluene	<18.4	ug/kg	56.7	18.4	1	10/21/21 08:15	10/22/21 15:46	95-49-8	
4-Chlorotoluene	<21.5	ug/kg	56.7	21.5	1	10/21/21 08:15	10/22/21 15:46	106-43-4	
1,2-Dibromo-3-chloropropane	<44.0	ug/kg	283	44.0	1	10/21/21 08:15	10/22/21 15:46	96-12-8	
Dibromochloromethane	<194	ug/kg	283	194	1	10/21/21 08:15	10/22/21 15:46	124-48-1	
1,2-Dibromoethane (EDB)	<15.5	ug/kg	56.7	15.5	1	10/21/21 08:15	10/22/21 15:46	106-93-4	
Dibromomethane	<16.8	ug/kg	56.7	16.8	1	10/21/21 08:15	10/22/21 15:46	74-95-3	
1,2-Dichlorobenzene	<17.6	ug/kg	56.7	17.6	1	10/21/21 08:15	10/22/21 15:46	95-50-1	
1,3-Dichlorobenzene	<15.5	ug/kg	56.7	15.5	1	10/21/21 08:15	10/22/21 15:46	541-73-1	
1,4-Dichlorobenzene	<15.5	ug/kg	56.7	15.5	1	10/21/21 08:15	10/22/21 15:46	106-46-7	
Dichlorodifluoromethane	<24.4	ug/kg	56.7	24.4	1	10/21/21 08:15	10/22/21 15:46	75-71-8	
1,1-Dichloroethane	<14.5	ug/kg	56.7	14.5	1	10/21/21 08:15	10/22/21 15:46	75-34-3	
1,2-Dichloroethane	<13.0	ug/kg	56.7	13.0	1	10/21/21 08:15	10/22/21 15:46	107-06-2	
1,1-Dichloroethene	<18.8	ug/kg	56.7	18.8	1	10/21/21 08:15	10/22/21 15:46	75-35-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-8 (2-4)**      **Lab ID: 40235057010**      Collected: 10/13/21 13:05      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
cis-1,2-Dichloroethene	<12.1	ug/kg	56.7	12.1	1	10/21/21 08:15	10/22/21 15:46	156-59-2	
trans-1,2-Dichloroethene	<12.2	ug/kg	56.7	12.2	1	10/21/21 08:15	10/22/21 15:46	156-60-5	
1,2-Dichloropropane	<13.5	ug/kg	56.7	13.5	1	10/21/21 08:15	10/22/21 15:46	78-87-5	
1,3-Dichloropropane	<12.4	ug/kg	56.7	12.4	1	10/21/21 08:15	10/22/21 15:46	142-28-9	
2,2-Dichloropropane	<15.3	ug/kg	56.7	15.3	1	10/21/21 08:15	10/22/21 15:46	594-20-7	
1,1-Dichloropropene	<18.4	ug/kg	56.7	18.4	1	10/21/21 08:15	10/22/21 15:46	563-58-6	
cis-1,3-Dichloropropene	<37.4	ug/kg	283	37.4	1	10/21/21 08:15	10/22/21 15:46	10061-01-5	
trans-1,3-Dichloropropene	<162	ug/kg	283	162	1	10/21/21 08:15	10/22/21 15:46	10061-02-6	
Diisopropyl ether	<14.1	ug/kg	56.7	14.1	1	10/21/21 08:15	10/22/21 15:46	108-20-3	
Ethylbenzene	<13.5	ug/kg	56.7	13.5	1	10/21/21 08:15	10/22/21 15:46	100-41-4	
Hexachloro-1,3-butadiene	<113	ug/kg	283	113	1	10/21/21 08:15	10/22/21 15:46	87-68-3	
Isopropylbenzene (Cumene)	<15.3	ug/kg	56.7	15.3	1	10/21/21 08:15	10/22/21 15:46	98-82-8	
p-Isopropyltoluene	<17.2	ug/kg	56.7	17.2	1	10/21/21 08:15	10/22/21 15:46	99-87-6	
Methylene Chloride	<15.8	ug/kg	56.7	15.8	1	10/21/21 08:15	10/22/21 15:46	75-09-2	
Methyl-tert-butyl ether	<16.7	ug/kg	56.7	16.7	1	10/21/21 08:15	10/22/21 15:46	1634-04-4	
Naphthalene	<17.7	ug/kg	283	17.7	1	10/21/21 08:15	10/22/21 15:46	91-20-3	
n-Propylbenzene	<13.6	ug/kg	56.7	13.6	1	10/21/21 08:15	10/22/21 15:46	103-65-1	
Styrene	<14.5	ug/kg	56.7	14.5	1	10/21/21 08:15	10/22/21 15:46	100-42-5	
1,1,1,2-Tetrachloroethane	<13.6	ug/kg	56.7	13.6	1	10/21/21 08:15	10/22/21 15:46	630-20-6	
1,1,1,2,2-Tetrachloroethane	<20.5	ug/kg	56.7	20.5	1	10/21/21 08:15	10/22/21 15:46	79-34-5	
Tetrachloroethene	<22.0	ug/kg	56.7	22.0	1	10/21/21 08:15	10/22/21 15:46	127-18-4	
Toluene	<14.3	ug/kg	56.7	14.3	1	10/21/21 08:15	10/22/21 15:46	108-88-3	
1,2,3-Trichlorobenzene	<63.1	ug/kg	283	63.1	1	10/21/21 08:15	10/22/21 15:46	87-61-6	
1,2,4-Trichlorobenzene	<46.7	ug/kg	283	46.7	1	10/21/21 08:15	10/22/21 15:46	120-82-1	
1,1,1-Trichloroethane	<14.5	ug/kg	56.7	14.5	1	10/21/21 08:15	10/22/21 15:46	71-55-6	
1,1,2-Trichloroethane	<20.6	ug/kg	56.7	20.6	1	10/21/21 08:15	10/22/21 15:46	79-00-5	
Trichloroethene	<21.2	ug/kg	56.7	21.2	1	10/21/21 08:15	10/22/21 15:46	79-01-6	
Trichlorofluoromethane	<16.4	ug/kg	56.7	16.4	1	10/21/21 08:15	10/22/21 15:46	75-69-4	
1,2,3-Trichloropropane	<27.5	ug/kg	56.7	27.5	1	10/21/21 08:15	10/22/21 15:46	96-18-4	
1,2,4-Trimethylbenzene	<16.9	ug/kg	56.7	16.9	1	10/21/21 08:15	10/22/21 15:46	95-63-6	
1,3,5-Trimethylbenzene	<18.2	ug/kg	56.7	18.2	1	10/21/21 08:15	10/22/21 15:46	108-67-8	
Vinyl chloride	<11.4	ug/kg	56.7	11.4	1	10/21/21 08:15	10/22/21 15:46	75-01-4	
m&p-Xylene	<23.9	ug/kg	113	23.9	1	10/21/21 08:15	10/22/21 15:46	179601-23-1	
o-Xylene	<17.0	ug/kg	56.7	17.0	1	10/21/21 08:15	10/22/21 15:46	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	112	%	67-159		1	10/21/21 08:15	10/22/21 15:46	2037-26-5	
4-Bromofluorobenzene (S)	117	%	66-153		1	10/21/21 08:15	10/22/21 15:46	460-00-4	
1,2-Dichlorobenzene-d4 (S)	112	%	82-158		1	10/21/21 08:15	10/22/21 15:46	2199-69-1	
<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87									
Pace Analytical Services - Green Bay									
Percent Moisture	<b>6.3</b>	%	0.10	0.10	1		10/14/21 13:24		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-8 (7-8)**      **Lab ID: 40235057011**      Collected: 10/13/21 13:10      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B									
Pace Analytical Services - Green Bay									
Arsenic	287	mg/kg	6.8	4.0	2	10/19/21 06:21	10/21/21 06:28	7440-38-2	
Lead	353	mg/kg	5.4	1.6	2	10/19/21 06:21	10/21/21 06:28	7439-92-1	
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM    Preparation Method: EPA 3546									
Pace Analytical Services - Green Bay									
Acenaphthene	555	ug/kg	476	61.7	20	10/20/21 06:47	10/20/21 18:03	83-32-9	
Acenaphthylene	748	ug/kg	476	60.0	20	10/20/21 06:47	10/20/21 18:03	208-96-8	
Anthracene	458J	ug/kg	476	59.1	20	10/20/21 06:47	10/20/21 18:03	120-12-7	
Benzo(a)anthracene	655	ug/kg	476	61.5	20	10/20/21 06:47	10/20/21 18:03	56-55-3	
Benzo(a)pyrene	368J	ug/kg	476	54.1	20	10/20/21 06:47	10/20/21 18:03	50-32-8	
Benzo(b)fluoranthene	541	ug/kg	476	66.1	20	10/20/21 06:47	10/20/21 18:03	205-99-2	
Benzo(g,h,i)perylene	146J	ug/kg	476	83.5	20	10/20/21 06:47	10/20/21 18:03	191-24-2	
Benzo(k)fluoranthene	183J	ug/kg	476	60.8	20	10/20/21 06:47	10/20/21 18:03	207-08-9	
Chrysene	587	ug/kg	476	89.8	20	10/20/21 06:47	10/20/21 18:03	218-01-9	
Dibenz(a,h)anthracene	<65.9	ug/kg	476	65.9	20	10/20/21 06:47	10/20/21 18:03	53-70-3	
Fluoranthene	1250	ug/kg	476	56.3	20	10/20/21 06:47	10/20/21 18:03	206-44-0	
Fluorene	937	ug/kg	476	57.1	20	10/20/21 06:47	10/20/21 18:03	86-73-7	
Indeno(1,2,3-cd)pyrene	123J	ug/kg	476	99.2	20	10/20/21 06:47	10/20/21 18:03	193-39-5	
1-Methylnaphthalene	8580	ug/kg	476	69.5	20	10/20/21 06:47	10/20/21 18:03	90-12-0	
2-Methylnaphthalene	13000	ug/kg	476	69.6	20	10/20/21 06:47	10/20/21 18:03	91-57-6	
Naphthalene	14400	ug/kg	476	46.4	20	10/20/21 06:47	10/20/21 18:03	91-20-3	
Phenanthrene	2140	ug/kg	476	54.5	20	10/20/21 06:47	10/20/21 18:03	85-01-8	
Pyrene	1470	ug/kg	476	69.9	20	10/20/21 06:47	10/20/21 18:03	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	56	%	36-86		20	10/20/21 06:47	10/20/21 18:03	321-60-8	
Terphenyl-d14 (S)	70	%	41-97		20	10/20/21 06:47	10/20/21 18:03	1718-51-0	
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Benzene	45.8	ug/kg	37.0	22.0	1	10/21/21 08:15	10/22/21 16:05	71-43-2	
Bromobenzene	<36.0	ug/kg	92.4	36.0	1	10/21/21 08:15	10/22/21 16:05	108-86-1	
Bromochloromethane	<25.3	ug/kg	92.4	25.3	1	10/21/21 08:15	10/22/21 16:05	74-97-5	
Bromodichloromethane	<22.0	ug/kg	92.4	22.0	1	10/21/21 08:15	10/22/21 16:05	75-27-4	
Bromoform	<407	ug/kg	462	407	1	10/21/21 08:15	10/22/21 16:05	75-25-2	
Bromomethane	<130	ug/kg	462	130	1	10/21/21 08:15	10/22/21 16:05	74-83-9	
n-Butylbenzene	1010	ug/kg	92.4	42.3	1	10/21/21 08:15	10/22/21 16:05	104-51-8	
sec-Butylbenzene	198	ug/kg	92.4	22.5	1	10/21/21 08:15	10/22/21 16:05	135-98-8	
tert-Butylbenzene	34.8J	ug/kg	92.4	29.0	1	10/21/21 08:15	10/22/21 16:05	98-06-6	
Carbon tetrachloride	<20.3	ug/kg	92.4	20.3	1	10/21/21 08:15	10/22/21 16:05	56-23-5	
Chlorobenzene	23.0J	ug/kg	92.4	11.1	1	10/21/21 08:15	10/22/21 16:05	108-90-7	
Chloroethane	<39.0	ug/kg	462	39.0	1	10/21/21 08:15	10/22/21 16:05	75-00-3	
Chloroform	<66.2	ug/kg	462	66.2	1	10/21/21 08:15	10/22/21 16:05	67-66-3	
Chloromethane	<35.1	ug/kg	92.4	35.1	1	10/21/21 08:15	10/22/21 16:05	74-87-3	
2-Chlorotoluene	<29.9	ug/kg	92.4	29.9	1	10/21/21 08:15	10/22/21 16:05	95-49-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-8 (7-8)**      **Lab ID: 40235057011**      Collected: 10/13/21 13:10      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
4-Chlorotoluene	<35.1	ug/kg	92.4	35.1	1	10/21/21 08:15	10/22/21 16:05	106-43-4	
1,2-Dibromo-3-chloropropane	<71.7	ug/kg	462	71.7	1	10/21/21 08:15	10/22/21 16:05	96-12-8	
Dibromochloromethane	<316	ug/kg	462	316	1	10/21/21 08:15	10/22/21 16:05	124-48-1	
1,2-Dibromoethane (EDB)	<25.3	ug/kg	92.4	25.3	1	10/21/21 08:15	10/22/21 16:05	106-93-4	
Dibromomethane	<27.4	ug/kg	92.4	27.4	1	10/21/21 08:15	10/22/21 16:05	74-95-3	
1,2-Dichlorobenzene	<28.6	ug/kg	92.4	28.6	1	10/21/21 08:15	10/22/21 16:05	95-50-1	
1,3-Dichlorobenzene	<25.3	ug/kg	92.4	25.3	1	10/21/21 08:15	10/22/21 16:05	541-73-1	
1,4-Dichlorobenzene	<25.3	ug/kg	92.4	25.3	1	10/21/21 08:15	10/22/21 16:05	106-46-7	
Dichlorodifluoromethane	<39.7	ug/kg	92.4	39.7	1	10/21/21 08:15	10/22/21 16:05	75-71-8	
1,1-Dichloroethane	<23.7	ug/kg	92.4	23.7	1	10/21/21 08:15	10/22/21 16:05	75-34-3	
1,2-Dichloroethane	<21.3	ug/kg	92.4	21.3	1	10/21/21 08:15	10/22/21 16:05	107-06-2	
1,1-Dichloroethene	<30.7	ug/kg	92.4	30.7	1	10/21/21 08:15	10/22/21 16:05	75-35-4	
cis-1,2-Dichloroethene	<19.8	ug/kg	92.4	19.8	1	10/21/21 08:15	10/22/21 16:05	156-59-2	
trans-1,2-Dichloroethene	<20.0	ug/kg	92.4	20.0	1	10/21/21 08:15	10/22/21 16:05	156-60-5	
1,2-Dichloropropane	<22.0	ug/kg	92.4	22.0	1	10/21/21 08:15	10/22/21 16:05	78-87-5	
1,3-Dichloropropane	<20.1	ug/kg	92.4	20.1	1	10/21/21 08:15	10/22/21 16:05	142-28-9	
2,2-Dichloropropane	<25.0	ug/kg	92.4	25.0	1	10/21/21 08:15	10/22/21 16:05	594-20-7	
1,1-Dichloropropene	<29.9	ug/kg	92.4	29.9	1	10/21/21 08:15	10/22/21 16:05	563-58-6	
cis-1,3-Dichloropropene	<61.0	ug/kg	462	61.0	1	10/21/21 08:15	10/22/21 16:05	10061-01-5	
trans-1,3-Dichloropropene	<264	ug/kg	462	264	1	10/21/21 08:15	10/22/21 16:05	10061-02-6	
Diisopropyl ether	<22.9	ug/kg	92.4	22.9	1	10/21/21 08:15	10/22/21 16:05	108-20-3	
Ethylbenzene	110	ug/kg	92.4	22.0	1	10/21/21 08:15	10/22/21 16:05	100-41-4	
Hexachloro-1,3-butadiene	<184	ug/kg	462	184	1	10/21/21 08:15	10/22/21 16:05	87-68-3	
Isopropylbenzene (Cumene)	379	ug/kg	92.4	25.0	1	10/21/21 08:15	10/22/21 16:05	98-82-8	
p-Isopropyltoluene	164	ug/kg	92.4	28.1	1	10/21/21 08:15	10/22/21 16:05	99-87-6	
Methylene Chloride	<25.7	ug/kg	92.4	25.7	1	10/21/21 08:15	10/22/21 16:05	75-09-2	
Methyl-tert-butyl ether	<27.2	ug/kg	92.4	27.2	1	10/21/21 08:15	10/22/21 16:05	1634-04-4	
Naphthalene	4840	ug/kg	462	28.8	1	10/21/21 08:15	10/22/21 16:05	91-20-3	
n-Propylbenzene	137	ug/kg	92.4	22.2	1	10/21/21 08:15	10/22/21 16:05	103-65-1	
Styrene	<23.7	ug/kg	92.4	23.7	1	10/21/21 08:15	10/22/21 16:05	100-42-5	
1,1,1,2-Tetrachloroethane	<22.2	ug/kg	92.4	22.2	1	10/21/21 08:15	10/22/21 16:05	630-20-6	
1,1,2,2-Tetrachloroethane	<33.5	ug/kg	92.4	33.5	1	10/21/21 08:15	10/22/21 16:05	79-34-5	
Tetrachloroethene	<35.9	ug/kg	92.4	35.9	1	10/21/21 08:15	10/22/21 16:05	127-18-4	
Toluene	146	ug/kg	92.4	23.3	1	10/21/21 08:15	10/22/21 16:05	108-88-3	
1,2,3-Trichlorobenzene	<103	ug/kg	462	103	1	10/21/21 08:15	10/22/21 16:05	87-61-6	
1,2,4-Trichlorobenzene	<76.1	ug/kg	462	76.1	1	10/21/21 08:15	10/22/21 16:05	120-82-1	
1,1,1-Trichloroethane	<23.7	ug/kg	92.4	23.7	1	10/21/21 08:15	10/22/21 16:05	71-55-6	
1,1,2-Trichloroethane	<33.6	ug/kg	92.4	33.6	1	10/21/21 08:15	10/22/21 16:05	79-00-5	
Trichloroethene	<34.6	ug/kg	92.4	34.6	1	10/21/21 08:15	10/22/21 16:05	79-01-6	
Trichlorofluoromethane	<26.8	ug/kg	92.4	26.8	1	10/21/21 08:15	10/22/21 16:05	75-69-4	
1,2,3-Trichloropropane	<44.9	ug/kg	92.4	44.9	1	10/21/21 08:15	10/22/21 16:05	96-18-4	
1,2,4-Trimethylbenzene	306	ug/kg	92.4	27.5	1	10/21/21 08:15	10/22/21 16:05	95-63-6	
1,3,5-Trimethylbenzene	180	ug/kg	92.4	29.8	1	10/21/21 08:15	10/22/21 16:05	108-67-8	
Vinyl chloride	<18.7	ug/kg	92.4	18.7	1	10/21/21 08:15	10/22/21 16:05	75-01-4	

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-8 (7-8)**      **Lab ID: 40235057011**      Collected: 10/13/21 13:10      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
m&p-Xylene	<b>71.6J</b>	ug/kg	185	39.0	1	10/21/21 08:15	10/22/21 16:05	179601-23-1	
o-Xylene	<b>68.2J</b>	ug/kg	92.4	27.7	1	10/21/21 08:15	10/22/21 16:05	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	132	%	67-159		1	10/21/21 08:15	10/22/21 16:05	2037-26-5	
4-Bromofluorobenzene (S)	141	%	66-153		1	10/21/21 08:15	10/22/21 16:05	460-00-4	
1,2-Dichlorobenzene-d4 (S)	140	%	82-158		1	10/21/21 08:15	10/22/21 16:05	2199-69-1	
<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87									
Pace Analytical Services - Green Bay									
Percent Moisture	<b>29.8</b>	%	0.10	0.10	1		10/14/21 13:24		

**Sample: GP-9 (1.5-3.5)**      **Lab ID: 40235057012**      Collected: 10/13/21 14:05      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B									
Pace Analytical Services - Green Bay									
Arsenic	<b>3.6</b>	mg/kg	2.4	1.4	1	10/19/21 06:21	10/19/21 22:09	7440-38-2	
Lead	<b>57.5</b>	mg/kg	1.9	0.58	1	10/19/21 06:21	10/19/21 22:09	7439-92-1	
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM    Preparation Method: EPA 3546									
Pace Analytical Services - Green Bay									
Acenaphthene	<b>17000</b>	ug/kg	8760	1140	500	10/20/21 06:47	10/20/21 18:20	83-32-9	
Acenaphthylene	<b>2610J</b>	ug/kg	8760	1100	500	10/20/21 06:47	10/20/21 18:20	208-96-8	
Anthracene	<b>63600</b>	ug/kg	8760	1090	500	10/20/21 06:47	10/20/21 18:20	120-12-7	
Benzo(a)anthracene	<b>59300</b>	ug/kg	8760	1130	500	10/20/21 06:47	10/20/21 18:20	56-55-3	
Benzo(a)pyrene	<b>49600</b>	ug/kg	8760	995	500	10/20/21 06:47	10/20/21 18:20	50-32-8	
Benzo(b)fluoranthene	<b>58500</b>	ug/kg	8760	1220	500	10/20/21 06:47	10/20/21 18:20	205-99-2	
Benzo(g,h,i)perylene	<b>20900</b>	ug/kg	8760	1540	500	10/20/21 06:47	10/20/21 18:20	191-24-2	
Benzo(k)fluoranthene	<b>33200</b>	ug/kg	8760	1120	500	10/20/21 06:47	10/20/21 18:20	207-08-9	
Chrysene	<b>56400</b>	ug/kg	8760	1650	500	10/20/21 06:47	10/20/21 18:20	218-01-9	
Dibenz(a,h)anthracene	<b>6400J</b>	ug/kg	8760	1210	500	10/20/21 06:47	10/20/21 18:20	53-70-3	
Fluoranthene	<b>191000</b>	ug/kg	8760	1040	500	10/20/21 06:47	10/20/21 18:20	206-44-0	
Fluorene	<b>35900</b>	ug/kg	8760	1050	500	10/20/21 06:47	10/20/21 18:20	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>19100</b>	ug/kg	8760	1820	500	10/20/21 06:47	10/20/21 18:20	193-39-5	
1-Methylnaphthalene	<b>8520J</b>	ug/kg	8760	1280	500	10/20/21 06:47	10/20/21 18:20	90-12-0	
2-Methylnaphthalene	<b>12300</b>	ug/kg	8760	1280	500	10/20/21 06:47	10/20/21 18:20	91-57-6	
Naphthalene	<b>34100</b>	ug/kg	8760	853	500	10/20/21 06:47	10/20/21 18:20	91-20-3	
Phenanthrene	<b>184000</b>	ug/kg	8760	1000	500	10/20/21 06:47	10/20/21 18:20	85-01-8	
Pyrene	<b>117000</b>	ug/kg	8760	1290	500	10/20/21 06:47	10/20/21 18:20	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	0	%	36-86		500	10/20/21 06:47	10/20/21 18:20	321-60-8	S4

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-9 (1.5-3.5)      Lab ID: 40235057012      Collected: 10/13/21 14:05      Received: 10/13/21 16:40      Matrix: Solid**

**Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.**

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM    Preparation Method: EPA 3546									
Pace Analytical Services - Green Bay									
<b>Surrogates</b>									
Terphenyl-d14 (S)	0	%	41-97		500	10/20/21 06:47	10/20/21 18:20	1718-51-0	S4
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Benzene	<13.1	ug/kg	22.0	13.1	1	10/21/21 08:15	10/22/21 18:57	71-43-2	
Bromobenzene	<21.4	ug/kg	54.9	21.4	1	10/21/21 08:15	10/22/21 18:57	108-86-1	
Bromochloromethane	<15.0	ug/kg	54.9	15.0	1	10/21/21 08:15	10/22/21 18:57	74-97-5	
Bromodichloromethane	<13.1	ug/kg	54.9	13.1	1	10/21/21 08:15	10/22/21 18:57	75-27-4	
Bromoform	<242	ug/kg	274	242	1	10/21/21 08:15	10/22/21 18:57	75-25-2	
Bromomethane	<77.0	ug/kg	274	77.0	1	10/21/21 08:15	10/22/21 18:57	74-83-9	
n-Butylbenzene	<25.1	ug/kg	54.9	25.1	1	10/21/21 08:15	10/22/21 18:57	104-51-8	
sec-Butylbenzene	<13.4	ug/kg	54.9	13.4	1	10/21/21 08:15	10/22/21 18:57	135-98-8	
tert-Butylbenzene	<17.2	ug/kg	54.9	17.2	1	10/21/21 08:15	10/22/21 18:57	98-06-6	
Carbon tetrachloride	<12.1	ug/kg	54.9	12.1	1	10/21/21 08:15	10/22/21 18:57	56-23-5	
Chlorobenzene	<6.6	ug/kg	54.9	6.6	1	10/21/21 08:15	10/22/21 18:57	108-90-7	
Chloroethane	<23.2	ug/kg	274	23.2	1	10/21/21 08:15	10/22/21 18:57	75-00-3	
Chloroform	<39.3	ug/kg	274	39.3	1	10/21/21 08:15	10/22/21 18:57	67-66-3	
Chloromethane	<20.9	ug/kg	54.9	20.9	1	10/21/21 08:15	10/22/21 18:57	74-87-3	
2-Chlorotoluene	<17.8	ug/kg	54.9	17.8	1	10/21/21 08:15	10/22/21 18:57	95-49-8	
4-Chlorotoluene	<20.9	ug/kg	54.9	20.9	1	10/21/21 08:15	10/22/21 18:57	106-43-4	
1,2-Dibromo-3-chloropropane	<42.6	ug/kg	274	42.6	1	10/21/21 08:15	10/22/21 18:57	96-12-8	
Dibromochloromethane	<188	ug/kg	274	188	1	10/21/21 08:15	10/22/21 18:57	124-48-1	
1,2-Dibromoethane (EDB)	<15.0	ug/kg	54.9	15.0	1	10/21/21 08:15	10/22/21 18:57	106-93-4	
Dibromomethane	<16.2	ug/kg	54.9	16.2	1	10/21/21 08:15	10/22/21 18:57	74-95-3	
1,2-Dichlorobenzene	<17.0	ug/kg	54.9	17.0	1	10/21/21 08:15	10/22/21 18:57	95-50-1	
1,3-Dichlorobenzene	<15.0	ug/kg	54.9	15.0	1	10/21/21 08:15	10/22/21 18:57	541-73-1	
1,4-Dichlorobenzene	<15.0	ug/kg	54.9	15.0	1	10/21/21 08:15	10/22/21 18:57	106-46-7	
Dichlorodifluoromethane	<23.6	ug/kg	54.9	23.6	1	10/21/21 08:15	10/22/21 18:57	75-71-8	
1,1-Dichloroethane	<14.1	ug/kg	54.9	14.1	1	10/21/21 08:15	10/22/21 18:57	75-34-3	
1,2-Dichloroethane	<12.6	ug/kg	54.9	12.6	1	10/21/21 08:15	10/22/21 18:57	107-06-2	
1,1-Dichloroethene	<18.2	ug/kg	54.9	18.2	1	10/21/21 08:15	10/22/21 18:57	75-35-4	
cis-1,2-Dichloroethene	<11.7	ug/kg	54.9	11.7	1	10/21/21 08:15	10/22/21 18:57	156-59-2	
trans-1,2-Dichloroethene	<11.9	ug/kg	54.9	11.9	1	10/21/21 08:15	10/22/21 18:57	156-60-5	
1,2-Dichloropropane	<13.1	ug/kg	54.9	13.1	1	10/21/21 08:15	10/22/21 18:57	78-87-5	
1,3-Dichloropropane	<12.0	ug/kg	54.9	12.0	1	10/21/21 08:15	10/22/21 18:57	142-28-9	
2,2-Dichloropropane	<14.8	ug/kg	54.9	14.8	1	10/21/21 08:15	10/22/21 18:57	594-20-7	
1,1-Dichloropropene	<17.8	ug/kg	54.9	17.8	1	10/21/21 08:15	10/22/21 18:57	563-58-6	
cis-1,3-Dichloropropene	<36.2	ug/kg	274	36.2	1	10/21/21 08:15	10/22/21 18:57	10061-01-5	
trans-1,3-Dichloropropene	<157	ug/kg	274	157	1	10/21/21 08:15	10/22/21 18:57	10061-02-6	
Diisopropyl ether	<13.6	ug/kg	54.9	13.6	1	10/21/21 08:15	10/22/21 18:57	108-20-3	
Ethylbenzene	<13.1	ug/kg	54.9	13.1	1	10/21/21 08:15	10/22/21 18:57	100-41-4	
Hexachloro-1,3-butadiene	<109	ug/kg	274	109	1	10/21/21 08:15	10/22/21 18:57	87-68-3	
Isopropylbenzene (Cumene)	<14.8	ug/kg	54.9	14.8	1	10/21/21 08:15	10/22/21 18:57	98-82-8	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-9 (1.5-3.5)**      **Lab ID: 40235057012**      Collected: 10/13/21 14:05      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay									
p-Isopropyltoluene	<16.7	ug/kg	54.9	16.7	1	10/21/21 08:15	10/22/21 18:57	99-87-6	
Methylene Chloride	<15.3	ug/kg	54.9	15.3	1	10/21/21 08:15	10/22/21 18:57	75-09-2	
Methyl-tert-butyl ether	<16.1	ug/kg	54.9	16.1	1	10/21/21 08:15	10/22/21 18:57	1634-04-4	
Naphthalene	611	ug/kg	274	17.1	1	10/21/21 08:15	10/22/21 18:57	91-20-3	
n-Propylbenzene	<13.2	ug/kg	54.9	13.2	1	10/21/21 08:15	10/22/21 18:57	103-65-1	
Styrene	<14.1	ug/kg	54.9	14.1	1	10/21/21 08:15	10/22/21 18:57	100-42-5	
1,1,1,2-Tetrachloroethane	<13.2	ug/kg	54.9	13.2	1	10/21/21 08:15	10/22/21 18:57	630-20-6	
1,1,2,2-Tetrachloroethane	<19.9	ug/kg	54.9	19.9	1	10/21/21 08:15	10/22/21 18:57	79-34-5	
Tetrachloroethene	<21.3	ug/kg	54.9	21.3	1	10/21/21 08:15	10/22/21 18:57	127-18-4	
Toluene	<13.8	ug/kg	54.9	13.8	1	10/21/21 08:15	10/22/21 18:57	108-88-3	
1,2,3-Trichlorobenzene	<61.2	ug/kg	274	61.2	1	10/21/21 08:15	10/22/21 18:57	87-61-6	
1,2,4-Trichlorobenzene	<45.2	ug/kg	274	45.2	1	10/21/21 08:15	10/22/21 18:57	120-82-1	
1,1,1-Trichloroethane	<14.1	ug/kg	54.9	14.1	1	10/21/21 08:15	10/22/21 18:57	71-55-6	
1,1,2-Trichloroethane	<20.0	ug/kg	54.9	20.0	1	10/21/21 08:15	10/22/21 18:57	79-00-5	
Trichloroethene	<20.5	ug/kg	54.9	20.5	1	10/21/21 08:15	10/22/21 18:57	79-01-6	
Trichlorofluoromethane	<15.9	ug/kg	54.9	15.9	1	10/21/21 08:15	10/22/21 18:57	75-69-4	
1,2,3-Trichloropropane	<26.7	ug/kg	54.9	26.7	1	10/21/21 08:15	10/22/21 18:57	96-18-4	
1,2,4-Trimethylbenzene	<16.4	ug/kg	54.9	16.4	1	10/21/21 08:15	10/22/21 18:57	95-63-6	
1,3,5-Trimethylbenzene	<17.7	ug/kg	54.9	17.7	1	10/21/21 08:15	10/22/21 18:57	108-67-8	
Vinyl chloride	<11.1	ug/kg	54.9	11.1	1	10/21/21 08:15	10/22/21 18:57	75-01-4	
m&p-Xylene	<23.2	ug/kg	110	23.2	1	10/21/21 08:15	10/22/21 18:57	179601-23-1	
o-Xylene	<16.5	ug/kg	54.9	16.5	1	10/21/21 08:15	10/22/21 18:57	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	109	%	67-159		1	10/21/21 08:15	10/22/21 18:57	2037-26-5	
4-Bromofluorobenzene (S)	115	%	66-153		1	10/21/21 08:15	10/22/21 18:57	460-00-4	
1,2-Dichlorobenzene-d4 (S)	108	%	82-158		1	10/21/21 08:15	10/22/21 18:57	2199-69-1	

**Percent Moisture**

Analytical Method: ASTM D2974-87  
Pace Analytical Services - Green Bay

Percent Moisture	4.7	%	0.10	0.10	1		10/14/21 13:25		
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**Sample: GP-9 (5.5-7.5)**      **Lab ID: 40235057013**      Collected: 10/13/21 14:10      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B Pace Analytical Services - Green Bay									
Arsenic	3.4	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 22:11	7440-38-2	
Lead	56.5	mg/kg	2.1	0.62	1	10/19/21 06:21	10/19/21 22:11	7439-92-1	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-9 (5.5-7.5)**      **Lab ID: 40235057013**      Collected: 10/13/21 14:10      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM      Preparation Method: EPA 3546									
Pace Analytical Services - Green Bay									
Acenaphthene	<b>154J</b>	ug/kg	361	46.8	20	10/20/21 06:47	10/20/21 18:37	83-32-9	
Acenaphthylene	<b>122J</b>	ug/kg	361	45.5	20	10/20/21 06:47	10/20/21 18:37	208-96-8	
Anthracene	<b>301J</b>	ug/kg	361	44.8	20	10/20/21 06:47	10/20/21 18:37	120-12-7	
Benzo(a)anthracene	<b>861</b>	ug/kg	361	46.6	20	10/20/21 06:47	10/20/21 18:37	56-55-3	
Benzo(a)pyrene	<b>773</b>	ug/kg	361	41.0	20	10/20/21 06:47	10/20/21 18:37	50-32-8	
Benzo(b)fluoranthene	<b>977</b>	ug/kg	361	50.1	20	10/20/21 06:47	10/20/21 18:37	205-99-2	
Benzo(g,h,i)perylene	<b>469</b>	ug/kg	361	63.3	20	10/20/21 06:47	10/20/21 18:37	191-24-2	
Benzo(k)fluoranthene	<b>324J</b>	ug/kg	361	46.1	20	10/20/21 06:47	10/20/21 18:37	207-08-9	
Chrysene	<b>926</b>	ug/kg	361	68.0	20	10/20/21 06:47	10/20/21 18:37	218-01-9	
Dibenz(a,h)anthracene	<b>100J</b>	ug/kg	361	49.9	20	10/20/21 06:47	10/20/21 18:37	53-70-3	
Fluoranthene	<b>1390</b>	ug/kg	361	42.7	20	10/20/21 06:47	10/20/21 18:37	206-44-0	
Fluorene	<b>236J</b>	ug/kg	361	43.2	20	10/20/21 06:47	10/20/21 18:37	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>345J</b>	ug/kg	361	75.2	20	10/20/21 06:47	10/20/21 18:37	193-39-5	
1-Methylnaphthalene	<b>124J</b>	ug/kg	361	52.7	20	10/20/21 06:47	10/20/21 18:37	90-12-0	
2-Methylnaphthalene	<b>150J</b>	ug/kg	361	52.8	20	10/20/21 06:47	10/20/21 18:37	91-57-6	
Naphthalene	<b>118J</b>	ug/kg	361	35.1	20	10/20/21 06:47	10/20/21 18:37	91-20-3	
Phenanthrene	<b>1800</b>	ug/kg	361	41.3	20	10/20/21 06:47	10/20/21 18:37	85-01-8	
Pyrene	<b>3890</b>	ug/kg	361	53.0	20	10/20/21 06:47	10/20/21 18:37	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	53	%	36-86		20	10/20/21 06:47	10/20/21 18:37	321-60-8	
Terphenyl-d14 (S)	59	%	41-97		20	10/20/21 06:47	10/20/21 18:37	1718-51-0	

**8260 MSV Med Level Normal List**

Analytical Method: EPA 8260      Preparation Method: EPA 5035/5030B  
Pace Analytical Services - Green Bay

Benzene	<b>14.9J</b>	ug/kg	23.3	13.8	1	10/21/21 08:15	10/22/21 08:56	71-43-2	
Bromobenzene	<b>&lt;22.7</b>	ug/kg	58.2	22.7	1	10/21/21 08:15	10/22/21 08:56	108-86-1	
Bromochloromethane	<b>&lt;15.9</b>	ug/kg	58.2	15.9	1	10/21/21 08:15	10/22/21 08:56	74-97-5	
Bromodichloromethane	<b>&lt;13.8</b>	ug/kg	58.2	13.8	1	10/21/21 08:15	10/22/21 08:56	75-27-4	
Bromoform	<b>&lt;256</b>	ug/kg	291	256	1	10/21/21 08:15	10/22/21 08:56	75-25-2	
Bromomethane	<b>&lt;81.6</b>	ug/kg	291	81.6	1	10/21/21 08:15	10/22/21 08:56	74-83-9	
n-Butylbenzene	<b>&lt;26.7</b>	ug/kg	58.2	26.7	1	10/21/21 08:15	10/22/21 08:56	104-51-8	
sec-Butylbenzene	<b>&lt;14.2</b>	ug/kg	58.2	14.2	1	10/21/21 08:15	10/22/21 08:56	135-98-8	
tert-Butylbenzene	<b>&lt;18.3</b>	ug/kg	58.2	18.3	1	10/21/21 08:15	10/22/21 08:56	98-06-6	
Carbon tetrachloride	<b>&lt;12.8</b>	ug/kg	58.2	12.8	1	10/21/21 08:15	10/22/21 08:56	56-23-5	
Chlorobenzene	<b>&lt;7.0</b>	ug/kg	58.2	7.0	1	10/21/21 08:15	10/22/21 08:56	108-90-7	
Chloroethane	<b>&lt;24.6</b>	ug/kg	291	24.6	1	10/21/21 08:15	10/22/21 08:56	75-00-3	
Chloroform	<b>&lt;41.7</b>	ug/kg	291	41.7	1	10/21/21 08:15	10/22/21 08:56	67-66-3	
Chloromethane	<b>&lt;22.1</b>	ug/kg	58.2	22.1	1	10/21/21 08:15	10/22/21 08:56	74-87-3	
2-Chlorotoluene	<b>&lt;18.9</b>	ug/kg	58.2	18.9	1	10/21/21 08:15	10/22/21 08:56	95-49-8	
4-Chlorotoluene	<b>&lt;22.1</b>	ug/kg	58.2	22.1	1	10/21/21 08:15	10/22/21 08:56	106-43-4	
1,2-Dibromo-3-chloropropane	<b>&lt;45.2</b>	ug/kg	291	45.2	1	10/21/21 08:15	10/22/21 08:56	96-12-8	
Dibromochloromethane	<b>&lt;199</b>	ug/kg	291	199	1	10/21/21 08:15	10/22/21 08:56	124-48-1	
1,2-Dibromoethane (EDB)	<b>&lt;15.9</b>	ug/kg	58.2	15.9	1	10/21/21 08:15	10/22/21 08:56	106-93-4	
Dibromomethane	<b>&lt;17.2</b>	ug/kg	58.2	17.2	1	10/21/21 08:15	10/22/21 08:56	74-95-3	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-9 (5.5-7.5)**      **Lab ID: 40235057013**      Collected: 10/13/21 14:10      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
1,2-Dichlorobenzene	<18.0	ug/kg	58.2	18.0	1	10/21/21 08:15	10/22/21 08:56	95-50-1	
1,3-Dichlorobenzene	<15.9	ug/kg	58.2	15.9	1	10/21/21 08:15	10/22/21 08:56	541-73-1	
1,4-Dichlorobenzene	<15.9	ug/kg	58.2	15.9	1	10/21/21 08:15	10/22/21 08:56	106-46-7	
Dichlorodifluoromethane	<25.0	ug/kg	58.2	25.0	1	10/21/21 08:15	10/22/21 08:56	75-71-8	
1,1-Dichloroethane	<14.9	ug/kg	58.2	14.9	1	10/21/21 08:15	10/22/21 08:56	75-34-3	
1,2-Dichloroethane	<13.4	ug/kg	58.2	13.4	1	10/21/21 08:15	10/22/21 08:56	107-06-2	
1,1-Dichloroethene	<19.3	ug/kg	58.2	19.3	1	10/21/21 08:15	10/22/21 08:56	75-35-4	
cis-1,2-Dichloroethene	<12.5	ug/kg	58.2	12.5	1	10/21/21 08:15	10/22/21 08:56	156-59-2	
trans-1,2-Dichloroethene	<12.6	ug/kg	58.2	12.6	1	10/21/21 08:15	10/22/21 08:56	156-60-5	
1,2-Dichloropropane	<13.8	ug/kg	58.2	13.8	1	10/21/21 08:15	10/22/21 08:56	78-87-5	
1,3-Dichloropropane	<12.7	ug/kg	58.2	12.7	1	10/21/21 08:15	10/22/21 08:56	142-28-9	
2,2-Dichloropropane	<15.7	ug/kg	58.2	15.7	1	10/21/21 08:15	10/22/21 08:56	594-20-7	
1,1-Dichloropropene	<18.9	ug/kg	58.2	18.9	1	10/21/21 08:15	10/22/21 08:56	563-58-6	
cis-1,3-Dichloropropene	<38.4	ug/kg	291	38.4	1	10/21/21 08:15	10/22/21 08:56	10061-01-5	
trans-1,3-Dichloropropene	<166	ug/kg	291	166	1	10/21/21 08:15	10/22/21 08:56	10061-02-6	
Diisopropyl ether	<14.4	ug/kg	58.2	14.4	1	10/21/21 08:15	10/22/21 08:56	108-20-3	
Ethylbenzene	<13.8	ug/kg	58.2	13.8	1	10/21/21 08:15	10/22/21 08:56	100-41-4	
Hexachloro-1,3-butadiene	<116	ug/kg	291	116	1	10/21/21 08:15	10/22/21 08:56	87-68-3	
Isopropylbenzene (Cumene)	<15.7	ug/kg	58.2	15.7	1	10/21/21 08:15	10/22/21 08:56	98-82-8	
p-Isopropyltoluene	<17.7	ug/kg	58.2	17.7	1	10/21/21 08:15	10/22/21 08:56	99-87-6	
Methylene Chloride	<16.2	ug/kg	58.2	16.2	1	10/21/21 08:15	10/22/21 08:56	75-09-2	
Methyl-tert-butyl ether	<17.1	ug/kg	58.2	17.1	1	10/21/21 08:15	10/22/21 08:56	1634-04-4	
Naphthalene	136J	ug/kg	291	18.2	1	10/21/21 08:15	10/22/21 08:56	91-20-3	
n-Propylbenzene	<14.0	ug/kg	58.2	14.0	1	10/21/21 08:15	10/22/21 08:56	103-65-1	
Styrene	<14.9	ug/kg	58.2	14.9	1	10/21/21 08:15	10/22/21 08:56	100-42-5	
1,1,1,2-Tetrachloroethane	<14.0	ug/kg	58.2	14.0	1	10/21/21 08:15	10/22/21 08:56	630-20-6	
1,1,1,2,2-Tetrachloroethane	<21.1	ug/kg	58.2	21.1	1	10/21/21 08:15	10/22/21 08:56	79-34-5	
Tetrachloroethene	<22.6	ug/kg	58.2	22.6	1	10/21/21 08:15	10/22/21 08:56	127-18-4	
Toluene	34.8J	ug/kg	58.2	14.7	1	10/21/21 08:15	10/22/21 08:56	108-88-3	
1,2,3-Trichlorobenzene	<64.8	ug/kg	291	64.8	1	10/21/21 08:15	10/22/21 08:56	87-61-6	
1,2,4-Trichlorobenzene	<47.9	ug/kg	291	47.9	1	10/21/21 08:15	10/22/21 08:56	120-82-1	
1,1,1-Trichloroethane	<14.9	ug/kg	58.2	14.9	1	10/21/21 08:15	10/22/21 08:56	71-55-6	
1,1,2-Trichloroethane	<21.2	ug/kg	58.2	21.2	1	10/21/21 08:15	10/22/21 08:56	79-00-5	
Trichloroethene	<21.8	ug/kg	58.2	21.8	1	10/21/21 08:15	10/22/21 08:56	79-01-6	
Trichlorofluoromethane	<16.9	ug/kg	58.2	16.9	1	10/21/21 08:15	10/22/21 08:56	75-69-4	
1,2,3-Trichloropropane	<28.3	ug/kg	58.2	28.3	1	10/21/21 08:15	10/22/21 08:56	96-18-4	
1,2,4-Trimethylbenzene	21.0J	ug/kg	58.2	17.3	1	10/21/21 08:15	10/22/21 08:56	95-63-6	
1,3,5-Trimethylbenzene	<18.7	ug/kg	58.2	18.7	1	10/21/21 08:15	10/22/21 08:56	108-67-8	
Vinyl chloride	<11.8	ug/kg	58.2	11.8	1	10/21/21 08:15	10/22/21 08:56	75-01-4	
m&p-Xylene	27.7J	ug/kg	116	24.6	1	10/21/21 08:15	10/22/21 08:56	179601-23-1	
o-Xylene	<17.5	ug/kg	58.2	17.5	1	10/21/21 08:15	10/22/21 08:56	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	118	%	67-159		1	10/21/21 08:15	10/22/21 08:56	2037-26-5	
4-Bromofluorobenzene (S)	134	%	66-153		1	10/21/21 08:15	10/22/21 08:56	460-00-4	

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-9 (5.5-7.5)**      **Lab ID: 40235057013**      Collected: 10/13/21 14:10      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay									
<b>Surrogates</b>									
1,2-Dichlorobenzene-d4 (S)	124	%	82-158		1	10/21/21 08:15	10/22/21 08:56	2199-69-1	
<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay									
Percent Moisture	7.6	%	0.10	0.10	1		10/14/21 13:25		

**Sample: GP-10 (2-4)**      **Lab ID: 40235057014**      Collected: 10/13/21 14:40      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B Pace Analytical Services - Green Bay									
Arsenic	14.0	mg/kg	3.4	2.0	1	10/19/21 06:21	10/19/21 22:14	7440-38-2	
Lead	211	mg/kg	2.7	0.81	1	10/19/21 06:21	10/19/21 22:14	7439-92-1	
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM    Preparation Method: EPA 3546 Pace Analytical Services - Green Bay									
Acenaphthene	2930J	ug/kg	9660	1250	400	10/20/21 06:47	10/20/21 18:54	83-32-9	
Acenaphthylene	3570J	ug/kg	9660	1220	400	10/20/21 06:47	10/20/21 18:54	208-96-8	
Anthracene	14300	ug/kg	9660	1200	400	10/20/21 06:47	10/20/21 18:54	120-12-7	
Benzo(a)anthracene	26100	ug/kg	9660	1250	400	10/20/21 06:47	10/20/21 18:54	56-55-3	
Benzo(a)pyrene	19700	ug/kg	9660	1100	400	10/20/21 06:47	10/20/21 18:54	50-32-8	
Benzo(b)fluoranthene	29300	ug/kg	9660	1340	400	10/20/21 06:47	10/20/21 18:54	205-99-2	
Benzo(g,h,i)perylene	7530J	ug/kg	9660	1700	400	10/20/21 06:47	10/20/21 18:54	191-24-2	
Benzo(k)fluoranthene	14300	ug/kg	9660	1230	400	10/20/21 06:47	10/20/21 18:54	207-08-9	
Chrysene	28600	ug/kg	9660	1820	400	10/20/21 06:47	10/20/21 18:54	218-01-9	
Dibenz(a,h)anthracene	2910J	ug/kg	9660	1340	400	10/20/21 06:47	10/20/21 18:54	53-70-3	
Fluoranthene	65400	ug/kg	9660	1140	400	10/20/21 06:47	10/20/21 18:54	206-44-0	
Fluorene	13200	ug/kg	9660	1160	400	10/20/21 06:47	10/20/21 18:54	86-73-7	
Indeno(1,2,3-cd)pyrene	7440J	ug/kg	9660	2010	400	10/20/21 06:47	10/20/21 18:54	193-39-5	
1-Methylnaphthalene	2360J	ug/kg	9660	1410	400	10/20/21 06:47	10/20/21 18:54	90-12-0	
2-Methylnaphthalene	3090J	ug/kg	9660	1410	400	10/20/21 06:47	10/20/21 18:54	91-57-6	
Naphthalene	5310J	ug/kg	9660	941	400	10/20/21 06:47	10/20/21 18:54	91-20-3	
Phenanthrene	71600	ug/kg	9660	1110	400	10/20/21 06:47	10/20/21 18:54	85-01-8	
Pyrene	41500	ug/kg	9660	1420	400	10/20/21 06:47	10/20/21 18:54	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	0	%	36-86		400	10/20/21 06:47	10/20/21 18:54	321-60-8	S4
Terphenyl-d14 (S)	0	%	41-97		400	10/20/21 06:47	10/20/21 18:54	1718-51-0	S4

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

Sample: GP-10 (2-4) Lab ID: 40235057014 Collected: 10/13/21 14:40 Received: 10/13/21 16:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Benzene	<22.8	ug/kg	38.3	22.8	1	10/21/21 08:15	10/22/21 18:37	71-43-2	
Bromobenzene	<37.4	ug/kg	95.9	37.4	1	10/21/21 08:15	10/22/21 18:37	108-86-1	
Bromochloromethane	<26.3	ug/kg	95.9	26.3	1	10/21/21 08:15	10/22/21 18:37	74-97-5	
Bromodichloromethane	<22.8	ug/kg	95.9	22.8	1	10/21/21 08:15	10/22/21 18:37	75-27-4	
Bromoform	<422	ug/kg	479	422	1	10/21/21 08:15	10/22/21 18:37	75-25-2	
Bromomethane	<134	ug/kg	479	134	1	10/21/21 08:15	10/22/21 18:37	74-83-9	
n-Butylbenzene	<43.9	ug/kg	95.9	43.9	1	10/21/21 08:15	10/22/21 18:37	104-51-8	
sec-Butylbenzene	<23.4	ug/kg	95.9	23.4	1	10/21/21 08:15	10/22/21 18:37	135-98-8	
tert-Butylbenzene	<30.1	ug/kg	95.9	30.1	1	10/21/21 08:15	10/22/21 18:37	98-06-6	
Carbon tetrachloride	<21.1	ug/kg	95.9	21.1	1	10/21/21 08:15	10/22/21 18:37	56-23-5	
Chlorobenzene	<11.5	ug/kg	95.9	11.5	1	10/21/21 08:15	10/22/21 18:37	108-90-7	
Chloroethane	<40.5	ug/kg	479	40.5	1	10/21/21 08:15	10/22/21 18:37	75-00-3	
Chloroform	<68.6	ug/kg	479	68.6	1	10/21/21 08:15	10/22/21 18:37	67-66-3	
Chloromethane	<36.4	ug/kg	95.9	36.4	1	10/21/21 08:15	10/22/21 18:37	74-87-3	
2-Chlorotoluene	<31.1	ug/kg	95.9	31.1	1	10/21/21 08:15	10/22/21 18:37	95-49-8	
4-Chlorotoluene	<36.4	ug/kg	95.9	36.4	1	10/21/21 08:15	10/22/21 18:37	106-43-4	
1,2-Dibromo-3-chloropropane	<74.4	ug/kg	479	74.4	1	10/21/21 08:15	10/22/21 18:37	96-12-8	
Dibromochloromethane	<328	ug/kg	479	328	1	10/21/21 08:15	10/22/21 18:37	124-48-1	
1,2-Dibromoethane (EDB)	<26.3	ug/kg	95.9	26.3	1	10/21/21 08:15	10/22/21 18:37	106-93-4	
Dibromomethane	<28.4	ug/kg	95.9	28.4	1	10/21/21 08:15	10/22/21 18:37	74-95-3	
1,2-Dichlorobenzene	<29.7	ug/kg	95.9	29.7	1	10/21/21 08:15	10/22/21 18:37	95-50-1	
1,3-Dichlorobenzene	<26.3	ug/kg	95.9	26.3	1	10/21/21 08:15	10/22/21 18:37	541-73-1	
1,4-Dichlorobenzene	<26.3	ug/kg	95.9	26.3	1	10/21/21 08:15	10/22/21 18:37	106-46-7	
Dichlorodifluoromethane	<41.2	ug/kg	95.9	41.2	1	10/21/21 08:15	10/22/21 18:37	75-71-8	
1,1-Dichloroethane	<24.5	ug/kg	95.9	24.5	1	10/21/21 08:15	10/22/21 18:37	75-34-3	
1,2-Dichloroethane	<22.0	ug/kg	95.9	22.0	1	10/21/21 08:15	10/22/21 18:37	107-06-2	
1,1-Dichloroethene	<31.8	ug/kg	95.9	31.8	1	10/21/21 08:15	10/22/21 18:37	75-35-4	
cis-1,2-Dichloroethene	<20.5	ug/kg	95.9	20.5	1	10/21/21 08:15	10/22/21 18:37	156-59-2	
trans-1,2-Dichloroethene	<20.7	ug/kg	95.9	20.7	1	10/21/21 08:15	10/22/21 18:37	156-60-5	
1,2-Dichloropropane	<22.8	ug/kg	95.9	22.8	1	10/21/21 08:15	10/22/21 18:37	78-87-5	
1,3-Dichloropropane	<20.9	ug/kg	95.9	20.9	1	10/21/21 08:15	10/22/21 18:37	142-28-9	
2,2-Dichloropropane	<25.9	ug/kg	95.9	25.9	1	10/21/21 08:15	10/22/21 18:37	594-20-7	
1,1-Dichloropropene	<31.1	ug/kg	95.9	31.1	1	10/21/21 08:15	10/22/21 18:37	563-58-6	
cis-1,3-Dichloropropene	<63.3	ug/kg	479	63.3	1	10/21/21 08:15	10/22/21 18:37	10061-01-5	
trans-1,3-Dichloropropene	<274	ug/kg	479	274	1	10/21/21 08:15	10/22/21 18:37	10061-02-6	
Diisopropyl ether	<23.8	ug/kg	95.9	23.8	1	10/21/21 08:15	10/22/21 18:37	108-20-3	
Ethylbenzene	28.8J	ug/kg	95.9	22.8	1	10/21/21 08:15	10/22/21 18:37	100-41-4	
Hexachloro-1,3-butadiene	<191	ug/kg	479	191	1	10/21/21 08:15	10/22/21 18:37	87-68-3	
Isopropylbenzene (Cumene)	<25.9	ug/kg	95.9	25.9	1	10/21/21 08:15	10/22/21 18:37	98-82-8	
p-Isopropyltoluene	<29.1	ug/kg	95.9	29.1	1	10/21/21 08:15	10/22/21 18:37	99-87-6	
Methylene Chloride	<26.6	ug/kg	95.9	26.6	1	10/21/21 08:15	10/22/21 18:37	75-09-2	
Methyl-tert-butyl ether	<28.2	ug/kg	95.9	28.2	1	10/21/21 08:15	10/22/21 18:37	1634-04-4	
Naphthalene	66.6J	ug/kg	479	29.9	1	10/21/21 08:15	10/22/21 18:37	91-20-3	
n-Propylbenzene	<23.0	ug/kg	95.9	23.0	1	10/21/21 08:15	10/22/21 18:37	103-65-1	

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-10 (2-4)**      **Lab ID: 40235057014**      Collected: 10/13/21 14:40      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay									
Styrene	<24.5	ug/kg	95.9	24.5	1	10/21/21 08:15	10/22/21 18:37	100-42-5	
1,1,1,2-Tetrachloroethane	<23.0	ug/kg	95.9	23.0	1	10/21/21 08:15	10/22/21 18:37	630-20-6	
1,1,2,2-Tetrachloroethane	<34.7	ug/kg	95.9	34.7	1	10/21/21 08:15	10/22/21 18:37	79-34-5	
Tetrachloroethene	<37.2	ug/kg	95.9	37.2	1	10/21/21 08:15	10/22/21 18:37	127-18-4	
Toluene	36.6J	ug/kg	95.9	24.2	1	10/21/21 08:15	10/22/21 18:37	108-88-3	
1,2,3-Trichlorobenzene	<107	ug/kg	479	107	1	10/21/21 08:15	10/22/21 18:37	87-61-6	
1,2,4-Trichlorobenzene	<79.0	ug/kg	479	79.0	1	10/21/21 08:15	10/22/21 18:37	120-82-1	
1,1,1-Trichloroethane	<24.5	ug/kg	95.9	24.5	1	10/21/21 08:15	10/22/21 18:37	71-55-6	
1,1,2-Trichloroethane	<34.9	ug/kg	95.9	34.9	1	10/21/21 08:15	10/22/21 18:37	79-00-5	
Trichloroethene	<35.9	ug/kg	95.9	35.9	1	10/21/21 08:15	10/22/21 18:37	79-01-6	
Trichlorofluoromethane	<27.8	ug/kg	95.9	27.8	1	10/21/21 08:15	10/22/21 18:37	75-69-4	
1,2,3-Trichloropropane	<46.6	ug/kg	95.9	46.6	1	10/21/21 08:15	10/22/21 18:37	96-18-4	
1,2,4-Trimethylbenzene	<28.6	ug/kg	95.9	28.6	1	10/21/21 08:15	10/22/21 18:37	95-63-6	
1,3,5-Trimethylbenzene	<30.9	ug/kg	95.9	30.9	1	10/21/21 08:15	10/22/21 18:37	108-67-8	
Vinyl chloride	<19.4	ug/kg	95.9	19.4	1	10/21/21 08:15	10/22/21 18:37	75-01-4	
m&p-Xylene	239	ug/kg	192	40.5	1	10/21/21 08:15	10/22/21 18:37	179601-23-1	
o-Xylene	48.7J	ug/kg	95.9	28.8	1	10/21/21 08:15	10/22/21 18:37	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	105	%	67-159		1	10/21/21 08:15	10/22/21 18:37	2037-26-5	
4-Bromofluorobenzene (S)	106	%	66-153		1	10/21/21 08:15	10/22/21 18:37	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	82-158		1	10/21/21 08:15	10/22/21 18:37	2199-69-1	

**Percent Moisture**

Analytical Method: ASTM D2974-87  
Pace Analytical Services - Green Bay

Percent Moisture	30.7	%	0.10	0.10	1		10/14/21 07:39		
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**Sample: GP-10 (6.5-8)**      **Lab ID: 40235057015**      Collected: 10/13/21 14:45      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3050B Pace Analytical Services - Green Bay									
Arsenic	1.7J	mg/kg	2.8	1.6	1	10/19/21 06:21	10/19/21 22:16	7440-38-2	
Lead	2.9	mg/kg	2.2	0.67	1	10/19/21 06:21	10/19/21 22:16	7439-92-1	
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM    Preparation Method: EPA 3546 Pace Analytical Services - Green Bay									
Acenaphthene	<2.6	ug/kg	20.1	2.6	1	10/20/21 06:47	10/20/21 11:28	83-32-9	
Acenaphthylene	<2.5	ug/kg	20.1	2.5	1	10/20/21 06:47	10/20/21 11:28	208-96-8	
Anthracene	<2.5	ug/kg	20.1	2.5	1	10/20/21 06:47	10/20/21 11:28	120-12-7	
Benzo(a)anthracene	4.5J	ug/kg	20.1	2.6	1	10/20/21 06:47	10/20/21 11:28	56-55-3	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON

Pace Project No.: 40235057

**Sample: GP-10 (6.5-8)**      **Lab ID: 40235057015**      Collected: 10/13/21 14:45      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8270E MSSV PAH by SIM</b>									
Analytical Method: EPA 8270E by SIM    Preparation Method: EPA 3546									
Pace Analytical Services - Green Bay									
Benzo(a)pyrene	<b>2.6J</b>	ug/kg	20.1	2.3	1	10/20/21 06:47	10/20/21 11:28	50-32-8	
Benzo(b)fluoranthene	<b>3.6J</b>	ug/kg	20.1	2.8	1	10/20/21 06:47	10/20/21 11:28	205-99-2	
Benzo(g,h,i)perylene	<b>&lt;3.5</b>	ug/kg	20.1	3.5	1	10/20/21 06:47	10/20/21 11:28	191-24-2	
Benzo(k)fluoranthene	<b>&lt;2.6</b>	ug/kg	20.1	2.6	1	10/20/21 06:47	10/20/21 11:28	207-08-9	
Chrysene	<b>&lt;3.8</b>	ug/kg	20.1	3.8	1	10/20/21 06:47	10/20/21 11:28	218-01-9	
Dibenz(a,h)anthracene	<b>&lt;2.8</b>	ug/kg	20.1	2.8	1	10/20/21 06:47	10/20/21 11:28	53-70-3	
Fluoranthene	<b>7.2J</b>	ug/kg	20.1	2.4	1	10/20/21 06:47	10/20/21 11:28	206-44-0	
Fluorene	<b>&lt;2.4</b>	ug/kg	20.1	2.4	1	10/20/21 06:47	10/20/21 11:28	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>&lt;4.2</b>	ug/kg	20.1	4.2	1	10/20/21 06:47	10/20/21 11:28	193-39-5	
1-Methylnaphthalene	<b>&lt;2.9</b>	ug/kg	20.1	2.9	1	10/20/21 06:47	10/20/21 11:28	90-12-0	
2-Methylnaphthalene	<b>&lt;2.9</b>	ug/kg	20.1	2.9	1	10/20/21 06:47	10/20/21 11:28	91-57-6	
Naphthalene	<b>&lt;2.0</b>	ug/kg	20.1	2.0	1	10/20/21 06:47	10/20/21 11:28	91-20-3	
Phenanthrene	<b>6.1J</b>	ug/kg	20.1	2.3	1	10/20/21 06:47	10/20/21 11:28	85-01-8	
Pyrene	<b>4.5J</b>	ug/kg	20.1	3.0	1	10/20/21 06:47	10/20/21 11:28	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	70	%	36-86		1	10/20/21 06:47	10/20/21 11:28	321-60-8	
Terphenyl-d14 (S)	65	%	41-97		1	10/20/21 06:47	10/20/21 11:28	1718-51-0	
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260    Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
Benzene	<b>&lt;16.7</b>	ug/kg	28.1	16.7	1	10/21/21 08:15	10/22/21 11:12	71-43-2	
Bromobenzene	<b>&lt;27.4</b>	ug/kg	70.3	27.4	1	10/21/21 08:15	10/22/21 11:12	108-86-1	
Bromochloromethane	<b>&lt;19.3</b>	ug/kg	70.3	19.3	1	10/21/21 08:15	10/22/21 11:12	74-97-5	
Bromodichloromethane	<b>&lt;16.7</b>	ug/kg	70.3	16.7	1	10/21/21 08:15	10/22/21 11:12	75-27-4	
Bromoform	<b>&lt;309</b>	ug/kg	352	309	1	10/21/21 08:15	10/22/21 11:12	75-25-2	
Bromomethane	<b>&lt;98.6</b>	ug/kg	352	98.6	1	10/21/21 08:15	10/22/21 11:12	74-83-9	
n-Butylbenzene	<b>&lt;32.2</b>	ug/kg	70.3	32.2	1	10/21/21 08:15	10/22/21 11:12	104-51-8	
sec-Butylbenzene	<b>&lt;17.2</b>	ug/kg	70.3	17.2	1	10/21/21 08:15	10/22/21 11:12	135-98-8	
tert-Butylbenzene	<b>&lt;22.1</b>	ug/kg	70.3	22.1	1	10/21/21 08:15	10/22/21 11:12	98-06-6	
Carbon tetrachloride	<b>&lt;15.5</b>	ug/kg	70.3	15.5	1	10/21/21 08:15	10/22/21 11:12	56-23-5	
Chlorobenzene	<b>&lt;8.4</b>	ug/kg	70.3	8.4	1	10/21/21 08:15	10/22/21 11:12	108-90-7	
Chloroethane	<b>&lt;29.7</b>	ug/kg	352	29.7	1	10/21/21 08:15	10/22/21 11:12	75-00-3	
Chloroform	<b>&lt;50.4</b>	ug/kg	352	50.4	1	10/21/21 08:15	10/22/21 11:12	67-66-3	
Chloromethane	<b>&lt;26.7</b>	ug/kg	70.3	26.7	1	10/21/21 08:15	10/22/21 11:12	74-87-3	
2-Chlorotoluene	<b>&lt;22.8</b>	ug/kg	70.3	22.8	1	10/21/21 08:15	10/22/21 11:12	95-49-8	
4-Chlorotoluene	<b>&lt;26.7</b>	ug/kg	70.3	26.7	1	10/21/21 08:15	10/22/21 11:12	106-43-4	
1,2-Dibromo-3-chloropropane	<b>&lt;54.6</b>	ug/kg	352	54.6	1	10/21/21 08:15	10/22/21 11:12	96-12-8	
Dibromochloromethane	<b>&lt;240</b>	ug/kg	352	240	1	10/21/21 08:15	10/22/21 11:12	124-48-1	
1,2-Dibromoethane (EDB)	<b>&lt;19.3</b>	ug/kg	70.3	19.3	1	10/21/21 08:15	10/22/21 11:12	106-93-4	
Dibromomethane	<b>&lt;20.8</b>	ug/kg	70.3	20.8	1	10/21/21 08:15	10/22/21 11:12	74-95-3	
1,2-Dichlorobenzene	<b>&lt;21.8</b>	ug/kg	70.3	21.8	1	10/21/21 08:15	10/22/21 11:12	95-50-1	
1,3-Dichlorobenzene	<b>&lt;19.3</b>	ug/kg	70.3	19.3	1	10/21/21 08:15	10/22/21 11:12	541-73-1	
1,4-Dichlorobenzene	<b>&lt;19.3</b>	ug/kg	70.3	19.3	1	10/21/21 08:15	10/22/21 11:12	106-46-7	
Dichlorodifluoromethane	<b>&lt;30.2</b>	ug/kg	70.3	30.2	1	10/21/21 08:15	10/22/21 11:12	75-71-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-10 (6.5-8)**      **Lab ID: 40235057015**      Collected: 10/13/21 14:45      Received: 10/13/21 16:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Level Normal List</b>									
Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Green Bay									
1,1-Dichloroethane	<18.0	ug/kg	70.3	18.0	1	10/21/21 08:15	10/22/21 11:12	75-34-3	
1,2-Dichloroethane	<16.2	ug/kg	70.3	16.2	1	10/21/21 08:15	10/22/21 11:12	107-06-2	
1,1-Dichloroethene	<23.3	ug/kg	70.3	23.3	1	10/21/21 08:15	10/22/21 11:12	75-35-4	
cis-1,2-Dichloroethene	<15.1	ug/kg	70.3	15.1	1	10/21/21 08:15	10/22/21 11:12	156-59-2	
trans-1,2-Dichloroethene	<15.2	ug/kg	70.3	15.2	1	10/21/21 08:15	10/22/21 11:12	156-60-5	
1,2-Dichloropropane	<16.7	ug/kg	70.3	16.7	1	10/21/21 08:15	10/22/21 11:12	78-87-5	
1,3-Dichloropropane	<15.3	ug/kg	70.3	15.3	1	10/21/21 08:15	10/22/21 11:12	142-28-9	
2,2-Dichloropropane	<19.0	ug/kg	70.3	19.0	1	10/21/21 08:15	10/22/21 11:12	594-20-7	
1,1-Dichloropropene	<22.8	ug/kg	70.3	22.8	1	10/21/21 08:15	10/22/21 11:12	563-58-6	
cis-1,3-Dichloropropene	<46.4	ug/kg	352	46.4	1	10/21/21 08:15	10/22/21 11:12	10061-01-5	
trans-1,3-Dichloropropene	<201	ug/kg	352	201	1	10/21/21 08:15	10/22/21 11:12	10061-02-6	
Diisopropyl ether	<17.4	ug/kg	70.3	17.4	1	10/21/21 08:15	10/22/21 11:12	108-20-3	
Ethylbenzene	<16.7	ug/kg	70.3	16.7	1	10/21/21 08:15	10/22/21 11:12	100-41-4	
Hexachloro-1,3-butadiene	<140	ug/kg	352	140	1	10/21/21 08:15	10/22/21 11:12	87-68-3	
Isopropylbenzene (Cumene)	<19.0	ug/kg	70.3	19.0	1	10/21/21 08:15	10/22/21 11:12	98-82-8	
p-Isopropyltoluene	<21.4	ug/kg	70.3	21.4	1	10/21/21 08:15	10/22/21 11:12	99-87-6	
Methylene Chloride	<19.6	ug/kg	70.3	19.6	1	10/21/21 08:15	10/22/21 11:12	75-09-2	
Methyl-tert-butyl ether	<20.7	ug/kg	70.3	20.7	1	10/21/21 08:15	10/22/21 11:12	1634-04-4	
Naphthalene	<21.9	ug/kg	352	21.9	1	10/21/21 08:15	10/22/21 11:12	91-20-3	
n-Propylbenzene	<16.9	ug/kg	70.3	16.9	1	10/21/21 08:15	10/22/21 11:12	103-65-1	
Styrene	<18.0	ug/kg	70.3	18.0	1	10/21/21 08:15	10/22/21 11:12	100-42-5	
1,1,1,2-Tetrachloroethane	<16.9	ug/kg	70.3	16.9	1	10/21/21 08:15	10/22/21 11:12	630-20-6	
1,1,2,2-Tetrachloroethane	<25.5	ug/kg	70.3	25.5	1	10/21/21 08:15	10/22/21 11:12	79-34-5	
Tetrachloroethene	<27.3	ug/kg	70.3	27.3	1	10/21/21 08:15	10/22/21 11:12	127-18-4	
Toluene	<17.7	ug/kg	70.3	17.7	1	10/21/21 08:15	10/22/21 11:12	108-88-3	
1,2,3-Trichlorobenzene	<78.3	ug/kg	352	78.3	1	10/21/21 08:15	10/22/21 11:12	87-61-6	
1,2,4-Trichlorobenzene	<57.9	ug/kg	352	57.9	1	10/21/21 08:15	10/22/21 11:12	120-82-1	
1,1,1-Trichloroethane	<18.0	ug/kg	70.3	18.0	1	10/21/21 08:15	10/22/21 11:12	71-55-6	
1,1,2-Trichloroethane	<25.6	ug/kg	70.3	25.6	1	10/21/21 08:15	10/22/21 11:12	79-00-5	
Trichloroethene	<26.3	ug/kg	70.3	26.3	1	10/21/21 08:15	10/22/21 11:12	79-01-6	
Trichlorofluoromethane	<20.4	ug/kg	70.3	20.4	1	10/21/21 08:15	10/22/21 11:12	75-69-4	
1,2,3-Trichloropropane	<34.2	ug/kg	70.3	34.2	1	10/21/21 08:15	10/22/21 11:12	96-18-4	
1,2,4-Trimethylbenzene	<21.0	ug/kg	70.3	21.0	1	10/21/21 08:15	10/22/21 11:12	95-63-6	
1,3,5-Trimethylbenzene	<22.6	ug/kg	70.3	22.6	1	10/21/21 08:15	10/22/21 11:12	108-67-8	
Vinyl chloride	<14.2	ug/kg	70.3	14.2	1	10/21/21 08:15	10/22/21 11:12	75-01-4	
m&p-Xylene	<29.7	ug/kg	141	29.7	1	10/21/21 08:15	10/22/21 11:12	179601-23-1	
o-Xylene	<21.1	ug/kg	70.3	21.1	1	10/21/21 08:15	10/22/21 11:12	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	123	%	67-159		1	10/21/21 08:15	10/22/21 11:12	2037-26-5	
4-Bromofluorobenzene (S)	128	%	66-153		1	10/21/21 08:15	10/22/21 11:12	460-00-4	
1,2-Dichlorobenzene-d4 (S)	119	%	82-158		1	10/21/21 08:15	10/22/21 11:12	2199-69-1	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40235057

**Sample: GP-10 (6.5-8)**      **Lab ID: 40235057015**      Collected: 10/13/21 14:45      Received: 10/13/21 16:40      Matrix: Solid  
*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Percent Moisture</b>	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	<b>16.9</b>	%	0.10	0.10	1		10/14/21 07:39		

**Sample: GP-4 (1.5-2.5)**      **Lab ID: 40235057016**      Collected: 10/13/21 11:15      Received: 10/13/21 16:40      Matrix: Solid  
*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>	Analytical Method: EPA 6010D      Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	<b>3.5</b>	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 22:19	7440-38-2	
Lead	<b>42.4</b>	mg/kg	2.1	0.62	1	10/19/21 06:21	10/19/21 22:19	7439-92-1	
<b>Percent Moisture</b>	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	<b>4.5</b>	%	0.10	0.10	1		10/14/21 07:39		

**Sample: GP-4 (8-10)**      **Lab ID: 40235057017**      Collected: 10/13/21 11:20      Received: 10/13/21 16:40      Matrix: Solid  
*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>	Analytical Method: EPA 6010D      Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	<b>1.8J</b>	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 22:21	7440-38-2	
Lead	<b>6.2</b>	mg/kg	2.0	0.61	1	10/19/21 06:21	10/19/21 22:21	7439-92-1	
<b>Percent Moisture</b>	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	<b>4.0</b>	%	0.10	0.10	1		10/14/21 07:39		

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40235057

METHOD BLANK: 2305064

Matrix: Solid

Associated Lab Samples: 40235057001, 40235057002, 40235057003, 40235057004, 40235057007, 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	<12.4	50.0	10/22/21 08:36	
Ethylbenzene	ug/kg	<11.9	50.0	10/22/21 08:36	
Hexachloro-1,3-butadiene	ug/kg	<99.4	250	10/22/21 08:36	
Isopropylbenzene (Cumene)	ug/kg	<13.5	50.0	10/22/21 08:36	
m&p-Xylene	ug/kg	<21.1	100	10/22/21 08:36	
Methyl-tert-butyl ether	ug/kg	<14.7	50.0	10/22/21 08:36	
Methylene Chloride	ug/kg	<13.9	50.0	10/22/21 08:36	
n-Butylbenzene	ug/kg	<22.9	50.0	10/22/21 08:36	
n-Propylbenzene	ug/kg	<12.0	50.0	10/22/21 08:36	
Naphthalene	ug/kg	<15.6	250	10/22/21 08:36	
o-Xylene	ug/kg	<15.0	50.0	10/22/21 08:36	
p-Isopropyltoluene	ug/kg	<15.2	50.0	10/22/21 08:36	
sec-Butylbenzene	ug/kg	<12.2	50.0	10/22/21 08:36	
Styrene	ug/kg	<12.8	50.0	10/22/21 08:36	
tert-Butylbenzene	ug/kg	<15.7	50.0	10/22/21 08:36	
Tetrachloroethene	ug/kg	<19.4	50.0	10/22/21 08:36	
Toluene	ug/kg	<12.6	50.0	10/22/21 08:36	
trans-1,2-Dichloroethene	ug/kg	<10.8	50.0	10/22/21 08:36	
trans-1,3-Dichloropropene	ug/kg	<143	250	10/22/21 08:36	
Trichloroethene	ug/kg	<18.7	50.0	10/22/21 08:36	
Trichlorofluoromethane	ug/kg	<14.5	50.0	10/22/21 08:36	
Vinyl chloride	ug/kg	<10.1	50.0	10/22/21 08:36	
1,2-Dichlorobenzene-d4 (S)	%	102	82-158	10/22/21 08:36	
4-Bromofluorobenzene (S)	%	111	66-153	10/22/21 08:36	
Toluene-d8 (S)	%	101	67-159	10/22/21 08:36	

LABORATORY CONTROL SAMPLE: 2305065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2450	98	70-130	
1,1,1,2-Tetrachloroethane	ug/kg	2500	2360	94	65-129	
1,1,2-Trichloroethane	ug/kg	2500	2320	93	70-130	
1,1-Dichloroethane	ug/kg	2500	2250	90	70-130	
1,1-Dichloroethene	ug/kg	2500	2220	89	67-120	
1,2,4-Trichlorobenzene	ug/kg	2500	2230	89	64-130	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2380	95	57-119	
1,2-Dibromoethane (EDB)	ug/kg	2500	2290	92	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2270	91	70-130	
1,2-Dichloroethane	ug/kg	2500	2530	101	70-130	
1,2-Dichloropropane	ug/kg	2500	2270	91	72-118	
1,3-Dichlorobenzene	ug/kg	2500	2230	89	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2200	88	70-130	
Benzene	ug/kg	2500	2290	92	70-130	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40235057

LABORATORY CONTROL SAMPLE: 2305065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromodichloromethane	ug/kg	2500	2430	97	70-130	
Bromoform	ug/kg	2500	2000	80	66-130	
Bromomethane	ug/kg	2500	2000	80	13-153	
Carbon tetrachloride	ug/kg	2500	2390	96	73-134	
Chlorobenzene	ug/kg	2500	2350	94	70-130	
Chloroethane	ug/kg	2500	1830	73	19-170	
Chloroform	ug/kg	2500	2470	99	79-120	
Chloromethane	ug/kg	2500	1200	48	45-117	
cis-1,2-Dichloroethene	ug/kg	2500	2220	89	70-130	
cis-1,3-Dichloropropene	ug/kg	2500	2280	91	68-130	
Dibromochloromethane	ug/kg	2500	2190	87	70-130	
Dichlorodifluoromethane	ug/kg	2500	789	32	15-135	
Ethylbenzene	ug/kg	2500	2340	94	78-120	
Isopropylbenzene (Cumene)	ug/kg	2500	2300	92	70-130	
m&p-Xylene	ug/kg	5000	4420	88	70-130	
Methyl-tert-butyl ether	ug/kg	2500	2160	86	65-130	
Methylene Chloride	ug/kg	2500	2290	92	70-130	
o-Xylene	ug/kg	2500	2220	89	70-130	
Styrene	ug/kg	2500	2290	91	70-130	
Tetrachloroethene	ug/kg	2500	2370	95	70-130	
Toluene	ug/kg	2500	2240	89	76-120	
trans-1,2-Dichloroethene	ug/kg	2500	2310	92	70-130	
trans-1,3-Dichloropropene	ug/kg	2500	2150	86	70-130	
Trichloroethene	ug/kg	2500	2440	98	70-130	
Trichlorofluoromethane	ug/kg	2500	1860	74	49-153	
Vinyl chloride	ug/kg	2500	1690	68	58-121	
1,2-Dichlorobenzene-d4 (S)	%			106	82-158	
4-Bromofluorobenzene (S)	%			117	66-153	
Toluene-d8 (S)	%			105	67-159	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2305066 2305067

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40235057015	Result	Spike Conc.	Spike Conc.								
1,1,1-Trichloroethane	ug/kg	<18.0	1410	1410	1320	1380	94	98	70-130	5	20		
1,1,1,2,2-Tetrachloroethane	ug/kg	<25.5	1410	1410	1540	1510	109	107	65-129	2	20		
1,1,2-Trichloroethane	ug/kg	<25.6	1410	1410	1490	1470	106	105	70-130	1	20		
1,1-Dichloroethane	ug/kg	<18.0	1410	1410	1340	1390	95	99	70-130	4	20		
1,1-Dichloroethene	ug/kg	<23.3	1410	1410	1300	1370	93	97	64-120	5	20		
1,2,4-Trichlorobenzene	ug/kg	<57.9	1410	1410	1570	1500	112	107	64-130	5	20		
1,2-Dibromo-3-chloropropane	ug/kg	<54.6	1410	1410	1490	1530	106	109	57-130	3	21		
1,2-Dibromoethane (EDB)	ug/kg	<19.3	1410	1410	1500	1480	107	105	70-130	1	20		
1,2-Dichlorobenzene	ug/kg	<21.8	1410	1410	1490	1530	106	109	70-130	2	20		
1,2-Dichloroethane	ug/kg	<16.2	1410	1410	1570	1460	112	104	70-130	8	20		

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### QUALITY CONTROL DATA

Project: LUDINGTON

Pace Project No.: 40235057

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2305066 2305067													
Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40235057015 Result	Spike Conc.	Spike Conc.	MS Result								
1,2-Dichloropropane	ug/kg	<16.7	1410	1410	1370	1330	97	95	72-122	2	20		
1,3-Dichlorobenzene	ug/kg	<19.3	1410	1410	1470	1500	105	107	70-130	2	20		
1,4-Dichlorobenzene	ug/kg	<19.3	1410	1410	1450	1500	103	106	70-130	3	20		
Benzene	ug/kg	<16.7	1410	1410	1360	1370	97	98	70-130	1	20		
Bromodichloromethane	ug/kg	<16.7	1410	1410	1430	1380	101	98	70-130	4	20		
Bromoform	ug/kg	<309	1410	1410	1430	1370	102	97	66-130	4	20		
Bromomethane	ug/kg	<98.6	1410	1410	1460	1450	104	103	13-153	1	20		
Carbon tetrachloride	ug/kg	<15.5	1410	1410	1300	1390	92	99	67-134	7	20		
Chlorobenzene	ug/kg	<8.4	1410	1410	1430	1480	101	105	70-130	4	20		
Chloroethane	ug/kg	<29.7	1410	1410	1370	1400	97	99	11-195	2	20		
Chloroform	ug/kg	<50.4	1410	1410	1480	1440	105	103	79-120	3	20		
Chloromethane	ug/kg	<26.7	1410	1410	1080	1120	76	79	30-136	4	20		
cis-1,2-Dichloroethene	ug/kg	<15.1	1410	1410	1340	1320	95	94	70-130	2	20		
cis-1,3-Dichloropropene	ug/kg	<46.4	1410	1410	1320	1320	94	94	68-130	0	20		
Dibromochloromethane	ug/kg	<240	1410	1410	1360	1360	97	97	70-130	0	20		
Dichlorodifluoromethane	ug/kg	<30.2	1410	1410	1040	1110	74	79	10-158	7	25		
Ethylbenzene	ug/kg	<16.7	1410	1410	1380	1400	98	99	78-120	2	20		
Isopropylbenzene (Cumene)	ug/kg	<19.0	1410	1410	1320	1370	94	98	70-130	4	20		
m&p-Xylene	ug/kg	<29.7	2820	2820	2650	2720	94	97	70-130	2	20		
Methyl-tert-butyl ether	ug/kg	<20.7	1410	1410	1280	1210	91	86	65-130	6	20		
Methylene Chloride	ug/kg	<19.6	1410	1410	1440	1480	102	105	70-130	2	20		
o-Xylene	ug/kg	<21.1	1410	1410	1350	1380	96	98	70-130	2	20		
Styrene	ug/kg	<18.0	1410	1410	1370	1430	98	102	70-130	4	20		
Tetrachloroethene	ug/kg	<27.3	1410	1410	1340	1360	95	97	70-130	2	20		
Toluene	ug/kg	<17.7	1410	1410	1380	1360	98	97	76-120	1	20		
trans-1,2-Dichloroethene	ug/kg	<15.2	1410	1410	1350	1400	96	99	70-130	3	20		
trans-1,3-Dichloropropene	ug/kg	<201	1410	1410	1270	1260	90	90	70-130	0	20		
Trichloroethene	ug/kg	<26.3	1410	1410	1430	1480	102	105	70-130	4	20		
Trichlorofluoromethane	ug/kg	<20.4	1410	1410	1120	1240	80	89	42-159	10	21		
Vinyl chloride	ug/kg	<14.2	1410	1410	1270	1330	90	95	43-137	5	20		
1,2-Dichlorobenzene-d4 (S)	%						117	119	82-158				
4-Bromofluorobenzene (S)	%						130	134	66-153				
Toluene-d8 (S)	%						120	120	67-159				

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40235057

QC Batch: 398540      Analysis Method: EPA 8082  
QC Batch Method: EPA 3541      Analysis Description: 8082 GCS PCB  
Laboratory: Pace Analytical Services - Green Bay  
Associated Lab Samples: 40235057007, 40235057008, 40235057009

METHOD BLANK: 2300671      Matrix: Solid  
Associated Lab Samples: 40235057007, 40235057008, 40235057009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1221 (Aroclor 1221)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1232 (Aroclor 1232)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1242 (Aroclor 1242)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1248 (Aroclor 1248)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1254 (Aroclor 1254)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1260 (Aroclor 1260)	ug/kg	<15.2	50.0	10/15/21 23:07	
Decachlorobiphenyl (S)	%	101	47-114	10/15/21 23:07	
Tetrachloro-m-xylene (S)	%	95	67-102	10/15/21 23:07	

LABORATORY CONTROL SAMPLE: 2300672

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg		<15.2			
PCB-1221 (Aroclor 1221)	ug/kg		<15.2			
PCB-1232 (Aroclor 1232)	ug/kg		<15.2			
PCB-1242 (Aroclor 1242)	ug/kg		<15.2			
PCB-1248 (Aroclor 1248)	ug/kg		<15.2			
PCB-1254 (Aroclor 1254)	ug/kg		<15.2			
PCB-1260 (Aroclor 1260)	ug/kg	500	445	89	69-115	
Decachlorobiphenyl (S)	%			98	47-114	
Tetrachloro-m-xylene (S)	%			93	67-102	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300673      2300674

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40234892004	Spike Conc.	Spike Conc.	Result						
PCB-1016 (Aroclor 1016)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20
PCB-1221 (Aroclor 1221)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20
PCB-1232 (Aroclor 1232)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20
PCB-1242 (Aroclor 1242)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20
PCB-1248 (Aroclor 1248)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20
PCB-1254 (Aroclor 1254)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40235057

Parameter	Units	40234892004		2300673		2300674		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
PCB-1260 (Aroclor 1260)	ug/kg	<0.018 mg/kg	602	605	547	539	91	89	45-120	1	20			
Decachlorobiphenyl (S)	%						97	95	47-114					
Tetrachloro-m-xylene (S)	%						96	94	67-102					

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40235057

QC Batch: 399013      Analysis Method: EPA 8270E by SIM  
QC Batch Method: EPA 3546      Analysis Description: 8270E/3546 MSSV PAH by SIM  
Laboratory: Pace Analytical Services - Green Bay  
Associated Lab Samples: 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015

METHOD BLANK: 2303909      Matrix: Solid  
Associated Lab Samples: 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<2.4	16.7	10/20/21 09:27	
2-Methylnaphthalene	ug/kg	<2.4	16.7	10/20/21 09:27	
Acenaphthene	ug/kg	<2.2	16.7	10/20/21 09:27	
Acenaphthylene	ug/kg	<2.1	16.7	10/20/21 09:27	
Anthracene	ug/kg	<2.1	16.7	10/20/21 09:27	
Benzo(a)anthracene	ug/kg	<2.2	16.7	10/20/21 09:27	
Benzo(a)pyrene	ug/kg	<1.9	16.7	10/20/21 09:27	
Benzo(b)fluoranthene	ug/kg	<2.3	16.7	10/20/21 09:27	
Benzo(g,h,i)perylene	ug/kg	<2.9	16.7	10/20/21 09:27	
Benzo(k)fluoranthene	ug/kg	<2.1	16.7	10/20/21 09:27	
Chrysene	ug/kg	<3.2	16.7	10/20/21 09:27	
Dibenz(a,h)anthracene	ug/kg	<2.3	16.7	10/20/21 09:27	
Fluoranthene	ug/kg	<2.0	16.7	10/20/21 09:27	
Fluorene	ug/kg	<2.0	16.7	10/20/21 09:27	
Indeno(1,2,3-cd)pyrene	ug/kg	<3.5	16.7	10/20/21 09:27	
Naphthalene	ug/kg	<1.6	16.7	10/20/21 09:27	
Phenanthrene	ug/kg	<1.9	16.7	10/20/21 09:27	
Pyrene	ug/kg	<2.5	16.7	10/20/21 09:27	
2-Fluorobiphenyl (S)	%	82	36-86	10/20/21 09:27	
Terphenyl-d14 (S)	%	108	41-97	10/20/21 09:27	S3

LABORATORY CONTROL SAMPLE: 2303910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	333	264	79	53-100	
2-Methylnaphthalene	ug/kg	333	264	79	51-97	
Acenaphthene	ug/kg	333	290	87	62-120	
Acenaphthylene	ug/kg	333	266	80	61-120	
Anthracene	ug/kg	333	334	100	62-111	
Benzo(a)anthracene	ug/kg	333	323	97	61-120	
Benzo(a)pyrene	ug/kg	333	325	98	65-120	
Benzo(b)fluoranthene	ug/kg	333	302	91	64-108	
Benzo(g,h,i)perylene	ug/kg	333	304	91	71-120	
Benzo(k)fluoranthene	ug/kg	333	293	88	76-120	
Chrysene	ug/kg	333	333	100	74-120	
Dibenz(a,h)anthracene	ug/kg	333	304	91	71-120	
Fluoranthene	ug/kg	333	344	103	67-112	

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40235057

LABORATORY CONTROL SAMPLE: 2303910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluorene	ug/kg	333	278	83	65-120	
Indeno(1,2,3-cd)pyrene	ug/kg	333	314	94	74-120	
Naphthalene	ug/kg	333	261	78	53-120	
Phenanthrene	ug/kg	333	323	97	67-120	
Pyrene	ug/kg	333	305	92	60-103	
2-Fluorobiphenyl (S)	%			66	36-86	
Terphenyl-d14 (S)	%			85	41-97	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2303911 2303912

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40235072004 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1-Methylnaphthalene	ug/kg	22.7J	484	484	405	386	79	75	41-100	5	29	
2-Methylnaphthalene	ug/kg	27.6	484	484	427	400	83	77	42-97	7	21	
Acenaphthene	ug/kg	5.7J	484	484	364	376	74	77	43-120	3	27	
Acenaphthylene	ug/kg	6.7J	484	484	407	380	83	77	51-120	7	26	
Anthracene	ug/kg	23.5J	484	484	449	437	88	85	46-111	3	29	
Benzo(a)anthracene	ug/kg	83.2	484	484	492	446	84	75	48-120	10	23	
Benzo(a)pyrene	ug/kg	81.0	484	484	506	450	88	76	46-108	12	30	
Benzo(b)fluoranthene	ug/kg	117	484	484	582	455	96	70	45-108	24	30	
Benzo(g,h,i)perylene	ug/kg	57.2	484	484	475	431	86	77	39-120	10	37	
Benzo(k)fluoranthene	ug/kg	41.9	484	484	481	449	91	84	47-120	7	31	
Chrysene	ug/kg	95.6	484	484	517	450	87	73	54-120	14	21	
Dibenz(a,h)anthracene	ug/kg	17.0J	484	484	450	375	89	74	46-120	18	34	
Fluoranthene	ug/kg	195	484	484	631	552	90	74	53-112	13	27	
Fluorene	ug/kg	8.8J	484	484	434	443	88	90	48-120	2	29	
Indeno(1,2,3-cd)pyrene	ug/kg	49.2	484	484	488	403	91	73	40-120	19	34	
Naphthalene	ug/kg	33.9	484	484	382	413	72	78	47-120	8	25	
Phenanthrene	ug/kg	111	484	484	524	472	85	75	49-120	10	28	
Pyrene	ug/kg	145	484	484	535	546	81	83	43-103	2	31	
2-Fluorobiphenyl (S)	%						71	72	36-86			
Terphenyl-d14 (S)	%						74	82	41-97			

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40235057

QC Batch: 399201      Analysis Method: EPA 8270E by SIM  
QC Batch Method: EPA 3546      Analysis Description: 8270E/3546 MSSV PAH by SIM  
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40235057007

METHOD BLANK: 2304907      Matrix: Solid  
Associated Lab Samples: 40235057007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<2.4	16.7	10/21/21 10:16	
2-Methylnaphthalene	ug/kg	<2.4	16.7	10/21/21 10:16	
Acenaphthene	ug/kg	<2.2	16.7	10/21/21 10:16	
Acenaphthylene	ug/kg	<2.1	16.7	10/21/21 10:16	
Anthracene	ug/kg	<2.1	16.7	10/21/21 10:16	
Benzo(a)anthracene	ug/kg	<2.2	16.7	10/21/21 10:16	
Benzo(a)pyrene	ug/kg	<1.9	16.7	10/21/21 10:16	
Benzo(b)fluoranthene	ug/kg	<2.3	16.7	10/21/21 10:16	
Benzo(g,h,i)perylene	ug/kg	<2.9	16.7	10/21/21 10:16	
Benzo(k)fluoranthene	ug/kg	<2.1	16.7	10/21/21 10:16	
Chrysene	ug/kg	<3.2	16.7	10/21/21 10:16	
Dibenz(a,h)anthracene	ug/kg	<2.3	16.7	10/21/21 10:16	
Fluoranthene	ug/kg	<2.0	16.7	10/21/21 10:16	
Fluorene	ug/kg	<2.0	16.7	10/21/21 10:16	
Indeno(1,2,3-cd)pyrene	ug/kg	<3.5	16.7	10/21/21 10:16	
Naphthalene	ug/kg	<1.6	16.7	10/21/21 10:16	
Phenanthrene	ug/kg	<1.9	16.7	10/21/21 10:16	
Pyrene	ug/kg	<2.5	16.7	10/21/21 10:16	
2-Fluorobiphenyl (S)	%	70	36-86	10/21/21 10:16	
Terphenyl-d14 (S)	%	80	41-97	10/21/21 10:16	

LABORATORY CONTROL SAMPLE: 2304908

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	333	230	69	53-100	
2-Methylnaphthalene	ug/kg	333	233	70	51-97	
Acenaphthene	ug/kg	333	239	72	62-120	
Acenaphthylene	ug/kg	333	240	72	61-120	
Anthracene	ug/kg	333	272	82	62-111	
Benzo(a)anthracene	ug/kg	333	266	80	61-120	
Benzo(a)pyrene	ug/kg	333	274	82	65-120	
Benzo(b)fluoranthene	ug/kg	333	250	75	64-108	
Benzo(g,h,i)perylene	ug/kg	333	280	84	71-120	
Benzo(k)fluoranthene	ug/kg	333	274	82	76-120	
Chrysene	ug/kg	333	271	82	74-120	
Dibenz(a,h)anthracene	ug/kg	333	282	85	71-120	
Fluoranthene	ug/kg	333	239	72	67-112	
Fluorene	ug/kg	333	247	74	65-120	
Indeno(1,2,3-cd)pyrene	ug/kg	333	286	86	74-120	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40235057

LABORATORY CONTROL SAMPLE: 2304908

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/kg	333	226	68	53-120	
Phenanthrene	ug/kg	333	264	79	67-120	
Pyrene	ug/kg	333	269	81	60-103	
2-Fluorobiphenyl (S)	%			68	36-86	
Terphenyl-d14 (S)	%			80	41-97	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2304909 2304910

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40235427005 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1-Methylnaphthalene	ug/kg	<2.9	399	399	171	202	43	50	41-100	17	29	
2-Methylnaphthalene	ug/kg	<2.9	399	399	168	202	42	51	42-97	19	21	
Acenaphthene	ug/kg	<2.6	399	399	211	236	53	59	43-120	11	27	
Acenaphthylene	ug/kg	<2.5	399	399	211	241	53	60	51-120	14	26	
Anthracene	ug/kg	<2.5	399	399	229	242	57	60	46-111	5	29	
Benzo(a)anthracene	ug/kg	10.2J	399	399	236	266	57	64	48-120	12	23	
Benzo(a)pyrene	ug/kg	7.8J	399	399	239	283	58	69	46-108	17	30	
Benzo(b)fluoranthene	ug/kg	11.5J	399	399	255	270	61	65	45-108	6	30	
Benzo(g,h,i)perylene	ug/kg	7.7J	399	399	224	244	54	59	39-120	8	37	
Benzo(k)fluoranthene	ug/kg	5.7J	399	399	229	268	56	66	47-120	16	31	
Chrysene	ug/kg	12.9J	399	399	237	257	56	61	54-120	8	21	
Dibenz(a,h)anthracene	ug/kg	<2.8	399	399	219	259	54	64	46-120	17	34	
Fluoranthene	ug/kg	28.0	399	399	278	291	63	66	53-112	5	27	
Fluorene	ug/kg	<2.4	399	399	211	240	53	60	48-120	13	29	
Indeno(1,2,3-cd)pyrene	ug/kg	5.8J	399	399	228	266	56	65	40-120	16	34	
Naphthalene	ug/kg	2.0J	399	399	197	221	49	55	47-120	12	25	
Phenanthrene	ug/kg	13.8J	399	399	245	254	58	60	49-120	4	28	
Pyrene	ug/kg	23.6	399	399	241	286	55	66	43-103	17	31	
2-Fluorobiphenyl (S)	%						61	56	36-86			
Terphenyl-d14 (S)	%						52	56	41-97			

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### QUALITY CONTROL DATA

Project: LUDINGTON

Pace Project No.: 40235057

QC Batch: 398475

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40235057014, 40235057015, 40235057016, 40235057017

SAMPLE DUPLICATE: 2300226

Parameter	Units	40235057017 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	4.0	3.8	5	10	

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### QUALITY CONTROL DATA

Project: LUDINGTON

Pace Project No.: 40235057

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QC Batch:	398541	Analysis Method:	ASTM D2974-87
QC Batch Method:	ASTM D2974-87	Analysis Description:	Dry Weight/Percent Moisture
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40235057001, 40235057002, 40235057003, 40235057004, 40235057005, 40235057006, 40235057007, 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013

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SAMPLE DUPLICATE: 2300681

Parameter	Units	40235057001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	2.9	2.7	4	10	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40235057

QC Batch: 399216      Analysis Method: EPA 9012B  
QC Batch Method: EPA 9012B      Analysis Description: 9012 Cyanide  
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40235057007, 40235057008, 40235057009

METHOD BLANK: 2304950      Matrix: Solid  
Associated Lab Samples: 40235057007, 40235057008, 40235057009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	<0.31	0.92	10/21/21 14:53	

LABORATORY CONTROL SAMPLE: 2304951

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2304952      2304953

Parameter	Units	10583322002		2304953		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.						
Cyanide	mg/kg	ND	4.9	2.7	3.2	53	64	80-120	18	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2304954      2304955

Parameter	Units	40235236001		2304955		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.						
Cyanide	mg/kg	<0.35	3.5	3.6	3.5	99	94	80-120	2	20	

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## QUALIFIERS

Project: LUDINGTON

Pace Project No.: 40235057

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

- |    |  |
|----|--|
| D3 | Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.           |
| M0 | Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.                  |
| S3 | Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample. |
| S4 | Surrogate recovery not evaluated against control limits due to sample dilution.                                      |

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: LUDINGTON  
Pace Project No.: 40235057

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40235057007	GP-5 (1.5-2.5)	EPA 3541	398540	EPA 8082	398576
40235057008	GP-6 (2-4)	EPA 3541	398540	EPA 8082	398576
40235057009	GP-7 (2-4)	EPA 3541	398540	EPA 8082	398576
40235057001	GP-1 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057002	GP-1 (9-11)	EPA 3050B	398513	EPA 6010D	398994
40235057003	GP-2 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057004	GP-2 (9-11)	EPA 3050B	398513	EPA 6010D	398994
40235057005	GP-3 (1.5-2.5)	EPA 3050B	398513	EPA 6010D	398994
40235057006	GP-3 (8-10)	EPA 3050B	398513	EPA 6010D	398994
40235057007	GP-5 (1.5-2.5)	EPA 3050B	398513	EPA 6010D	398994
40235057008	GP-6 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057009	GP-7 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057010	GP-8 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057011	GP-8 (7-8)	EPA 3050B	398513	EPA 6010D	398994
40235057012	GP-9 (1.5-3.5)	EPA 3050B	398513	EPA 6010D	398994
40235057013	GP-9 (5.5-7.5)	EPA 3050B	398513	EPA 6010D	398994
40235057014	GP-10 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057015	GP-10 (6.5-8)	EPA 3050B	398513	EPA 6010D	398994
40235057016	GP-4 (1.5-2.5)	EPA 3050B	398513	EPA 6010D	398994
40235057017	GP-4 (8-10)	EPA 3050B	398513	EPA 6010D	398994
40235057007	GP-5 (1.5-2.5)	EPA 3546	399201	EPA 8270E by SIM	399265
40235057008	GP-6 (2-4)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057009	GP-7 (2-4)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057010	GP-8 (2-4)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057011	GP-8 (7-8)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057012	GP-9 (1.5-3.5)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057013	GP-9 (5.5-7.5)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057014	GP-10 (2-4)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057015	GP-10 (6.5-8)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057001	GP-1 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057002	GP-1 (9-11)	EPA 5035/5030B	399239	EPA 8260	399243
40235057003	GP-2 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057004	GP-2 (9-11)	EPA 5035/5030B	399239	EPA 8260	399243
40235057007	GP-5 (1.5-2.5)	EPA 5035/5030B	399239	EPA 8260	399243
40235057008	GP-6 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057009	GP-7 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057010	GP-8 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057011	GP-8 (7-8)	EPA 5035/5030B	399239	EPA 8260	399243
40235057012	GP-9 (1.5-3.5)	EPA 5035/5030B	399239	EPA 8260	399243
40235057013	GP-9 (5.5-7.5)	EPA 5035/5030B	399239	EPA 8260	399243
40235057014	GP-10 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057015	GP-10 (6.5-8)	EPA 5035/5030B	399239	EPA 8260	399243
40235057001	GP-1 (2-4)	ASTM D2974-87	398541		
40235057002	GP-1 (9-11)	ASTM D2974-87	398541		
40235057003	GP-2 (2-4)	ASTM D2974-87	398541		
40235057004	GP-2 (9-11)	ASTM D2974-87	398541		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: LUDINGTON  
Pace Project No.: 40235057

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40235057005	GP-3 (1.5-2.5)	ASTM D2974-87	398541		
40235057006	GP-3 (8-10)	ASTM D2974-87	398541		
40235057007	GP-5 (1.5-2.5)	ASTM D2974-87	398541		
40235057008	GP-6 (2-4)	ASTM D2974-87	398541		
40235057009	GP-7 (2-4)	ASTM D2974-87	398541		
40235057010	GP-8 (2-4)	ASTM D2974-87	398541		
40235057011	GP-8 (7-8)	ASTM D2974-87	398541		
40235057012	GP-9 (1.5-3.5)	ASTM D2974-87	398541		
40235057013	GP-9 (5.5-7.5)	ASTM D2974-87	398541		
40235057014	GP-10 (2-4)	ASTM D2974-87	398475		
40235057015	GP-10 (6.5-8)	ASTM D2974-87	398475		
40235057016	GP-4 (1.5-2.5)	ASTM D2974-87	398475		
40235057017	GP-4 (8-10)	ASTM D2974-87	398475		
40235057007	GP-5 (1.5-2.5)	EPA 9012B	399216	EPA 9012B	399286
40235057008	GP-6 (2-4)	EPA 9012B	399216	EPA 9012B	399286
40235057009	GP-7 (2-4)	EPA 9012B	399216	EPA 9012B	399286

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(Please Print Clearly)

Company Name: Aynes  
 Branch/Location: Green Bay  
 Project Contact: Bill Honea  
 Phone: (920) 327-7815  
 Project Number:  
 Project Name: Ludington  
 Project State: WI  
 Sampled By (Print): William Honea  
 Sampled By (Sign): William Honea



UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

40235057

### CHAIN OF CUSTODY

**\*Preservation Codes**  
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?  
(YES/NO)  
 PRESERVATION  
(CODE)\*

Y/N	Pick Letter	As + Pb	PFAS	VOCs	PAHs	Asbestos	As, Pb, + Cyanide	PAHs + PCBs
				F				
Analyses Requested								

Quote #:  
 Mail To Contact:  
 Mail To Company:  
 Mail To Address:  
 Invoice To Contact:  
 Invoice To Company:  
 Invoice To Address: subs@aynesassociates.com  
 Invoice To Phone:  
 CLIENT COMMENTS  
 LAB COMMENTS (Lab Use Only)  
 Profile #

**Data Package Options** (billable)  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	As + Pb	PFAS	VOCs	PAHs	Asbestos	As, Pb, + Cyanide	PAHs + PCBs
		DATE	TIME								
001	GP-1 (2-4)	10-13-21	9:35	S	1		1				
002	GP-1 (9-11)	10-13-21	9:45	S	1		1				
003	GP-2 (2-4)	10-13-21	10:15	S	1		1				
004	GP-2 (9-11)	10-13-21	10:20	S	1		1				
005	GP-3 (1.5-2.5)	10-13-21	10:45	S	1						
006	GP-3 (8-10)	10-13-21	10:50	S	1						
007	GP-5 (1.5-2.5)	10-13-21	12:00	S			1		1	1	
008	GP-6 (2-4)	10-13-21	12:20	S			1		1	1	
009	GP-7 (2-4)	10-13-21	12:35	S			1		1	1	
010	GP-8 (2-4)	10-13-21	13:05	S	1	1	1	1	1		
011	GP-8 (7-8)	10-13-21	13:10	S	1	X	1	1	1		
012	GP-9 (1.5-3.5)	10-13-21	14:05	S	1	1	1	1	1		
013	GP-9 (5.5-7.5)	10-13-21	14:10	S	1	1	1	1	1		

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)  
 Date Needed: \_\_\_\_\_

Relinquished By: William Honea Date/Time: 10/13/21 1640  
 Received By: [Signature] Date/Time: 10/13/21 1640

Transmit Prelim Rush Results by (complete what you want):

Email #1: \_\_\_\_\_  
 Email #2: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

Samples on HOLD are subject to special pricing and release of liability

PACE Project No. 40235057  
 Receipt Temp = 3 °C  
 Sample Receipt pH OK / Adjusted  
 Cooler Custody Seal Present / Not Present Intact / Not Intact



# Sample Preservation Receipt Form

Pace Analytical Services, LLC  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

Client Name: Hyrex

Project # 40235057

All containers needing preservation have been checked and noted below:  Yes  No  N/A

Initial when completed:

Date/Time:

Lab Lot# of pH paper:


Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass							Plastic					Vials					Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)						
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC								GN					
001																																					2.5 / 5 / 10
002																																					2.5 / 5 / 10
003																																					2.5 / 5 / 10
004																																					2.5 / 5 / 10
005																																					2.5 / 5 / 10
006																																					2.5 / 5 / 10
007																																					2.5 / 5 / 10
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017																																					2.5 / 5 / 10
018																																					2.5 / 5 / 10
019																																					2.5 / 5 / 10
020																																					2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: \_\_\_\_\_ Headspace in VOA Vials (>6mm) :  Yes  No  N/A \*If yes look in headspace column

AG1U 1 liter amber glass	BP1U 1 liter plastic unpres	VG9A 40 mL clear ascorbic	JGFU 4 oz amber jar unpres
BG1U 1 liter clear glass	BP3U 250 mL plastic unpres	DG9T 40 mL amber Na Thio	JG9U 9 oz amber jar unpres
AG1H 1 liter amber glass HCL	BP3B 250 mL plastic NaOH	VG9U 40 mL clear vial unpres	WGFU 4 oz clear jar unpres
AG4S 125 mL amber glass H2SO4	BP3N 250 mL plastic HNO3	VG9H 40 mL clear vial HCL	WPFU 4 oz plastic jar unpres
AG4U 120 mL amber glass unpres	BP3S 250 mL plastic H2SO4	VG9M 40 mL clear vial MeOH	SP5T 120 mL plastic Na Thiosulfate
AG5U 100 mL amber glass unpres		VG9D 40 mL clear vial DI	ZPLC ziploc bag
AG2S 500 mL amber glass H2SO4			GN
BG3U 250 mL clear glass unpres			



 1241 Bellevue Street, Green Bay, WI 54302	Document Name: <b>Sample Condition Upon Receipt (SCUR)</b>	Document Revised: 26Mar2020
	Document No.: <b>ENV-FRM-GBAY-0014-Rev.00</b>	Author: Pace Green Bay Quality Office

**Sample Condition Upon Receipt Form (SCUR)**

Project #:

Client Name: Ayres

**WO# : 40235057**

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Waltco  
 Client  Pace Other: \_\_\_\_\_



Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR - 110 Type of Ice:  Wet  Blue  Dry  None

Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3 / Corr: 3

<b>Person examining contents:</b> Date: <u>10/13/21</u> / Initials: <u>AK</u> Labeled By Initials: <u>AK</u>
--

Temp Blank Present:  yes  no

Biological Tissue is Frozen:  yes  no

Temp should be above freezing to 6°C.

Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>proj #, mail</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis	Matrix: <u>S</u>	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

**Client Notification/ Resolution:**

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

**Report Prepared for:**

Client Services  
PACE Wisconsin  
1241 Bellevue Street  
Green Bay WI 54302

**REPORT OF  
LABORATORY  
ANALYSIS  
FOR PFAAs**

**Report Prepared Date:**

November 11, 2021

**Report Information:**

**Pace Project #: 10583480**

**Sample Receipt Date: 10/15/2021**

**Client Project #: 40235057 AYRES & ASSOCIA**

**Client Sub PO #: N/A**

**State Cert #: 999407970**

**Invoicing & Reporting Options:**

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Ashley Williams, your Pace Project Manager.

**This report has been reviewed by:**



November 18, 2021

Kirsten Hogberg, Project Manager

(612) 607-6407

(612) 607-6444 (fax)

kirsten.hogberg@pacelabs.com



**Report of Laboratory Analysis**

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The results relate only to the samples included in this report.

## **DISCUSSION**

This report presents the results from the analyses performed on four samples, one matrix spike, and one matrix spike duplicate submitted by a representative of Pace Wisconsin. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR Guidance for PFAS. Reporting limits were set to MDL.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. With the exception of 8:2 FTS in BLANK-94140, the results show the blanks were free of the target perfluorinated compounds at the reporting limits. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged B in the results tables and may be, at least partially, attributed to the background.

A laboratory spike sample and matrix spikes were also prepared with the sample batch using clean reference matrix and sample material in the project respectively that had been fortified with native standards. The recovery results were within the method limits. The RPDs (relative percent differences) between one designated matrix spike and its duplicate were within the method limits. These spikes indicate that extraction performed as expected. These spikes indicate that extraction performed as expected.

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2\_PFDA, and 13C2\_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

## Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Missouri	10100
Alabama	40770	Montana	CERT0092
Alaska-DW	MN00064	Nebraska	NE-OS-18-06
Alaska-UST	17-009	Nevada	MN00064
Arizona	AZ0014	New Hampshire	2081
Arkansas - WW	88-0680	New Jersey	MN002
Arkansas-DW	MN00064	New York	11647
California	2929	North Carolina-	27700
Colorado	MN00064	North Carolina-	530
Connecticut	PH-0256	North Dakota	R-036
Florida	E87605	Ohio-DW	41244
Georgia	959	Ohio-VAP (170	CL101
Hawaii	MN00064	Ohio-VAP (180	CL110
Idaho	MN00064	Oklahoma	9507
Illinois	200011	Oregon- rimary	MN300001
Indiana	C-MN-01	Oregon-Second	MN200001
Iowa	368	Pennsylvania	68-00563
Kansas	E-10167	Puerto Rico	MN00064
Kentucky-DW	90062	South Carolina	74003
Kentucky-WW	90062	Tennessee	TN02818
Louisiana-DEQ	AI-84596	Texas	T104704192
Louisiana-DW	MN00064	Utah	MN00064
Maine	MN00064	Vermont	VT-027053137
Maryland	322	Virginia	460163
Michigan	9909	Washington	C486
Minnesota	027-053-137	West Virginia-D	382
Minnesota-Ag	via MN 027-053	West Virginia-D	9952C
Minnesota-Petr	1240	Wisconsin	999407970
Mississippi	MN00064	Wyoming-UST	via A2LA 2926.

## REPORT OF LABORATORY ANALYSIS

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# Appendix A

## Sample Management

# Internal Transfer Chain of Custody



Samples Pre-Logged into eCOC.

State Of Origin: WI  
 Cert. Needed:  Yes  No

Workorder: 40235057 Workorder Name: LUDINGTON

Owner Received xDate: 10/13/2021 Results Requested By: 11/04/2021

Report To	Subcontract To	Requested Analysis											
Dan Milewsky Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700	PFAS (WDNR 33 Targets)											

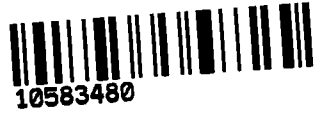
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers					PFAS (WDNR 33 Targets)	LAB USE ONLY
						Unpreserved						
1	GP-8 (2-4)	PS	10/13/2021 13:05	40235057010	Solid	1					X	010
2	GP-9 (1.5-3.5)	PS	10/13/2021 14:05	40235057012	Solid	1					X	012
3	GP-9 (5.5-7.5)	PS	10/13/2021 14:10	40235057013	Solid	1					X	RHL 013 10-13-21
4	GP-10 (2-4)	PS	10/13/2021 14:40	40235057014	Solid	1					X	014
5												

Transfers					Comments
Released By	Date/Time	Received By	Date/Time		
<i>Allen</i>	10/14/21 17:00	<i>CF</i>	10/15/21 09:25		

Cooler Temperature on Receipt 1.9 °C Custody Seal  or N Received on Ice  or N Samples Intact  or N

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.  
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

WO#: 10583480





<b>Sample Condition Upon Receipt</b>	Client Name: <u>Pace Green Bay</u>	Project #: <b>WO#: 10583480</b>	<b>PM: AW1 Due Date: 11/03/21</b> <b>CLIENT: PASI-WI</b>
Courier:	<input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Client <input type="checkbox"/> Pace <input type="checkbox"/> Speedee <input checked="" type="checkbox"/> Commercial	See Exceptions <input type="checkbox"/>	ENV-FRM-MIN4-0142
Tracking Number:			

Custody Seal on Cooler/Box Present?  Yes  No    Seals Intact?  Yes  No    Biological Tissue Frozen?  Yes  No  N/A

Packing Material:  Bubble Wrap     Bubble Bags     None     Other: \_\_\_\_\_    Temp Blank?  Yes  No

Thermometer:  T1(0461)     T2(1336)     T3(0459)     OS418-LS    Type of Ice:  Wet     Blue     None     Dry     Melted  
 T4(0254)     T5(0489)     160285052

Did Samples Originate in West Virginia?  Yes  No    Were All Container Temps Taken?  Yes  No  N/A

Temp should be above freezing to 6°C    Cooler Temp Read w/temp blank: 1.9 °C    Average Corrected Temp (no temp blank only): \_\_\_\_\_ °C     See Exceptions ENV-FRM-MIN4-0142     1 Container

Correction Factor: 1.0    Cooler Temp Corrected w/temp blank: 1.9 °C

USDA Regulated Soil: ( N/A, water sample, Other)    Date/Initials of Person Examining Contents: CJA 10/19/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No    Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present and Filled-Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Reinspected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception ENV-FRM-MIN4-0142
Matrix: <input type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input checked="" type="checkbox"/> Other	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PAHs <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No    pH Paper Lot# <input type="checkbox"/> See Exception ENV-FRM-MIN4-0142
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Res. Chlorine    0-6 Roll    0-6 Strip    0-14 Strip
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception ENV-FRM-MIN4-0140
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased):

**CLIENT NOTIFICATION/RESOLUTION**    Field Data Required?  Yes  No

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

Project Manager Review: Ashley Williams    Date: 10/18/21

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

40235057



### CHAIN OF CUSTODY

**\*Preservation Codes**  
 A=None B=HCL C=H2SO4 D=HNO3 E=Dl Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

*(Please Print Clearly)*

Company Name: Ayres  
 Branch/Location: Green Bay  
 Project Contact: Bill Honea  
 Phone: (920) 327-7815  
 Project Number:  
 Project Name: Ludington  
 Project State: WI  
 Sampled By (Print): William Honea  
 Sampled By (Sign): William Honea  
 PO #:  
 Regulatory Program:

**Data Package Options** (billable)  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 Sl = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	Y/N	PICK Letter	Analyses Requested	As + Pb	PFAS	VOCs	PAHs	Asbestos	As, Pb, + Cyanide	PAHs + PCBs	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
		DATE	TIME														
001	GP-1 (2-4)	10-13-21	9:35	S													
002	GP-1 (9-11)	10-13-21	9:45	S													
003	GP-2 (2-4)	10-13-21	10:15	S													
004	GP-2 (9-11)	10-13-21	10:20	S													
005	GP-3 (1.5-2.5)	10-13-21	10:45	S													
006	GP-3 (8-10)	10-13-21	10:50	S													
007	GP-5 (1.5-2.5)	10-13-21	12:00	S													
008	GP-6 (2-4)	10-13-21	12:20	S													
009	GP-7 (2-4)	10-13-21	12:35	S													
010	GP-8 (2-4)	10-13-21	13:05	S													
011	GP-8 (7-8)	10-13-21	13:10	S													
012	GP-9 (1.5-3.5)	10-13-21	14:05	S													
013	GP-9 (5.5-7.5)	10-13-21	14:10	S													

Quote #:  
 Mail To Contact:  
 Mail To Company:  
 Mail To Address:  
 Invoice To Contact:  
 Invoice To Company:  
 Invoice To Address: subs@ayresassociates.com  
 Invoice To Phone:  
 CLIENT COMMENTS  
 LAB COMMENTS (Lab Use Only)  
 Profile #

Rush Turnaround Time Requested - Prelims  
 (Rush TAT subject to approval/surcharge)  
 Date Needed:  
 Transmit Prelim Rush Results by (complete what you want):  
 Email #1:  
 Email #2:  
 Telephone:  
 Fax:  
 110

Relinquished By: <u>William Honea</u>	Date/Time: <u>10/13/21 1640</u>	Received By: <u>[Signature]</u>	Date/Time: <u>10/13/21 1640</u>
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No. 40235057  
 Receipt Temp = 3 °C  
 Sample Receipt pH  
 OK / Adjusted  
 Cooler Custody Seal  
 Present / Not Present  
 Intact / Not Intact

Report No.: 10583480\_1D36\_DFR Page 7 of 49





**Sample Condition Upon Receipt Form (SCUR)**

Project #:

Client Name: Ayres

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Walco  
 Client  Pace Other: \_\_\_\_\_

Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR - 110 Type of Ice:  Wet  Blue  Dry  None

Cooler Temperature Uncorr: 3 / Corr: 3

Temp Blank Present:  yes  no

Biological Tissue is Frozen:  yes  no

Temp should be above freezing to 6°C.

Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

**WO# : 40235057**



40235057

Person examining contents:  
Date: 10/13/21 / Initials: AK  
Labeled By Initials: AK

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>proj #, mail</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>S</u>	
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

**Client Notification/ Resolution:** \_\_\_\_\_ If checked, see attached form for additional comments   
Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Comments/ Resolution: \_\_\_\_\_

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

## Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- \* = See Discussion

### REPORT OF LABORATORY ANALYSIS

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# **Appendix B**

## **Sample Analysis Summary**



**Pace Analytical Services, LLC**  
 1700 Elm Street, Suite 200  
 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444  
 www.pacelabs.com

**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Page 1 of 5

Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	30 J	99	23	23	1	375-22-4	N2
PFPeA	70 J	99	26	26	1	2706-90-3	N2
HFPO-DA	ND	99	29	29	1	13252-13-6	N2
PFBS	ND	88	22	22	1	375-73-5	N2
PFHxA	ND	99	30	30	1	307-24-4	N2
4:2 FTS	ND	93	31	31	1	757124-72-4	N2
PFPeS	ND	93	18	18	1	2706-91-4	N2
PFHpA	ND	99	22	22	1	375-85-9	N2
DONA	ND	94	38	38	1	919005-14-4	N2
PFHxS	51 IJ	90	22	22	1	355-46-4	N2
PFOA	30 J	99	22	22	1	335-67-1	N2
6:2 FTS	68 J	94	32	32	1	27619-97-2	N2
PFHpS	ND	94	25	25	1	375-92-8	N2
PFNA	ND	99	28	28	1	375-95-1	N2
PFOSAm	ND	99	23	23	1	754-91-6	N2
PFOS	330	92	28	28	1	1763-23-1	N2
MeFOSA	ND	99	25	25	1	31506-32-8	N2
PFDA	ND	99	21	21	1	335-76-2	N2
EtFOSAm	ND	99	23	23	1	4151-50-2	N2
8:2 FTS	ND	95	26	26	1	39108-34-4	N2
9-CI-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	95	18	18	1	68259-12-1	N2
PFUnDA	ND	99	28	28	1	2058-94-8	N2
NMeFOSAA	ND	99	23	23	1	2355-31-9	N2
NEtFOSAA	77 J	99	24	24	1	2991-50-6	N2
PFDS	ND	96	25	25	1	335-77-3	N2
PFDOA	ND	99	26	26	1	307-55-1	N2
MeFOSE	ND	99	23	23	1	24448-09-7	N2
EtFOSE	ND	99	25	25	1	1691-99-2	N2
11-CI-PF3OUdS	ND	93	16	16	1	763051-92-9	N2
PFTTrDA	ND	99	21	21	1	72629-94-8	N2
PFDoS	ND	96	30	30	1	79780-39-5	N2
PFTDA	ND	99	32	32	1	376-06-7	N2

**REPORT OF LABORATORY ANALYSIS**

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	1000	103	50-150	
13C4_PFOA	990	1100	116	50-150	
13C2_PFDA	990	1100	112	50-150	
13C4_PFOS	950	990	105	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	990	760	76	25-150	
13C5_PFPeA	990	780	79	25-150	
13C3_PFBS	920	760	83	25-150	
13C2_4:2FTS	930	740	80	25-150	
13C5_PFHxA	990	810	82	25-150	
13C4_PFHpA	990	800	81	25-150	
13C3_PFHxS	940	810	86	25-150	
13C2_6:2FTS	940	810	86	25-150	
13C8_PFOA	990	810	82	25-150	
13C9_PFNA	990	870	88	25-150	
13C8_PFOS	950	810	85	25-150	
13C2_8:2FTS	950	1100	114	25-150	
13C6_PFDA	990	870	88	25-150	
d3-MeFOSAA	990	950	96	25-150	
13C8_PFOA	990	620	62	25-150	
d5-EtFOSAA	990	1000	102	25-150	
13C7_PFUdA	990	950	96	25-150	
13C2_PFDoA	990	980	99	25-150	
13C2_PFTeDA	990	940	95	25-150	
13C3_HFPO-DA	990	770	78	25-150	
d7-N-MeFOSE	990	550	55	10-150	
d9-N-EtFOSE	990	520	52	10-150	
d3-N-MeFOSA	990	420	43	10-150	
d5-N-EtFOSA	990	430	43	10-150	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.91	6.91	
13C4 PFOS	N/A	N/A	7.20	7.21	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.68	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.83	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.48	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.67	6.67	
13C6 PFDA	N/A	N/A	6.91	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7 PFUdA	N/A	N/A	7.33	7.34	
13C2 PFDoA	N/A	N/A	7.76	7.77	
13C2 PFTeDA	N/A	N/A	8.60	8.61	
13C3 HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.70	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	J
PFPeA	N/A	N/A	4.54	4.54	J
HFPO-DA	0.000	0.470	0.00	5.33	
PFBS	0.000	0.340	0.00	5.29	
PFHxA	0.000	0.0560	5.12	5.12	
4:2 FTS	0.000	0.540	0.00	4.90	
PFPeS	0.000	0.350	0.00	5.84	
PFHpA	0.190	0.310	5.62	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.000	0.240	6.30	6.32	IJ
PFOA	0.400	0.390	6.06	6.06	J
6:2 FTS	0.540	0.480	5.83	5.83	J
PFHpS	0.000	0.260	0.00	6.78	
PFNA	0.130	0.200	6.48	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.150	0.210	7.21	7.17	
MeFOSA	0.000	0.920	0.00	10.34	
PFDA	0.000	0.0950	0.00	6.92	
EtFOSAm	0.000	0.720	0.00	11.03	
8:2 FTS	0.000	0.680	0.00	6.68	
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.230	7.69	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.500	0.00	6.86	
NEtFOSAA	0.510	0.570	7.05	7.10	J
PFDS	0.000	0.240	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0160	0.00	8.37	
PFTTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.230	8.82	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	30 J	99	23	23	1	375-22-4	N2
PFPeA	54 J	99	26	26	1	2706-90-3	N2
HFPO-DA	ND	99	29	29	1	13252-13-6	N2
PFBS	ND	88	22	22	1	375-73-5	N2
PFHxA	ND	99	30	30	1	307-24-4	N2
4:2 FTS	ND	93	31	31	1	757124-72-4	N2
PFPeS	ND	93	18	18	1	2706-91-4	N2
PFHpA	ND	99	22	22	1	375-85-9	N2
DONA	ND	94	38	38	1	919005-14-4	N2
PFHxS	67 IJ	90	22	22	1	355-46-4	N2
PFOA	34 J	99	22	22	1	335-67-1	N2
6:2 FTS	44 J	94	32	32	1	27619-97-2	N2
PFHpS	ND	94	25	25	1	375-92-8	N2
PFNA	ND	99	28	28	1	375-95-1	N2
PFOSAm	ND	99	23	23	1	754-91-6	N2
PFOS	310	92	28	28	1	1763-23-1	N2
MeFOSA	ND	99	25	25	1	31506-32-8	N2
PFDA	ND	99	21	21	1	335-76-2	N2
EtFOSAm	ND	99	23	23	1	4151-50-2	N2
8:2 FTS	ND	95	26	26	1	39108-34-4	N2
9-CI-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	95	18	18	1	68259-12-1	N2
PFUnDA	ND	99	28	28	1	2058-94-8	N2
NMeFOSAA	ND	99	23	23	1	2355-31-9	N2
NEtFOSAA	ND	99	24	24	1	2991-50-6	N2
PFDS	ND	96	25	25	1	335-77-3	N2
PFDOA	ND	99	26	26	1	307-55-1	N2
MeFOSE	ND	99	23	23	1	24448-09-7	N2
EtFOSE	ND	99	25	25	1	1691-99-2	N2
11-CI-PF3OUdS	ND	93	16	16	1	763051-92-9	N2
PFTTrDA	ND	99	21	21	1	72629-94-8	N2
PFDoS	ND	96	30	30	1	79780-39-5	N2
PFTDA	ND	99	32	32	1	376-06-7	N2

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	990	100	50-150	
13C4_PFOA	990	1000	104	50-150	
13C2_PFDA	990	1100	110	50-150	
13C4_PFOS	950	990	105	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	990	780	79	25-150	
13C5_PFPeA	990	830	83	25-150	
13C3_PFBS	920	800	87	25-150	
13C2_4:2FTS	930	750	81	25-150	
13C5_PFHxA	990	840	85	25-150	
13C4_PFHpA	990	870	88	25-150	
13C3_PFHxS	940	870	93	25-150	
13C2_6:2FTS	940	830	88	25-150	
13C8_PFOA	990	880	89	25-150	
13C9_PFNA	990	910	92	25-150	
13C8_PFOS	950	830	87	25-150	
13C2_8:2FTS	950	1100	112	25-150	
13C6_PFDA	990	920	93	25-150	
d3-MeFOSAA	990	1000	104	25-150	
13C8_PFOA	990	700	70	25-150	
d5-EtFOSAA	990	990	100	25-150	
13C7_PFUdA	990	1100	110	25-150	
13C2_PFDoA	990	1100	112	25-150	
13C2_PFTeDA	990	980	99	25-150	
13C3_HFPO-DA	990	840	85	25-150	
d7-N-MeFOSE	990	620	62	10-150	
d9-N-EtFOSE	990	620	63	10-150	
d3-N-MeFOSA	990	500	51	10-150	
d5-N-EtFOSA	990	510	52	10-150	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.11	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.19	7.21	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.68	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.28	5.29	
13C2 4:2FTS	N/A	N/A	4.90	4.90	
13C5 PFHxA	N/A	N/A	5.11	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.82	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.47	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.66	6.67	
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.65	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7 PFUdA	N/A	N/A	7.33	7.34	
13C2 PFDoA	N/A	N/A	7.75	7.77	
13C2 PFTeDA	N/A	N/A	8.59	8.61	
13C3 HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.69	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	10.99	11.01	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	J
PFPeA	N/A	N/A	4.54	4.54	J
HFPO-DA	0.000	0.470	0.00	5.33	
PFBS	0.000	0.340	0.00	5.29	
PFHxA	0.000	0.0560	5.12	5.12	
4:2 FTS	0.000	0.540	0.00	4.90	
PFPeS	0.000	0.350	0.00	5.84	
PFHpA	0.160	0.310	5.61	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.000	0.240	6.34	6.32	IJ
PFOA	0.340	0.390	6.05	6.06	J
6:2 FTS	0.700	0.480	5.83	5.83	J
PFHpS	0.000	0.260	0.00	6.78	
PFNA	0.180	0.200	6.49	6.49	
PFOSAm	N/A	N/A	8.65	8.66	
PFOS	0.210	0.210	7.20	7.17	
MeFOSA	0.000	0.920	0.00	10.34	
PFDA	0.000	0.0950	0.00	6.92	
EtFOSAm	0.000	0.720	0.00	11.03	
8:2 FTS	0.000	0.680	0.00	6.68	
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.230	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.500	0.00	6.86	
NEtFOSAA	0.000	0.570	7.08	7.10	
PFDS	0.000	0.240	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0160	0.00	8.37	
PFTTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.230	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	68 J	99	23	23	1	375-22-4	N2
PFPeA	100	99	26	26	1	2706-90-3	N2
HFPO-DA	ND	99	29	29	1	13252-13-6	N2
PFBS	ND	87	22	22	1	375-73-5	N2
PFHxA	42 IJ	99	30	30	1	307-24-4	N2
4:2 FTS	ND	92	31	31	1	757124-72-4	N2
PFPeS	ND	93	18	18	1	2706-91-4	N2
PFHpA	44 J	99	22	22	1	375-85-9	N2
DONA	ND	93	38	38	1	919005-14-4	N2
PFHxS	290 I	90	22	22	1	355-46-4	N2
PFOA	57 J	99	22	22	1	335-67-1	N2
6:2 FTS	38 J	94	32	32	1	27619-97-2	N2
PFHpS	ND	94	25	25	1	375-92-8	N2
PFNA	ND	99	28	28	1	375-95-1	N2
PFOSAm	ND	99	23	23	1	754-91-6	N2
PFOS	380	91	27	27	1	1763-23-1	N2
MeFOSA	ND	99	25	25	1	31506-32-8	N2
PFDA	ND	99	21	21	1	335-76-2	N2
EtFOSAm	ND	99	23	23	1	4151-50-2	N2
8:2 FTS	ND	95	26	26	1	39108-34-4	N2
9-CI-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	95	18	18	1	68259-12-1	N2
PFUnDA	ND	99	28	28	1	2058-94-8	N2
NMeFOSAA	ND	99	23	23	1	2355-31-9	N2
NEtFOSAA	ND	99	24	24	1	2991-50-6	N2
PFDS	ND	95	25	25	1	335-77-3	N2
PFDOA	ND	99	26	26	1	307-55-1	N2
MeFOSE	ND	99	23	23	1	24448-09-7	N2
EtFOSE	ND	99	25	25	1	1691-99-2	N2
11-CI-PF3OUdS	ND	93	16	16	1	763051-92-9	N2
PFTTrDA	ND	99	21	21	1	72629-94-8	N2
PFDoS	ND	96	30	30	1	79780-39-5	N2
PFTDA	ND	99	32	32	1	376-06-7	N2

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	960	97	50-150	
13C4_PFOA	990	1100	107	50-150	
13C2_PFDA	990	1100	115	50-150	
13C4_PFOS	950	930	98	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	990	680	68	25-150	
13C5_PFPeA	990	720	73	25-150	
13C3_PFBs	920	690	75	25-150	
13C2_4:2Fts	920	710	77	25-150	
13C5_PFHxA	990	710	71	25-150	
13C4_PFHpA	990	730	74	25-150	
13C3_PFHxS	940	800	86	25-150	
13C2_6:2Fts	940	880	94	25-150	
13C8_PFOA	990	760	77	25-150	
13C9_PFNA	990	820	83	25-150	
13C8_PFOS	950	760	80	25-150	
13C2_8:2Fts	950	1000	106	25-150	
13C6_PFDA	990	870	88	25-150	
d3-MeFOSAA	990	910	92	25-150	
13C8_PFOsA	990	600	61	25-150	
d5-EtFOSAA	990	1100	108	25-150	
13C7_PFUdA	990	990	101	25-150	
13C2_PFDoA	990	1000	103	25-150	
13C2_PFTeDA	990	910	92	25-150	
13C3_HFPO-DA	990	690	70	25-150	
d7-N-MeFOSE	990	490	50	10-150	
d9-N-EtFOSE	990	480	48	10-150	
d3-N-MeFOSA	990	340	34	10-150	
d5-N-EtFOSA	990	350	35	10-150	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

**Page 3 of 5**

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.11	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.20	7.21	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.68	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.82	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.48	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.67	6.67	
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7 PFUdA	N/A	N/A	7.33	7.34	
13C2 PFDoA	N/A	N/A	7.76	7.77	
13C2 PFTeDA	N/A	N/A	8.59	8.61	
13C3 HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.70	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.70	3.70	J
PFPeA	N/A	N/A	4.54	4.54	
HFPO-DA	0.000	0.470	0.00	5.33	
PFBS	0.000	0.340	0.00	5.29	
PFHxA	0.000	0.0560	5.12	5.12	IJ
4:2 FTS	0.000	0.540	0.00	4.90	
PFPeS	0.000	0.350	0.00	5.84	
PFHpA	0.220	0.310	5.61	5.61	J
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.007	0.240	6.33	6.32	I
PFOA	0.400	0.390	6.05	6.06	J
6:2 FTS	0.440	0.480	5.83	5.83	J
PFHpS	0.000	0.260	0.00	6.78	
PFNA	0.340	0.200	6.48	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.170	0.210	7.21	7.17	
MeFOSA	0.000	0.920	0.00	10.34	
PFDA	0.000	0.0950	0.00	6.92	
EtFOSAm	0.000	0.720	0.00	11.03	
8:2 FTS	0.000	0.680	0.00	6.68	
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.230	7.65	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.500	0.00	6.86	
NEtFOSAA	0.000	0.570	0.00	7.10	
PFDS	0.000	0.240	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	10.14	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0160	0.00	8.37	
PFTTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.230	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	51 J	99	23	23	1	375-22-4	N2
PFPeA	160	99	26	26	1	2706-90-3	N2
HFPO-DA	ND	99	29	29	1	13252-13-6	N2
PFBS	ND	87	22	22	1	375-73-5	N2
PFHxA	98 IJ	99	30	30	1	307-24-4	N2
4:2 FTS	ND	92	31	31	1	757124-72-4	N2
PFPeS	ND	93	18	18	1	2706-91-4	N2
PFHpA	70 J	99	22	22	1	375-85-9	N2
DONA	ND	93	38	38	1	919005-14-4	N2
PFHxS	27 IJ	90	22	22	1	355-46-4	N2
PFOA	220	99	22	22	1	335-67-1	N2
6:2 FTS	ND	94	32	32	1	27619-97-2	N2
PFHpS	63 IJ	94	25	25	1	375-92-8	N2
PFNA	170	99	28	28	1	375-95-1	N2
PFOSAm	ND	99	23	23	1	754-91-6	N2
PFOS	3200	91	27	27	1	1763-23-1	N2
MeFOSA	ND	99	25	25	1	31506-32-8	N2
PFDA	ND	99	21	21	1	335-76-2	N2
EtFOSAm	ND	99	23	23	1	4151-50-2	N2
8:2 FTS	ND	95	26	26	1	39108-34-4	N2
9-CI-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	95	18	18	1	68259-12-1	N2
PFUnDA	ND	99	28	28	1	2058-94-8	N2
NMeFOSAA	ND	99	23	23	1	2355-31-9	N2
NEtFOSAA	170	99	24	24	1	2991-50-6	N2
PFDS	ND	95	25	25	1	335-77-3	N2
PFDOA	ND	99	26	26	1	307-55-1	N2
MeFOSE	ND	99	23	23	1	24448-09-7	N2
EtFOSE	ND	99	25	25	1	1691-99-2	N2
11-CI-PF3OUdS	ND	93	16	16	1	763051-92-9	N2
PFTTrDA	68 IJ	99	21	21	1	72629-94-8	N2
PFDoS	ND	96	30	30	1	79780-39-5	N2
PFTDA	ND	99	32	32	1	376-06-7	N2

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	770	78	50-150	
13C4_PFOA	990	820	84	50-150	
13C2_PFDA	990	890	90	50-150	
13C4_PFOS	940	810	86	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	990	570	58	50-150	
13C5_PFPeA	990	610	62	50-150	
13C3_PFBs	920	600	65	50-150	
13C2_4:2Fts	920	640	70	50-150	
13C5_PFHxA	990	640	65	50-150	
13C4_PFHpA	990	620	63	50-150	
13C3_PFHxS	930	620	67	50-150	
13C2_6:2Fts	940	680	72	50-150	
13C8_PFOA	990	620	63	50-150	
13C9_PFNA	990	660	67	50-150	
13C8_PFOs	940	610	64	50-150	
13C2_8:2Fts	950	750	80	50-150	
13C6_PFDA	990	690	70	50-150	
d3-MeFOSAA	990	770	78	50-150	
13C8_PFOsA	990	560	57	50-150	
d5-EtFOSAA	990	800	81	50-150	
13C7_PFUdA	990	780	79	50-150	
13C2_PFDoA	990	700	71	50-150	
13C2_PFTeDA	990	740	74	50-150	
13C3_HFPO-DA	990	580	58	50-150	
d7-N-MeFOSE	990	390	39	10-150	
d9-N-EtFOSE	990	420	42	10-150	
d3-N-MeFOSA	990	140	15	10-150	
d5-N-EtFOSA	990	170	17	10-150	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFOA	N/A	N/A	6.04	6.05	
13C2 PFDA	N/A	N/A	6.89	6.91	
13C4 PFOS	N/A	N/A	7.19	7.21	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.69	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.82	5.83	
13C8 PFOA	N/A	N/A	6.04	6.05	
13C9 PFNA	N/A	N/A	6.47	6.48	
13C8 PFOS	N/A	N/A	7.19	7.21	
13C2 8:2FTS	N/A	N/A	6.66	6.67	
13C6 PFDA	N/A	N/A	6.89	6.91	
d3-MeFOSAA	N/A	N/A	6.84	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7 PFUdA	N/A	N/A	7.32	7.34	
13C2 PFDoA	N/A	N/A	7.74	7.77	
13C2 PFTeDA	N/A	N/A	8.58	8.61	
13C3 HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.09	
d9-N-EtFOSE	N/A	N/A	10.71	10.71	
d3-N-MeFOSA	N/A	N/A	10.33	10.33	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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**Sample Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	J
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.440	0.00	5.33	
PFBS	1.40	0.390	5.29	5.29	
PFHxA	0.110	0.0620	5.12	5.12	IJ
4:2 FTS	0.000	0.560	4.84	4.90	
PFPeS	0.000	0.260	5.83	5.84	
PFHpA	0.350	0.280	5.60	5.61	J
DONA	0.000	0.500	0.00	5.78	
PFHxS	0.360	0.230	6.31	6.32	IJ
PFOA	0.390	0.400	6.05	6.06	
6:2 FTS	0.000	0.570	0.00	5.83	
PFHpS	0.091	0.270	6.77	6.78	IJ
PFNA	0.200	0.190	6.47	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.220	0.260	7.20	7.17	
MeFOSA	0.000	0.840	0.00	10.34	
PFDA	0.000	0.0760	0.00	6.92	
EtFOSAm	0.000	0.710	0.00	11.03	
8:2 FTS	0.000	0.530	0.00	6.68	
9-Cl-PF3ON	0.000	0.0190	0.00	7.53	
PFNS	0.000	0.270	0.00	7.65	
PFUnDA	0.000	0.0830	0.00	7.35	
NMeFOSAA	0.000	0.540	0.00	6.86	
NEtFOSAA	0.760	0.750	7.04	7.10	
PFDS	0.000	0.270	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0200	0.00	8.37	
PFTTrDA	0.000	0.140	8.07	8.20	IJ
PFDoS	0.000	0.240	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	BLKKC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	ND	98	23	23	1	375-22-4	N2
PFPeA	ND	98	26	26	1	2706-90-3	N2
HFPO-DA	ND	98	29	29	1	13252-13-6	N2
PFBS	ND	87	22	22	1	375-73-5	N2
PFHxA	ND	98	29	29	1	307-24-4	N2
4:2 FTS	ND	92	31	31	1	757124-72-4	N2
PFPeS	ND	92	18	18	1	2706-91-4	N2
PFHpA	ND	98	22	22	1	375-85-9	N2
DONA	ND	93	38	38	1	919005-14-4	N2
PFHxS	ND	89	22	22	1	355-46-4	N2
PFOA	ND	98	22	22	1	335-67-1	N2
6:2 FTS	ND	93	31	31	1	27619-97-2	N2
PFHpS	ND	93	25	25	1	375-92-8	N2
PFNA	ND	98	28	28	1	375-95-1	N2
PFOSAm	ND	98	23	23	1	754-91-6	N2
PFOS	ND	91	27	27	1	1763-23-1	N2
MeFOSA	ND	98	24	24	1	31506-32-8	N2
PFDA	ND	98	21	21	1	335-76-2	N2
EtFOSAm	ND	98	23	23	1	4151-50-2	N2
8:2 FTS	26 IJ	94	25	25	1	39108-34-4	N2
9-CI-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	94	18	18	1	68259-12-1	N2
PFUnDA	ND	98	28	28	1	2058-94-8	N2
NMeFOSAA	ND	98	23	23	1	2355-31-9	N2
NEtFOSAA	ND	98	24	24	1	2991-50-6	N2
PFDS	ND	95	25	25	1	335-77-3	N2
PFDOA	ND	98	26	26	1	307-55-1	N2
MeFOSE	ND	98	23	23	1	24448-09-7	N2
EtFOSE	ND	98	24	24	1	1691-99-2	N2
11-CI-PF3OUdS	ND	92	16	16	1	763051-92-9	N2
PFTTrDA	ND	98	21	21	1	72629-94-8	N2
PFDoS	ND	95	29	29	1	79780-39-5	N2
PFTDA	ND	98	32	32	1	376-06-7	N2

**REPORT OF LABORATORY ANALYSIS**

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKKC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	980	1000	103	50-150	
13C4_PFOA	980	1000	105	50-150	
13C2_PFDA	980	980	100	50-150	
13C4_PFOS	940	950	101	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	980	830	85	50-150	
13C5_PFPeA	980	880	89	50-150	
13C3_PFBs	910	740	82	50-150	
13C2_4:2Fts	920	800	87	50-150	
13C5_PFHxA	980	840	86	50-150	
13C4_PFHpA	980	910	93	50-150	
13C3_PFHxS	930	830	89	50-150	
13C2_6:2Fts	930	860	93	50-150	
13C8_PFOA	980	820	83	50-150	
13C9_PfNA	980	880	90	50-150	
13C8_PFOs	940	790	84	50-150	
13C2_8:2Fts	940	920	97	50-150	
13C6_PFDA	980	850	87	50-150	
d3-MeFOSAA	980	880	89	50-150	
13C8_PFOsA	980	820	83	50-150	
d5-EtFOSAA	980	840	85	50-150	
13C7_PFUdA	980	840	86	50-150	
13C2_PFDoA	980	850	87	50-150	
13C2_PFTeDA	980	870	89	50-150	
13C3_HFPO-DA	980	830	85	50-150	
d7-N-MeFOSE	980	650	67	20-150	
d9-N-EtFOSE	980	620	63	20-150	
d3-N-MeFOSA	980	610	62	20-150	
d5-N-EtFOSA	980	590	60	20-150	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

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Client Sample ID	BLKKC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.11	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.20	7.21	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKKC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.68	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.28	5.29	
13C2 4:2FTS	N/A	N/A	4.90	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.83	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.48	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.67	6.67	
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.65	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7 PFUdA	N/A	N/A	7.33	7.34	
13C2 PFDoA	N/A	N/A	7.76	7.77	
13C2 PFTeDA	N/A	N/A	8.60	8.61	
13C3 HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.70	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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**Method Blank Analysis Summary**  
 PFAS by Isotope Dilution

Client Sample ID	BLKCC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.68	3.70	
PFPeA	N/A	N/A	0.00	4.54	
HFPO-DA	0.000	0.470	0.00	5.33	
PFBS	0.000	0.340	0.00	5.29	
PFHxA	0.000	0.0560	5.12	5.12	
4:2 FTS	0.000	0.540	0.00	4.90	
PFPeS	0.000	0.350	0.00	5.84	
PFHpA	0.000	0.310	0.00	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.000	0.240	0.00	6.32	
PFOA	0.000	0.390	0.00	6.06	
6:2 FTS	0.000	0.480	0.00	5.83	
PFHpS	0.000	0.260	0.00	6.78	
PFNA	0.000	0.200	0.00	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.000	0.210	0.00	7.17	
MeFOSA	0.000	0.920	0.00	10.34	
PFDA	0.000	0.0950	0.00	6.92	
EtFOSAm	0.000	0.720	0.00	11.03	
8:2 FTS	0.000	0.680	6.44	6.68	IJ
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.230	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.500	0.00	6.86	
NEtFOSAA	0.000	0.570	0.00	7.10	
PFDS	0.000	0.240	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0160	0.00	8.37	
PFTTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.230	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID	LCS-94141	Instrument ID	10LCMS03
Run File Name	A211104A_007	Column ID	118AB10133
Analyzed	11/04/2021 10:52	Ical ID	211103A03
Injected By	NH	Level	L

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	960	97	50-150	
13C4_PFOA	990	960	97	50-150	
13C2_PFDA	990	1000	103	50-150	
13C4_PFOS	950	880	92	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	990	830	84	50-150	
13C5_PFPeA	990	830	84	50-150	
13C3_PFBs	920	880	95	50-150	
13C2_4:2Fts	930	820	88	50-150	
13C5_PFHxA	990	850	86	50-150	
13C4_PFHpA	990	850	86	50-150	
13C3_PFHxS	940	800	85	50-150	
13C2_6:2Fts	940	790	84	50-150	
13C8_PFOA	990	890	89	50-150	
13C9_PFNA	990	870	88	50-150	
13C8_PFOS	950	800	84	50-150	
13C2_8:2Fts	950	1000	106	50-150	
13C6_PFDA	990	900	91	50-150	
d3-MeFOSAA	990	880	89	50-150	
13C8_PFOsA	990	830	83	50-150	
d5-EtFOSAA	990	900	91	50-150	
13C7_PFUdA	990	850	86	50-150	
13C2_PFDoA	990	880	89	50-150	
13C2_PFTeDA	990	840	85	50-150	
13C3_HFPO-DA	990	850	86	50-150	
d7-N-MeFOSE	990	640	64	20-150	
d9-N-EtFOSE	990	650	66	20-150	
d3-N-MeFOSA	990	680	68	20-150	
d5-N-EtFOSA	990	670	68	20-150	

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

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Lab Sample ID LCS-94141  
 Run File Name A211104A\_007  
 Analyzed 11/04/2021 10:52  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211103A03  
 Level L

**Native Analytes**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	200	210	107	50-150		375-22-4
PFPeA	200	210	105	50-150		2706-90-3
HFPO-DA	200	200	103	50-150		13252-13-6
PFBS	180	180	104	50-150		375-73-5
PFHxA	200	210	107	50-150		307-24-4
4:2 FTS	190	220	117	50-150		757124-72-4
PFPeS	190	210	111	50-150		2706-91-4
PFHpA	200	220	110	50-150		375-85-9
DONA	190	210	114	50-150		919005-14-4
PFHxS	180	180	100	50-150		355-46-4
PFOA	200	210	106	50-150		335-67-1
6:2 FTS	190	210	112	50-150		27619-97-2
PFHpS	190	200	106	50-150		375-92-8
PFNA	200	210	105	50-150		375-95-1
PFOSAm	200	200	103	50-150		754-91-6
PFOS	180	200	109	50-150		1763-23-1
MeFOSA	200	210	108	50-150		31506-32-8
PFDA	200	210	103	50-150		335-76-2
EtFOSAm	200	220	109	50-150		4151-50-2
8:2 FTS	190	240	124	50-150	B	39108-34-4
9-CI-PF3ON	180	200	108	50-150		756426-58-1
PFNS	190	200	105	50-150		68259-12-1
PFUnDA	200	220	109	50-150		2058-94-8
NMeFOSAA	200	220	111	50-150		2355-31-9
NEtFOSAA	200	220	113	50-150		2991-50-6
PFDS	190	200	104	50-150		335-77-3
PFDOA	200	220	111	50-150		307-55-1
MeFOSE	200	210	105	50-150		24448-09-7
EtFOSE	200	210	108	50-150		1691-99-2
11-CI-PF3OUdS	190	210	112	50-150		763051-92-9
PFTrDA	200	220	110	50-150		72629-94-8
PFDoS	190	220	115	50-150		79780-39-5
PFTDA	200	200	102	50-150		376-06-7

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID LCS-94141  
 Run File Name A211104A\_007  
 Analyzed 11/04/2021 10:52  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211103A03  
 Level L

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.20	7.21	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.69	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.61	5.61	
13C3 PFHxS	N/A	N/A	6.32	6.32	
13C2 6:2FTS	N/A	N/A	5.83	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.48	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.67	6.67	
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7 PFUdA	N/A	N/A	7.33	7.34	
13C2 PFDoA	N/A	N/A	7.76	7.77	
13C2 PFTeDA	N/A	N/A	8.60	8.61	
13C3 HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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**LCS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID      LCS-94141  
 Run File Name      A211104A\_007  
 Analyzed            11/04/2021 10:52  
 Injected By         NH

Instrument ID      10LCMS03  
 Column ID         118AB10133  
 Ical ID             211103A03  
 Level                L

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.48	0.47	5.33	5.33	
PFBS	0.34	0.34	5.30	5.29	
PFHxA	0.07	0.07	5.13	5.12	
4:2 FTS	0.52	0.56	4.91	4.90	
PFPeS	0.31	0.35	5.84	5.84	
PFHpA	0.29	0.28	5.61	5.61	
DONA	0.49	0.48	5.78	5.78	
PFHxS	0.29	0.28	6.32	6.32	
PFOA	0.36	0.32	6.06	6.06	
6:2 FTS	0.64	0.54	5.83	5.83	
PFHpS	0.26	0.24	6.77	6.78	
PFNA	0.20	0.20	6.49	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.22	0.23	7.21	7.17	
MeFOSA	0.84	0.90	10.35	10.34	
PFDA	0.10	0.09	6.91	6.92	
EtFOSAm	0.68	0.74	11.04	11.03	
8:2 FTS	0.52	0.64	6.67	6.68	B
9-Cl-PF3ON	0.02	0.01	7.52	7.53	
PFNS	0.23	0.22	7.64	7.65	
PFUnDA	0.09	0.08	7.34	7.35	
NMeFOSAA	0.48	0.57	6.86	6.86	
NEtFOSAA	0.71	0.57	7.06	7.10	
PFDS	0.24	0.23	8.06	8.07	
PFDOA	0.13	0.14	7.76	7.77	
MeFOSE	N/A	N/A	10.13	10.12	
EtFOSE	0.00	0.00	10.77	10.76	
11-Cl-PF3OUdS	0.01	0.01	8.36	8.37	
PFTrDA	0.15	0.16	8.18	8.20	
PFDoS	0.20	0.26	8.85	8.87	
PFTDA	0.15	0.17	8.60	8.61	

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**MS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID 40235057012-MS-R  
 Run File Name A211102A\_029  
 Analyzed 11/02/2021 15:59  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	1000	104	50-150	
13C4_PFOA	990	1100	109	50-150	
13C2_PFDA	990	1200	126	50-150	
13C4_PFOS	950	1000	106	50-150	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	990	710	72	50-150	
13C5_PFPeA	990	740	75	50-150	
13C3_PFBs	920	760	83	50-150	
13C2_4:2FTS	920	720	78	50-150	
13C5_PFHxA	990	740	75	50-150	
13C4_PFHpA	990	820	83	50-150	
13C3_PFHxS	930	810	87	50-150	
13C2_6:2FTS	940	910	97	50-150	
13C8_PFOA	990	750	76	50-150	
13C9_PFNA	990	820	83	50-150	
13C8_PFOS	950	730	77	50-150	
13C2_8:2FTS	950	1100	115	50-150	
13C6_PFDA	990	890	90	50-150	
d3-MeFOSAA	990	1300	132	50-150	
13C8_PFOSA	990	690	70	50-150	
d5-EtFOSAA	990	1000	102	50-150	
13C7_PFUdA	990	1200	124	50-150	
13C2_PFDaA	990	1200	120	50-150	
13C2_PFTeDA	990	920	93	50-150	
13C3_HFPO-DA	990	720	73	50-150	
d7-N-MeFOSE	990	580	59	10-150	
d9-N-EtFOSE	990	550	55	10-150	
d3-N-MeFOSA	990	550	56	10-150	
d5-N-EtFOSA	990	520	53	10-150	

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**MS Analysis Summary**  
 PFAS by Isotope Dilution

Page 2 of 4

Lab Sample ID 40235057012-MS-R  
 Run File Name A211102A\_029  
 Analyzed 11/02/2021 15:59  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level

**Native Analytes**

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	30	200	240	105	50-150		375-22-4
PFPeA	54	200	270	109	50-150		2706-90-3
HFPO-DA	0.00	200	200	101	50-150		13252-13-6
PFBS	0.00	170	190	109	50-150		375-73-5
PFHxA	0.00	200	230	115	50-150		307-24-4
4:2 FTS	0.00	180	180	100	50-150		757124-72-4
PFPeS	0.00	190	210	111	50-150		2706-91-4
PFHpA	0.00	200	210	107	50-150		375-85-9
DONA	0.00	190	200	105	50-150		919005-14-4
PFHxS	67	180	250	100	50-150		355-46-4
PFOA	34	200	270	118	50-150		335-67-1
6:2 FTS	44	190	210	87	50-150		27619-97-2
PFHpS	0.00	190	190	101	50-150		375-92-8
PFNA	0.00	200	200	104	50-150		375-95-1
PFOSAm	0.00	200	210	104	50-150		754-91-6
PFOS	310	180	430	69	50-150		1763-23-1
MeFOSA	0.00	200	210	104	50-150		31506-32-8
PFDA	0.00	200	190	97	50-150		335-76-2
EtFOSAm	0.00	200	190	94	50-150		4151-50-2
8:2 FTS	0.00	190	220	117	50-150	B	39108-34-4
9-CI-PF3ON	0.00	180	180	96	50-150		756426-58-1
PFNS	0.00	180	200	107	50-150		68259-12-1
PFUnDA	0.00	200	210	108	50-150		2058-94-8
NMeFOSAA	0.00	200	180	92	50-150		2355-31-9
NEtFOSAA	0.00	200	210	108	50-150		2991-50-6
PFDS	0.00	190	190	99	50-150		335-77-3
PFDOA	0.00	200	210	106	50-150		307-55-1
MeFOSE	0.00	200	200	104	50-150		24448-09-7
EtFOSE	0.00	200	210	108	50-150		1691-99-2
11-CI-PF3OUdS	0.00	190	170	92	50-150		763051-92-9
PFTTrDA	0.00	200	200	103	50-150		72629-94-8
PFDoS	0.00	190	170	88	50-150		79780-39-5
PFTDA	0.00	200	200	101	50-150		376-06-7

**REPORT OF LABORATORY ANALYSIS**

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**MS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID 40235057012-MS-R  
 Run File Name A211102A\_029  
 Analyzed 11/02/2021 15:59  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.11	5.11	
13C4 PFOA	N/A	N/A	6.04	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.19	7.21	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.68	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.28	5.29	
13C2 4:2FTS	N/A	N/A	4.90	4.90	
13C5 PFHxA	N/A	N/A	5.11	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.82	5.83	
13C8 PFOA	N/A	N/A	6.04	6.05	
13C9 PFNA	N/A	N/A	6.48	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.66	6.67	
13C6 PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.84	6.86	
13C8 PFOSA	N/A	N/A	8.65	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7 PFUdA	N/A	N/A	7.33	7.34	
13C2 PFDoA	N/A	N/A	7.75	7.77	
13C2 PFTeDA	N/A	N/A	8.59	8.61	
13C3 HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.69	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	10.99	11.01	

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**MS Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID 40235057012-MS-R  
 Run File Name A211102A\_029  
 Analyzed 11/02/2021 15:59  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level

**Native Analytes**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.68	3.70	
PFPeA	N/A	N/A	4.54	4.54	
HFPO-DA	0.47	0.47	5.32	5.33	
PFBS	0.29	0.34	5.29	5.29	
PFHxA	0.06	0.05	5.12	5.12	
4:2 FTS	0.59	0.54	4.91	4.90	
PFPeS	0.27	0.35	5.83	5.84	
PFHpA	0.29	0.31	5.61	5.61	
DONA	0.50	0.52	5.77	5.78	
PFHxS	0.19	0.24	6.32	6.32	
PFOA	0.35	0.39	6.05	6.06	
6:2 FTS	0.50	0.48	5.83	5.83	
PFHpS	0.24	0.26	6.77	6.78	
PFNA	0.22	0.20	6.48	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.23	0.21	7.20	7.17	
MeFOSA	0.89	0.92	10.33	10.34	
PFDA	0.10	0.09	6.91	6.92	
EtFOSAm	0.73	0.72	11.02	11.03	
8:2 FTS	0.49	0.68	6.67	6.68	B
9-CI-PF3ON	0.02	0.02	7.51	7.53	
PFNS	0.23	0.23	7.63	7.65	
PFUnDA	0.10	0.10	7.34	7.35	
NMeFOSAA	0.52	0.50	6.85	6.86	
NEtFOSAA	0.62	0.57	7.05	7.10	
PFDS	0.23	0.24	8.05	8.07	
PFDOA	0.16	0.13	7.76	7.77	
MeFOSE	N/A	N/A	10.12	10.12	
EtFOSE	0.00	0.00	10.76	10.76	
11-CI-PF3OUdS	0.01	0.01	8.35	8.37	
PFTrDA	0.15	0.16	8.18	8.20	
PFDoS	0.25	0.23	8.85	8.87	
PFTDA	0.14	0.14	8.59	8.61	

**REPORT OF LABORATORY ANALYSIS**

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**MSD Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID 40235057012-MSD-R  
 Run File Name A211102A\_030  
 Analyzed 11/02/2021 16:14  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level

**Injection Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C2_PFHxA	980	1000	106	50-150	2.0	
13C4_PFOA	980	1100	110	50-150	0.3	
13C2_PFDA	980	1200	123	50-150	2.2	
13C4_PFOS	940	1000	109	50-150	2.8	

**Extracted Internal Standards**

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C4_PFBFA	980	750	76	50-150	5.9	
13C5_PFPeA	980	800	82	50-150	9.0	
13C3_PFBFS	910	790	87	50-150	4.3	
13C2_4:2FTS	920	780	85	50-150	8.1	
13C5_PFHxA	980	770	78	50-150	4.5	
13C4_PFHpA	980	820	83	50-150	0.6	
13C3_PFHxS	930	820	88	50-150	1.6	
13C2_6:2FTS	930	840	90	50-150	8.0	
13C8_PFOA	980	810	83	50-150	7.9	
13C9_PFNA	980	900	91	50-150	8.7	
13C8_PFOS	940	850	90	50-150	15.4	
13C2_8:2FTS	940	1000	109	50-150	5.4	
13C6_PFDA	980	920	94	50-150	4.2	
d3-MeFOSAA	980	1100	109	50-150	19.2	
13C8_PFOSA	980	660	67	50-150	4.0	
d5-EtFOSAA	980	1000	103	50-150	1.4	
13C7_PFUdA	980	1100	107	50-150	14.4	
13C2_PFDaA	980	1100	113	50-150	6.1	
13C2_PFTeDA	980	860	87	50-150	6.1	
13C3_HFPO-DA	980	770	79	50-150	7.8	
d7-N-MeFOSE	980	610	62	10-150	4.6	
d9-N-EtFOSE	980	580	59	10-150	5.5	
d3-N-MeFOSA	980	480	49	10-150	13.6	
d5-N-EtFOSA	980	510	52	10-150	1.2	

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**MSD Analysis Summary**  
 PFAS by Isotope Dilution

Lab Sample ID 40235057012-MSD-R  
 Run File Name A211102A\_030  
 Analyzed 11/02/2021 16:14  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level

**Native Analytes**

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	30	200	220	99	50-150	5.0		375-22-4
PFPeA	54	200	250	99	50-150	7.2		2706-90-3
HFPO-DA	0.00	200	190	98	50-150	3.7		13252-13-6
PFBS	0.00	170	190	109	50-150	0.4		375-73-5
PFHxA	0.00	200	210	109	50-150	5.6		307-24-4
4:2 FTS	0.00	180	180	96	50-150	3.7		757124-72-4
PFPeS	0.00	190	210	111	50-150	0.3		2706-91-4
PFHpA	0.00	200	210	109	50-150	1.9		375-85-9
DONA	0.00	190	200	108	50-150	2.6		919005-14-4
PFHxS	67	180	280	121	50-150	14.3		355-46-4
PFOA	34	200	270	122	50-150	2.7		335-67-1
6:2 FTS	44	190	230	102	50-150	12.2		27619-97-2
PFHpS	0.00	190	170	90	50-150	11.3		375-92-8
PFNA	0.00	200	210	109	50-150	5.0		375-95-1
PFOSAm	0.00	200	200	101	50-150	3.4		754-91-6
PFOS	310	180	520	118	50-150	18.9		1763-23-1
MeFOSA	0.00	200	200	103	50-150	0.8		31506-32-8
PFDA	0.00	200	220	113	50-150	15.1		335-76-2
EtFOSAm	0.00	200	200	99	50-150	5.4		4151-50-2
8:2 FTS	0.00	190	190	98	50-150	17.3	B	39108-34-4
9-CI-PF3ON	0.00	180	180	96	50-150	0.4		756426-58-1
PFNS	0.00	180	190	102	50-150	5.5		68259-12-1
PFUnDA	0.00	200	220	110	50-150	2.3		2058-94-8
NMeFOSAA	0.00	200	180	89	50-150	3.0		2355-31-9
NEtFOSAA	0.00	200	230	119	50-150	9.5		2991-50-6
PFDS	0.00	190	180	96	50-150	3.4		335-77-3
PFDOA	0.00	200	210	104	50-150	1.7		307-55-1
MeFOSE	0.00	200	200	102	50-150	1.8		24448-09-7
EtFOSE	0.00	200	190	96	50-150	11.3		1691-99-2
11-CI-PF3OUdS	0.00	190	160	86	50-150	7.6		763051-92-9
PFTTrDA	0.00	200	190	97	50-150	5.1		72629-94-8
PFDoS	0.00	190	160	84	50-150	5.0		79780-39-5
PFTDA	0.00	200	200	104	50-150	2.7		376-06-7

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**MSD Analysis Summary**  
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 Level

**Injection Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFOA	N/A	N/A	6.05	6.05	
13C2 PFDA	N/A	N/A	6.90	6.91	
13C4 PFOS	N/A	N/A	7.20	7.21	

**Extracted Internal Standards**

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.68	3.69	
13C5 PFPeA	N/A	N/A	4.54	4.53	
13C3 PFBS	N/A	N/A	5.29	5.29	
13C2 4:2FTS	N/A	N/A	4.91	4.90	
13C5 PFHxA	N/A	N/A	5.12	5.11	
13C4 PFHpA	N/A	N/A	5.60	5.61	
13C3 PFHxS	N/A	N/A	6.31	6.32	
13C2 6:2FTS	N/A	N/A	5.83	5.83	
13C8 PFOA	N/A	N/A	6.05	6.05	
13C9 PFNA	N/A	N/A	6.48	6.48	
13C8 PFOS	N/A	N/A	7.20	7.21	
13C2 8:2FTS	N/A	N/A	6.67	6.67	
13C6 PFDA	N/A	N/A	6.91	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8 PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7 PFUdA	N/A	N/A	7.33	7.34	
13C2 PFDoA	N/A	N/A	7.76	7.77	
13C2 PFTeDA	N/A	N/A	8.59	8.61	
13C3 HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.70	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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 Analyzed 11/02/2021 16:14  
 Injected By NH

Instrument ID 10LCMS03  
 Column ID 118AB10133  
 Ical ID 211026A03  
 Level

**Native Analytes**

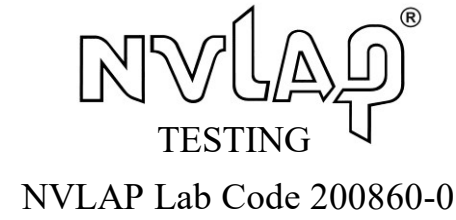
Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.49	0.47	5.33	5.33	
PFBS	0.32	0.34	5.29	5.29	
PFHxA	0.06	0.05	5.12	5.12	
4:2 FTS	0.57	0.54	4.91	4.90	
PFPeS	0.29	0.35	5.84	5.84	
PFHpA	0.30	0.31	5.61	5.61	
DONA	0.45	0.52	5.78	5.78	
PFHxS	0.16	0.24	6.32	6.32	
PFOA	0.29	0.39	6.05	6.06	
6:2 FTS	0.55	0.48	5.83	5.83	
PFHpS	0.27	0.26	6.77	6.78	
PFNA	0.18	0.20	6.49	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.18	0.21	7.21	7.17	
MeFOSA	0.87	0.92	10.34	10.34	
PFDA	0.09	0.09	6.91	6.92	
EtFOSAm	0.67	0.72	11.03	11.03	
8:2 FTS	0.80	0.68	6.67	6.68	B
9-Cl-PF3ON	0.02	0.02	7.52	7.53	
PFNS	0.25	0.23	7.64	7.65	
PFUnDA	0.11	0.10	7.34	7.35	
NMeFOSAA	0.66	0.50	6.86	6.86	
NEtFOSAA	0.58	0.57	7.06	7.10	
PFDS	0.24	0.24	8.06	8.07	
PFDOA	0.14	0.13	7.76	7.77	
MeFOSE	N/A	N/A	10.12	10.12	
EtFOSE	0.00	0.00	10.76	10.76	
11-Cl-PF3OUdS	0.01	0.01	8.36	8.37	
PFTrDA	0.15	0.16	8.19	8.20	
PFDoS	0.25	0.23	8.85	8.87	
PFTDA	0.13	0.14	8.60	8.61	

**REPORT OF LABORATORY ANALYSIS**

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Certificate of Analysis


Client Name: Pace Analytical Green Bay  
 Street Address: 1241 Bellevue Street, Suite 9  
 City, State ZIP: Green Bay, WI 54302  
 Attn: Dan Milewsky  
 Client Project Name: 40235057 / Ludington




Date Collected: 10/13/2021  
 Date Received: 10/15/2021  
 Date Analyzed: 10/27/2021  
 Date Reported: 10/27/2021  
 Project ID: 21047603

Test Requested: 3002, Asbestos in Bulk Samples  
 Method: EPA 600/R-93/116: Method for Asbestos in Bulk Building Materials, EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method for Asbestos in Bulk Insulation Samples

Sample Identification		Physical Description of Sample/Layer	Homo- geneous (Y/N)	Layer Percentage	Asbestos Detected	Asbestos Percentage	Non-Asbestos Fiber Percentage	Non-Fibrous Material Percentage	Matrix Material Composition
Client	Lab Sample Number								
GP-8 (2-4)	21047603-1	Brown Soil	N	100	ND		2 CELL	98	
GP-8 (7-8)	21047603-2	Brown Soil with Brown Fibrous Debris	N	100	ND		30 CELL	70	
GP-9 (1.5-3.5)	21047603-3	Gray Soil	N	100	ND		2 CELL	98	
GP-9 (5.5-7.5)	21047603-4	Brown Soil	N	100	ND		2 CELL	98	
GP-10 (2-4)	21047603-5	Brown Soil with Brown Fibrous Debris	N	100	ND		15 CELL	85	
GP-10 (6.5-8)	21047603-6	Brown Soil	N	100	ND		2 CELL	98	

  
 Piper-Lenore Murphy  
 Laboratory Analyst

  
 Shannon Whitmore  
 Asbestos Lab Supervisor

AC = Actinolite    AH = Animal Hair    B = Binder    Q = Quartz  
 AM = Amosite    CELL = Cellulose    C = Calcite    T = Tar  
 AN = Anthophyllite    FG = Fibrous Glass    D = Diatoms    V = Vermiculite  
 CHRY = Chrysotile    MW = Mineral Wool    G = Gypsum  
 CR = Crocidolite    OT = Other    M = Mica  
 TRM = Tremolite    SYN = Synthetic    OR = Organic  
 Tr = Trace    TL = Talc    OP = Opaques  
 ND = None Detected    W = Wollastonite    P = Perlite

### Certificate of Analysis

Client Name: Pace Analytical Green Bay  
Street Address: 1241 Bellevue Street, Suite 9  
City, State ZIP: Green Bay, WI 54302  
Attn: Dan Milewsky  
Client Project Name: 40235057 / Ludington



Date Collected: 10/13/2021  
Date Received: 10/15/2021  
Date Analyzed: 10/27/2021  
Date Reported: 10/27/2021  
Project ID: 21047603

Test Requested: **3002, Asbestos in Bulk Samples**  
Method: EPA 600/R-93/116: Method for Asbestos in Bulk Building Materials, EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method for Asbestos in Bulk Insulation Samples

#### General Notes

- **ND** indicates no asbestos was detected; the method detection limit is 1 %.
- **Trace** or "< 1" indicates asbestos was identified in the sample, but the concentration is less than 1% and cannot be quantified without point counting.
- Samples identified as inhomogeneous (more than one layer) are separated into individual layers, and each layer is analyzed and reported separately.
- All regulated asbestos minerals (i.e. chrysotile, amosite, crocidolite, anthophyllite, tremolite, and actinolite) were sought in every layer of each sample, but only those asbestos minerals detected are listed. Amosite is the common name for the asbestiform variety of the mineral grunerite. Crocidolite is the common name used for the asbestiform variety of the mineral riebeckite.
- Tile, vinyl, foam, plastic, and fine powder samples may contain asbestos fibers of such small diameter (< 0.25 microns in diameter) that these fibers cannot be detected by PLM. For such samples, more sensitive analytical methods (e.g. TEM, SEM, and XRD) are recommended if greater certainty about asbestos content is required. Semi-quantitative bulk TEM floor tile analysis is accepted under NESHAP regulations.
- These results are submitted pursuant to Aerobiology Laboratory Associates, Inc.'s current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted.
- Unless notified in writing to return the samples covered by this report, Aerobiology Laboratory Associates, Inc. will store the samples for a minimum period of thirty (30) days before discarding. A shipping and handling charge will be assessed for the return of any samples.
- Aerobiology does not guarantee the results of tape lifts, microvacs, wipe, and/or debris samples. Accurate analysis cannot be performed due to particle size, media used, and/or amount of material given. Analysis of these materials should be performed by a TEM. ***A result of ND does not indicate that the sample area does not contain asbestos. It means the analyst could not identify asbestos in the specific sample for the reasons listed above.***

#### Notes Required by NVLAP

- This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
- This test report relates only to the items tested or calibrated.
- This report is not valid unless it bears the name of a NVLAP-approved signatory.
- Any reproduction of this document must include the entire document in order for the report to be valid.



# Internal Transfer Chain of Custody

210471603



Samples Pre-Logged into eCOC.

Workorder: 40235057    Workorder Name: LUDINGTON

State Of Origin: WI  
 Cert. Needed:  Yes  No  
 Owner Received Date: 10/13/2021    Results Requested By: 10/27/2021



**Report To**  
 Dan Milewsky  
 Pace Analytical Green Bay  
 1241 Bellevue Street  
 Suite 9  
 Green Bay, WI 54302  
 Phone (920)469-2436

**Subcontract To**  
 Pace Analytical Golden  
 780 Simms St, Suite 104  
 Golden, CO 80401  
 Phone (866) 620-9348

*dan.milewsky@pace*

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Asbestos-PLM	Requested Analysis	Comments			
						Unpreserved	Preserved						
1	GP-8 (2-4)	PS	10/13/2021 13:05	40235057010	Solid	1		X		LAB USE ONLY			
2	GP-8 (7-8)	PS	10/13/2021 13:10	40235057011	Solid	1		X					
3	GP-9 (1.5-3.5)	PS	10/13/2021 14:05	40235057012	Solid	1		X					
4	GP-9 (5.5-7.5)	PS	10/13/2021 14:10	40235057013	Solid	1		X					
5	GP-10 (2-4)	PS	10/13/2021 14:40	40235057014	Solid	1		X					
6	GP-10 (6.5-8)	PS	10/13/2021 14:45	40235057015	Solid	1		X					
<b>Transfers</b>													
1	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt		°C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N
2	<i>[Signature]</i>	10/14/2021	<i>[Signature]</i>	10/15/21									
3													

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature  
 This chain of custody is considered complete as is since this information is available in the owner laborat

LAB USE ONLY *[Signature]*

A: *pac* 10/27/21

V: \_\_\_\_\_

Q: *AG* 10/27/21

December 07, 2021

Bill Honea  
AYRES & ASSOCIATES, INC.  
3376 Packerland Avenue  
De Pere, WI 54115

RE: Project: LUDINGTON  
Pace Project No.: 40237395

Dear Bill Honea:

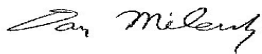
Enclosed are the analytical results for sample(s) received by the laboratory on November 22, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: LUDINGTON

Pace Project No.: 40237395

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### **Pace Analytical Services Green Bay**

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: LUDINGTON

Pace Project No.: 40237395

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
40237395001	GP-8 (7-8)	Solid	10/13/21 13:10	11/22/21 16:40

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: LUDINGTON  
Pace Project No.: 40237395

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Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40237395001	GP-8 (7-8)	EPA 6010D	TXW	2	PASI-G

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PASI-G = Pace Analytical Services - Green Bay

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LUDINGTON  
Pace Project No.: 40237395

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**Sample: GP-8 (7-8)**      **Lab ID: 40237395001**      Collected: 10/13/21 13:10      Received: 11/22/21 16:40      Matrix: Solid

*Results reported on a "wet-weight" basis*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP, TCLP</b>									
Analytical Method: EPA 6010D    Preparation Method: EPA 3010A									
Leachate Method/Date: EPA 1311; 11/30/21 13:32									
Pace Analytical Services - Green Bay									
Arsenic	<b>0.12</b>	mg/L	0.050	0.017	2	12/02/21 10:05	12/06/21 13:37	7440-38-2	
Lead	<b>3.3</b>	mg/L	0.040	0.012	2	12/02/21 10:05	12/06/21 13:37	7439-92-1	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40237395

QC Batch: 403230      Analysis Method: EPA 6010D  
QC Batch Method: EPA 3010A      Analysis Description: 6010D MET TCLP  
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40237395001

METHOD BLANK: 2327836      Matrix: Water  
Associated Lab Samples: 40237395001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0084	0.025	12/02/21 22:58	
Lead	mg/L	<0.0059	0.020	12/02/21 22:58	

METHOD BLANK: 2327020      Matrix: Solid  
Associated Lab Samples: 40237395001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0084	0.025	12/02/21 23:49	
Lead	mg/L	<0.0059	0.020	12/02/21 23:49	

METHOD BLANK: 2327255      Matrix: Solid  
Associated Lab Samples: 40237395001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0084	0.025	12/02/21 23:31	
Lead	mg/L	<0.0059	0.020	12/02/21 23:31	

LABORATORY CONTROL SAMPLE: 2327837

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.25	0.23	90	80-120	
Lead	mg/L	0.25	0.24	95	80-120	

MATRIX SPIKE SAMPLE: 2327838

Parameter	Units	40237541001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.017	0.25	0.25	99	75-125	
Lead	mg/L	<0.012	0.25	0.27	105	75-125	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LUDINGTON  
Pace Project No.: 40237395

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2327839												2327840	
Parameter	Units	40237575045 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual		
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD			
Arsenic	mg/L	<0.0084	0.25	0.25	0.25	0.25	97	97	75-125	0	20		
Lead	mg/L	<0.0059	0.25	0.25	0.25	0.24	99	97	75-125	2	20		

MATRIX SPIKE SAMPLE: 2327841									
Parameter	Units	40237577001	Spike	MS	MS	% Rec	Qualifiers		
		Result	Conc.	Result	% Rec	Limits			
Arsenic	mg/L	0.011J	0.25	0.26	98	75-125			
Lead	mg/L	<0.0059	0.25	0.25	102	75-125			

MATRIX SPIKE SAMPLE: 2327842									
Parameter	Units	50303942001	Spike	MS	MS	% Rec	Qualifiers		
		Result	Conc.	Result	% Rec	Limits			
Arsenic	mg/L	0.012J	0.25	0.26	99	75-125			
Lead	mg/L	<0.0059	0.25	0.25	99	75-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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## QUALIFIERS

Project: LUDINGTON

Pace Project No.: 40237395

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: LUDINGTON

Pace Project No.: 40237395

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<b>Lab ID</b>	<b>Sample ID</b>	<b>QC Batch Method</b>	<b>QC Batch</b>	<b>Analytical Method</b>	<b>Analytical Batch</b>
40237395001	GP-8 (7-8)	EPA 3010A	403230	EPA 6010D	403280

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## REPORT OF LABORATORY ANALYSIS

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40237395

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**From:** Susan Wylie  
**Sent:** Tuesday, November 23, 2021 9:10 AM  
**To:** Dan Milewsky; WI Sample Receiving  
**Cc:** Vyvyan Cole; McKenna Arnoldi; Kylee Richards  
**Subject:** RE: # 40235057011

JGFU approx.. 200g; WPFU approx.. 217g

Sent from Mail for Windows

---

**From:** Dan Milewsky  
**Sent:** Monday, November 22, 2021 1:06 PM  
**To:** WI Sample Receiving  
**Cc:** Vyvyan Cole; McKenna Arnoldi; Kylee Richards  
**Subject:** RE: # 40235057011

If enough sample is left for TCLP, use this COC for the relog.

---

**From:** Dan Milewsky  
**Sent:** Monday, November 22, 2021 1:01 PM  
**To:** WI Sample Receiving <[WISampleReceiving@pacelabs.com](mailto:WISampleReceiving@pacelabs.com)>  
**Subject:** # 40235057011

Good afternoon receiving,

Can you pull this sample and tell me if there is enough left for TCLP Metals?  
If so it will get logged with a new work order number.

Ayres  
40235057011

████████████████████

**Dan Milewsky**  
Project Manager | Pace Environmental Sciences  
1241 Bellevue St. STE 9  
Green Bay, WI 54302  
Direct/Cell-920-412-8566 | Lab-920.469.2436 |  
[pacelabs.com](http://pacelabs.com)

Pace Analytical will be closed for Thanksgiving on November 25th, 26th, & 27th Please make the necessary changes to your sampling schedule, especially if you have short hold or rush items. During the week of Thanksgiving, the lab will only set BOD or cBOD samples on Wednesday, November 24<sup>th</sup>

Client Name: Ayres

**Sample Preservation Receipt Form**

Project # U0237395

Pace Analytical Services, LLC  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

All containers needing preservation have been checked and noted below: Yes No N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/Time:

Pace Lab #	Glass							Plastic					Vials					Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)						
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC								GN					
001																																					2.5 / 5 / 10
002																																					2.5 / 5 / 10
003																																					2.5 / 5 / 10
004																																					2.5 / 5 / 10
005																																					2.5 / 5 / 10
006																																					2.5 / 5 / 10
007																																					2.5 / 5 / 10
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017																																					2.5 / 5 / 10
018																																					2.5 / 5 / 10
019																																					2.5 / 5 / 10
020																																					2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: \_\_\_\_\_ Headspace in VOA Vials (>6mm) : Yes No N/A \*If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9A	40 mL clear ascorbic	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG5U	100 mL amber glass unpres			VG9D	40 mL clear vial DI	ZPLC	ziploc bag
AG2S	500 mL amber glass H2SO4					GN	
BG3U	250 mL clear glass unpres						

**Sample Condition Upon Receipt Form (SCUR)**

Client Name: Ayres Project #: \_\_\_\_\_

Courier:  CS Logistics  FedEx  Speedee  UPS  Waltco  
 Client  Pace Other: \_\_\_\_\_

Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR - Type of Ice: Wet Blue Dry None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: \_\_\_\_\_ /Corr: \_\_\_\_\_

Temp Blank Present:  yes  no Biological Tissue is Frozen:  yes  no

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

**WO# : 40237395**



Person examining contents:  
Date: 11/23/21 /Initials: SCU  
Labeled By Initials: AS

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1. Sample from 40235057 getting
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. relogged per PM 11/23/21 SCU
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>5</u>	
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

**Client Notification/ Resolution:** \_\_\_\_\_ If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_