Ottawa-Carleton District School Board

Phase Two Environmental Site Assessment
150 Abbeyhill Drive
Kanata, Ontario

ER1086

September 27, 2024

CM3 Environmental Inc.
5710 Akins Road Ottawa, Ontario K2S 1B8

1.0 EXECUTIVE SUMMARY

CM3 Environmental Inc. (CM3) was retained by the Ottawa-Carleton District School Board (OCDSB) to complete a Phase Two Environmental Site Assessment (ESA) for the property located at 150 Abbeyhill Drive, Kanata, Ontario ("site" or "subject property"). The purpose of the Phase Two ESA was to identify contaminants of concern, if present, in soil and groundwater in areas of potential environmental concern (APECs). The Phase Two ESA was undertaken for due diligence purposes in support of a Site Plan Control application for an addition to the on-site building. The Phase Two ESA was not completed in support of a record of site condition.

CM3 completed a Phase One ESA in July 2024 that identified on-site potentially contaminating activities (PCAs) as a former public fuel system and the use of ground mounted hydro transformers. Four off-site PCAs were identified that included a polychlorinated biphenyl (PCB) transformer oil spill, a former laundry facility (with use of halogenated solvents), a former fuel tank, and a styrene spill. The on-site former public fuel system and the four off-site PCAs resulted in APECs. Contaminated media includes soil and groundwater, and contaminants of concern include VOCs, BTEX, PHCs (F1-F4 fractions), and PCBs. Environmental concerns were not identified in the area of the proposed addition.

The Phase Two investigation included the advancement of six boreholes, five of which were converted to monitoring wells to assess the soil and groundwater conditions on-site. The overburden soil generally encountered at the site consisted of a cap of asphalt or grass, primarily underlain by organic soil, clay, silty clay, and/or sandy clay to a maximum observed depth of 5.70 meters below grade (m bg). Practical drilling refusal was encountered at a depth of 2.80 m bg to 5.70 m bg during the investigation. Groundwater was present in monitoring well MW1 at 1.54 m bg, MW2 at 2.39 m bg, MW4 at 4.47 m bg, MW5 at 2.30 m bg, and MW6 at 0.63 m bg. The groundwater elevations and monitoring well locations indicate that the on-site groundwater flow direction is south.

A minimum of one soil sample was collected from each of the five APECs for laboratory analysis for contaminants of concern (COCs). A total of six samples were submitted for analysis and the results were compared to the Ministry of the Environment, Conservation and Parks (MECP) soil, ground water and sediment standards for use under Part XV.1 of the Environmental Protection Act (Table 3). Sample MW4 SA5 and MW6 SA6 were collected from APEC 1 and analyzed for petroleum hydrocarbons in the F1 to F4 fractions (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), and polycyclic aromatic hydrocarbons (PAHs) related to a former public fuel transmission pipeline. Sample BH3 SA4 was collected from APEC 2 and analyzed for PHCs, BTEX, and PCBs related to a historic transformer oil spill. Sample MW1 SA5 was collected from APEC 3 and analyzed for PHCs, BTEX, and PAHs related to a former fuel tank. Sample MW2 SA5 was collected from APEC 4 and analyzed for volatile organic compounds (VOCs) related to a former dry cleaner with the use of halogenated solvents. Sample MW5 SA5 was collected from APEC 5 and analyzed for PHCs and VOCs related to a historic styrene spill.

All soil and groundwater samples analyzed as part of the Phase Two Investigation were non-detectable for COCs and therefore meet the MECP Table 3 site condition standards (SCS).

If excess soils are to be generated, the project leader must meet the following requirements to be in compliance with Ontario Regulation (O. Reg.) 406/19.

1. Preparation of an assessment of past uses (Phase One ESA complete – no further action required);
2. Preparation of a sampling and analysis plan (Phase Two ESA complete – may require additional sampling to meet the receiving sites requirements);
3. Preparation of a soil characterization report (Phase Two ESA report complete – may require additional reporting based on Item 2 above);
4. Preparation of an excess soil destination assessment report; and
5. Development and implementation of a soil tracking system.

CM3 should be notified prior to the excavation of soils at the site to determine the additional requirements to be in compliance with O. Reg. 406/19.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

2.0 INTRODUCTION

CM3 was retained by the OCDSB to complete a Phase Two ESA for the property located at 150 Abbeyhill Drive in Ottawa, Ontario. The purpose of the Phase Two ESA was to identify COCs, if present, in soil and groundwater on site in the APECs. The Phase Two ESA was undertaken for due diligence purposes in support of a Site Plan Control application for an addition on the south side of the existing on-site building.

2.1 Site Description

The subject property is located on the south-east side of Abbeyhill Drive in Kanata, Ontario. The legal description is PT Lot 32, Con 11 Goulbourn as in CT212287 & Pts 1-4, 5R1601 and the property identification number is 04485-0210 (LT). The site is zoned as minor institutional (I1A). The site location is provided as **Figure 1**. The current site land use designation is minor institutional.

The subject property is irregular in shape and is bound by residential properties and Abbeyhill Drive to the north, residential properties and Paddock Way to the east, residential properties and open space (Hope Cloutier Park) to the south, and residential properties to the west. One main building was on-site and has been used as a public school since opening in 1976. Multiple portable classroom units were present on the south-west and west sides of the building. The subject property is approximately 8.09 hectares and was mainly grass and asphalt covered. Trees were present primarily at the property boundaries and surrounding the building. One vehicle access point was present from the west from Abbeyhill Drive. The subject property location is shown on **Figure 1**.

2.2 Property Ownership

The subject property is currently owned and operated by the OCDSB. CM3's main point of contact at the OCDSB for the Phase Two ESA was Ms. Jean Voth, P.Eng., the contact information for Ms. Voth is provided below:

Ms. Jean Voth, P.Eng.
Project Officer Architectural & Engineering, Design & Construction
Ottawa Carleton District School Board
1224 Stittsville Main Street
Stittsville, ON K2S 0E2
Tel: 613-596-8211 ext.8748
Fax: 613-721-0045
Email: jean.voth@ocdsb.ca

2.3 Current and Proposed Future Uses

The property is currently used as an educational institution. There are no proposed plans to change the property use.

2.4 Applicable Site Condition Standard

The environmental condition of the subject property was evaluated in comparison to the Ontario Ministry of Environment, Conservation and Parks (MECP) *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act,* under O. Reg. 153/04. The following site conditions were used in the selection of the appropriate site condition standards:

- No environmentally sensitive areas were located on site or in the immediate vicinity;
- The site is not considered a shallow soil property (i.e., bedrock is greater than 2 metres below grade);
- The site was not located within 30 m of a water body;
- Municipal water is used as the potable water source in the area;
- Land use at the site was considered institutional; and
- Surrounding land use was considered residential.

For the purposes of the Phase Two ESA, the Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition and institutional land use with coarse soils were selected for evaluation of the analytical results, based on the above.

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

The site elevation is approximately 106.88 meters above sea level (m asl) and has a gentle slope to the south. The area surrounding the subject property slopes downward from north to south from 114 m asl to 97 m asl and from east to west from 108 m asl to 103 m asl.

Surface drainage at the subject property is controlled by surface coverings (grass and pavement) and site grading. It is likely that most of the surface drainage is by infiltration in the grass covered areas and by overland flow to storm water catch basins surrounding the on-site building on the asphalt covered areas.

Surface soils within the Phase One study area were described as offshore marine deposits of clay, silt, and sand with low permeability. Bedrock geology within the Phase One study area was described as limestone, dolostone, shale, arkose, and sandstone of the Ottawa Group, Simcoe Group, and the Shadow Lake Formation.

Areas of natural and scientific interest (ANSI) were not identified within the Phase One study area. Several observation/monitoring well manhole covers were noted in the asphalt on the southside of the on-site building. No wellhead protection areas were identified within the study area.

The subject property and properties within the study area were served by a municipal drinking water system.

3.2 Past Investigations

The following environmental report was available for review and are summarized below:

1. **CM3 Environmental Phase One Site Assessment 150 Abbeyhill Drive, Ottawa, ON. July 16, 2024.**

CM3 completed a Phase One ESA in July 2024 that identified two PCAs on-site related to a ground mounted transformer and a former public fuel transmission pipeline. Four off-site PCAs were identified related to a PCB transformer oil spill, a former gas/diesel tank, a former laundry facility with use of halogenated solvents, and a styrene spill. The following APEC and COCs were identified on the subject property:

Table 6: Areas of Potential Environmental Concern

APEC	Location	Cause of Concern	COCs
1	North side of subject building	PCA 2 – Former public fuel transmission pipeline	PHCs (F1-F4), BTEX, PAHs
2	West corner of subject property	PCA 3 – 25 L PCB transformer oil spill	PHCs (F1-F4), PCBs
3	South corner of parking lot	PCA 4 – Former gasoline/diesel tank	PHCs (F1-F4), BTEX, PAHs

Table 6: Areas of Potential Environmental Concern			
APEC	**Location**	**Cause of Concern**	**COCs**
4	South parking lot boundary	PCA 5 – Former laundry facility with use of halogenated solvents	VOCs
5	North-east side of subject building	PCA 6 – Styrene spill	VOCs

The findings of the Phase One ESA identified five APECs at the subject property due to a former public fuel transmission pipeline, a former PCB transformer oil spill, a former laundry facility with the use of halogenated solvents, a former fuel tank, and a styrene spill. The contaminants of concern included VOCs, BTEX, PHCs, PAHs and PCBs and potentially contaminated media included soil and groundwater.

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of Site Investigation

The purpose of the investigation was to assess the presence of potential contaminants of concern at the APECs identified in the Phase One ESA. The site investigation was completed following the Canadian Standards Association (CSA) Standard Z769-00 (R2008) and O. Reg. 153/04. The scope of work for the investigation included:

- The determination of the locations of all underground utilities by a third-party utility locator;
- The advancement of six boreholes, five of which were completed as monitoring wells;
- The continuous collection of soil samples during the drilling of boreholes for soil logging and on-site field screening;
- The selection of soil samples from all boreholes for laboratory analysis of one or more of VOCs, PHCs, BTEX, PAHs, and PCBs;
- The measurement of the depth to LPH (if present) and groundwater in all newly installed monitoring wells; and,
- The collection of groundwater samples from all newly installed monitoring wells for laboratory analysis of VOCs, PHCs, BTEX, and PAHs.

4.2 Media Investigated

The Phase Two ESA included the investigation of soil quality at APEC 1 through APEC 5 and groundwater at APEC 1, APEC 3, APEC 4, and APEC 5. Soil and groundwater were selected as the media of investigation based on the findings of the Phase One ESA. Sediment was not present at the subject property.

4.3 Phase One Conceptual Site Model

A Phase One conceptual site model (CSM) was developed based on the information collected as part of this investigation.

The subject property was operational as a secondary school at the time of the investigation. The Carp River is approximately 50 m beyond the south property boundary. The river discharges into the Ottawa River at Fitzroy Harbour, approximately 33 km north-west of the subject property. The river's headwaters originate in a provincially significant wetland (the Stony Swamp wetland complex) on the east side of Eagleson Road, approximately 650 m east of the subject property. Two areas of natural and scientific interest (ANSI) were identified the north and north-east of the subject property, outside of the Phase One study area. The ANSI were Eagleson's corners (ANSI #251213662) and Stony Swamp (ANSI #251213660). The regional ground water flow direction was inferred to be south based on topography and the presence of local water bodies. The site ground water flow direction could not be determined based on the findings of this assessment.

Two PCAs were identified on-site related to the use of ground mounted transformers and a former public fuel transmission pipeline. Four PCAs were identified off-site related to a PCB transformer oil spill, a former fuel tank, a former laundry facility with halogenated solvent use, and a styrene

spill. All off-site PCAs resulted in APECs on the subject property. Contaminated media includes soil and groundwater and contaminants of concern include VOCs, BTEX, PHCs, PAHs, and PCBs.

Underground services (gas and water) are provided to the site and come from the east from Paddock Way. Stormwater catch basins were identified surrounding the on-site building. Drainage on the subject property is by infiltration on the grass covered areas and overland flow to the catch basins on the asphalt covered areas.

Surface soils within the Phase One study area were described as offshore marine deposits of clay, silt, and sand with low permeability. Bedrock geology within the Phase One study area was described as limestone, dolostone, shale, arkose, and sandstone of the Ottawa Group, Simcoe Group, and the Shadow Lake Formation.

4.4 Deviations From Sampling and Analysis Plan

A borehole was advanced as part of this Phase Two ESA within APEC 2, however a monitoring well was not installed due to practical drilling refusal above the depth to groundwater. Therefore, groundwater analysis in APEC 2 was not completed for PHCs and PCBs.

4.5 Impediments

A borehole was advanced as part of this Phase Two ESA within APEC 2, however a monitoring well was not installed due to practical drilling refusal above the depth to groundwater.

5.0 INVESTIGATION METHOD

5.1 General

CM3 was on-site with Ohlman Geotechnical Services Inc. (OGS) on July 25th and August 12th, 2024, to advance six boreholes. CM3 collected soil samples during the drilling for soil logging, field screening, and potentially the submission to a laboratory for the analysis of COCs. Five of the six boreholes were converted to monitoring wells for subsequent groundwater sampling. CM3 collected groundwater samples after developing and purging the wells for the submission to a laboratory for the analysis of COCs.

5.2 Drilling

Boreholes (MW1, MW2 and BH3) were advanced on July 25th, 2024, and boreholes MW4 through MW6 were drilled on August 12, 2024. The borehole drilling was completed by OGS of Almonte, Ontario, under the supervision of CM3. The boreholes were advanced using a truck mounted auger drill equipped with hollow stem augers and split spoon sampling equipment. The July 25th, 2024, drilling was completed at APECs 2, 3 and 4. The August 12, 2024 drilling was completed in APCEs 1 and 5. The borehole/monitoring well locations are provided on **Figure 3** and **Figure 4**.

5.3 Soil: Sampling

Soil samples were collected from 0.0 meters m bg to a maximum of 5.7 m bg using a 0.76 cm long, 5.1 cm diameter split spoon sampler. Soil samples were logged at the time of drilling for grain size, colour, moisture content, and visual or olfactory evidence of impacts. The sampling equipment was washed and rinsed between each sample interval and borehole location to prevent cross contamination.

At the time of recovery, a portion of each sample was placed into a polyethylene bag for headspace combustible vapour analysis. The remainder of each sample was placed into the appropriate laboratory supplied sample containers for the required analysis following MECP sampling protocols. The sample containers were placed into an ice chilled cooler pending submission to the laboratory for analysis.

5.4 Field Screening Measurements

The bagged soil samples were allowed to equilibrate to ambient temperature prior to combustible vapour readings being collected. The vapour concentrations were measured and recorded from the bag sample headspace using an RKI Eagle combustible vapour meter calibrated to hexane and operated in methane elimination mode. The intake probe of the vapour meter was inserted into the plastic bag and the highest vapour reading from each sample was recorded in parts per million (ppm). The results of the vapour analysis and field screening were used in the selection of samples for laboratory analysis.

5.5 Ground Water: Monitoring Well Installation

Boreholes MW1, MW2, MW4, MW5 and MW6 were converted to monitoring wells. Monitoring well construction consisted of 50 mm outside diameter, flush-threaded schedule 40 PVC well screens and risers. At each borehole, a 10-slot well screen was placed with the intention of intercepting the water table to allow for the detection of LPH, if present. A silica sand pack was placed around the outside of the well screen in the annular space of the borehole to a minimum of 0.30 m above the screened interval. A bentonite seal was placed above the sand pack to approximately 0.30 m bg. Monitoring wells were finished below grade with a protective steal flush mount cover.

5.6 Ground Water: Field Measurement of Water Quality Parameters

Field measured water quality parameters such as pH, specific conductance, and temperature were not measured as part of this assessment.

5.7 Ground Water: Sampling

Groundwater was measured in all monitoring wells on Aug 20th, 2024, using a Heron Instruments Inc. water level meter with fixed probe. The depth to LPH (if present) and groundwater were measured the nearest millimetre from the highest point of the well riser. The interface probe was cleaned and rinsed with distilled water between each well to prevent cross contamination. Liquid phase hydrocarbons were not observed.

Groundwater samples were collected from each well using dedicated tubing and a peristaltic pump. All samples were collected into laboratory supplied sample containers for the required analysis following MECP sampling protocols.

5.8 Analytical Testing

Soil and groundwater samples selected for analysis were submitted to Paracel Laboratories Limited (Paracel) of Ottawa, Ontario. Samples were submitted on the day of collection for regular turnaround.

A total of thirty-five sub surface soil samples were collected from the site. A minimum of one soil samples was submitted from each borehole for laboratory analysis for COCs. VOCs (including BTEX) analysis was completed on samples MW1 SA5 and MW5 SA5. BTEX analysis was completed on MW2 SA5, BH3 SA5, MW4 SA5 and MW6 SA6. PHCs (F1-F4) analysis was completed on MW1 SA5, BH3 SA5, MW4 SA5, MW5 SA5 and MW6 SA6. PAH analysis was completed on MW1 SA5 MW4 SA45 and MW6 SA6 and PCB analysis was completed BH3 SA5.

Groundwater samples were collected from monitoring wells MW1, MW2, and MW4 through MW6 for analysis of VOCs, and PHCs (F1-F4), BTEX. PAHs were analysed from groundwater samples collected for monitoring wells MW1, MW4 and MW6.

5.9 Residue Management Procedures

Soil cuttings from drilling and water from well development and purging were left in 200 litre metal drums on-site. Once the quality of the soil cuttings and groundwater was confirmed the drums were pickup for proper disposal by Triangle Pump Service Limited of Gloucester, Ontario.

5.10 Elevation Surveying

The locations of all newly installed monitoring wells were referenced to existing site buildings and structures. The ground surface and monitoring well top of pipe elevations were referenced to a permanent structure using a TopCon AT-B4 automatic level. The ground surface and top of pipe elevations are included in **Table 1** and within the borehole logs (**Appendix A**).

5.11 Quality Assurance and Quality Control Measures

CM3 followed a quality assurance and quality control (QA/QC) program to ensure that the results of the Phase II ESA were representative of site conditions. The QA/QC program included general field procedures to maintain sample integrity to demonstrate that the field sampling techniques were capable of yielding reproducible results. The general field QA/QC procedures included, but were not limited to:

- A new pair of disposable nitrile gloves was used for each sample collected;
- Sampling equipment was either single use or was dedicated to a specific location (i.e. LDPE tubing for monitoring well sampling);
- Equipment that came into contact with the media to be collected (interface probe, stainless-steel trowel, etc.) was decontaminated between each monitoring location or sample;
- Clean, laboratory prepared sample containers containing the required preservatives were obtained from the laboratory for the proposed analyses;
- Sample containers were labelled prior to sample collection;
- Samples were placed in the appropriate sample containers for the selected analyses, following CM3 standard operating procedures and MECP protocols;
- Immediately following collection, all samples were stored in laboratory supplied coolers with the appropriate packing materials and ice packs, pending shipment to the laboratory; and
- Chain of Custody forms with CM3 contact information, date sampled, sample matrix, number and type of containers, and requested analyses travelled with all samples delivered to the laboratory for analysis.

All samples collected by CM3 were given unique sample identification and field staff recorded the location and identification of each sample collected using field logs and/or notebooks. Chain of Custody forms were filled out on site and travelled with all samples placed in coolers delivered to the laboratory for analysis. Each Chain of Custody included the CM3 contact information, date sampled, sample matrix, number and type of containers, and requested analyses.

Paracel is a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory that uses Ministry of Environment recognized methods to conduct analyses and follows an in-house QA/QC program. Paracel employs method blanks, control standard samples, certified reference material standards, method spikes, replicates, duplicates and instrument blanks as part of their internal QA/QC programs. The results of the laboratory QA/QC are reported in the laboratory certificates. If the internal QA/QC criteria are not met, the laboratory either re-analyses the affected samples or qualifies the results.

6.0 REVIEW AND EVALUATION

6.1 Geology

The site geology was determined based on the borehole drilling and soil logging. Surface materials included asphalt and grass, typically underlain by organic soil, clay, silty clay, and/or sandy clay to a maximum depth of 5.7 m bg. Practical refusal was encountered, however the depth to bedrock was not confirmed. The site stratigraphy is provided on the borehole logs, **Appendix A**.

6.2 Groundwater: Elevations and Flow Direction

Based on the groundwater elevations and monitoring well locations, the groundwater flow direction at the site was determined to be south. Groundwater elevations are provided in **Table 1**. Monitoring well locations are provided on **Figure 3** and **Figure 4**.

6.3 Groundwater: Hydraulic Gradients

The hydraulic gradient was not calculated as part of this assessment.

6.4 Fine-Medium Soil Texture

Based on visual observations, the soil at the site consists of primarily medium to fine grained soils. As a conservative approach, the soils were considered coarse grained for the purposes of the O. Reg. 153/04 SCS analytical comparison. The stratigraphy observed at the site is provided on the borehole logs, **Appendix A**.

6.5 Soil: Field Screening

A total of thirty-five soil samples were collected from boreholes for field screening and combustible vapour analysis. The samples showed combustible vapour concentrations ranging from 0 parts per million (ppm) to 25 ppm. The soil combustible vapour concentrations are included on the borehole logs (**Appendix A**).

6.6 Soil Quality

A total of six soil samples were analysed for one or more COCs. Soil samples collected from APECs 1 through 5 showed that concentrations of COCs were non-detectable. The soil sample analytical results are summarized in **Table 2**. The borehole locations and soil quality are provided on **Figure 3**. The soil sample laboratory reports are provided in **Appendix B**.

APEC 1 – North Side of Property (Former Public Fuel Pipeline)

Boreholes MW4, MW5 and MW6 were advanced at APEC 1. Soil samples MW4 S5, MW6 SA6 were analysed for PHCs, BTEX, and PAHs and sample MW5 SA5 was analysed for VOCs. The laboratory analytical results indicated the following:

- MW4 SA5 & MW6 SA6: BTEX, PHCs, and PAHs met the MECP Table 3 SCS.
- MW5 SA5: VOCs met the MECP Table 3 SCS.

APEC 2 –West Corner of Property (PCB Transformer Oil Spill)

Borehole BH3 was advanced at the west corner of the subject property. Soil sample BH3 S5 was analysed for of BTEX, PHCs, and PCBs. The laboratory analytical results indicated:

- BH3 SA5: VOCs, PHCs, and PCBs met the MECP Table 3 SCS.

APEC 3 – South Side of Sports Field (Former Gas/Diesel Highway Fuel Tank)

Borehole MW1 was advanced at the south side of Sports Field east of the subject property parking lot. Soil sample MW1 S5 was analysed for of BTEX and PHCs (F1-F4). The laboratory results showed:

MW1 SA5: BTEX and PHCs (F1-F4) met the MECP Table 3 SCS.

APEC 4 – South Side of Parking Lot (Former Laundry Facility with Use of Halogenated Solvents)

Boreholes MW2 was advanced at the south side of subject property parking lot. Soil sample MW2 S5 was analysed for of VOCs. The laboratory results showed:

- MW2 SA5: VOCs met the MECP Table 3 SCS.

APEC 5 – North side of the On-Site Building (Styrene Spill)

Boreholes MW5 SA5 was advanced at the north side of subject property on the north side of the existing building. Soil samples MW5 SA5 was analysed for of VOCs and PHCs. The laboratory results showed:

- MW5 SA5: VOCs and PHCs met the MECP Table 3 SCS.

6.7 Ground Water Quality

Groundwater samples were collected from the 5 monitoring wells installed within the APECs. The samples were analysed for one or more COCs from APECs 1, 3, 4 and 5. No monitoring well was installed in APEC 2. All groundwater sample results showed that concentrations of COCs were non-detectable. The groundwater sample analytical results are summarized in **Table 3**. The monitoring well locations and groundwater quality are provided on **Figure 4**. The groundwater sample laboratory reports are provided in **Appendix B**.

APEC 1 & APEC 5 – North Side of Property (Former Public Fuel Pipeline and Styrene Spill)

Monitoring wells MW4, MW5 and MW6 were installed at APEC 1. Monitoring well MW5 was also installed into the overlapping APEC 5. Groundwater samples MW4, and MW6 were analysed for

VOCs and PHCs (F1-F4). Groundwater samples MW4 and MW6 were also analysed for PAHs. The laboratory analytical results indicated:

- MW4, MW5 and MW6: VOCs and PHCs met the MECP Table 3 SCS.
- MW4 and MW6: PAHs met the MECP Table 3 SCS.

APEC 2 –West Corner of Property (PCB Transformer Oil Spill)

A monitoring well was not installed in APEC 2 due to the shallow depth to refusal of borehole BH3 and the proximity of major underground utilities in the work area. Based on the soil analytical results discussed in section 6.6. above, groundwater in APEC 2 is not expected to have concentrations of COCs above the MECP Table 3 SCS.

APEC 4 – South Side of Parking Lot (Former Laundry Facility with Use of Halogenated Solvents)

Monitoring well MW2 was installed at the south side of subject property parking lot. Groundwater sample MW2 was analysed for of VOCs. The laboratory results showed:

- MW2: VOCs met the MECP Table 3 SCS.

6.8 Quality Assurance and Quality Control Results

Field duplicates were not collected during the Phase Two ESA, due to budgetary constraints. However, all soil and groundwater samples were collected following industry protocols and CM3's internal QA/QC procedures. All samples were received by the laboratory withing the specified holding time for the requested analyses. The laboratory did not identify any samples that did not meet the appropriate protocols with respect to container type, preservation method, or storage requirement.

The laboratory employs method blanks, control standard samples, certified reference material standards, method spikes, replicates, duplicates, and instrument blanks as part of their internal QA/QC programs. The results of the laboratory QA/QC are reported in the laboratory certificates. If the internal QA/QC criteria are not met, the laboratory either re-analyses the affected samples or qualifies the results.

6.9 Phase Two Conceptual Site Model

Two on-site and four off-site PCAs were identified. The PCAs related to a former public fuel system a ground mounted hydro transformer, a polychlorinated biphenyl (PCB) transformer oil spill, a former laundry facility (with use of halogenated solvents), a former fuel tank, and a styrene spill. The review of the PCAs resulted in 5 on-site APECs. The areas include a section of the northern and southern portion of the property.

Section 35 of O. Reg. 153/04 SCS, non-potable site condition standards, are applicable to the subject property based on the following:

- The subject properties are not in a designated wellhead protection area.

Section 41 of O. Reg. 153/04 SCS, Environmentally Sensitive Areas, does not apply to the subject property based on the following:

- the subject property:
  - was not within an area of natural significance,
  - did not include or is adjacent to an area of natural significance,
  - did not include land within 30 metres of an area of natural significance.

Section 43.1 of O. Reg. 153/04 SCS, shallow soil property or water body, is not applicable to the subject property base don the following:

- The subject properties are not within 30 m of a water body.

The site geology was determined based on the borehole drilling and soil logging. Surface materials included asphalt and grass, typically underlain by organic soil, sandy clay, and/or silty clay observed to a maximum depth of 5.70 m bg. Practical refusal was encountered at borehole BH3 at a depth of 2.84 m bg. The depth to bedrock was not confirmed. Bedrock geology within the subject site area is described as limestone, dolostone, shale, arkose, and sandstone of the Ottawa Group, Simcoe Group, and the Shadow Lake Formation. Groundwater was encountered from 0.63 m below the top of casing (TOC) in MW6 to 2.47 m below TOC in MW4. Depth to groundwater is included in **Table 1** and on the borehole logs **Appendix A**.

The Phase Two ESA did not identify concentrations of COCs above the MECP Table 3 SCS in soil or groundwater within the APECs.

7.0 EXCESS SOIL MANAGEMENT

7.1 Additional Requirements

If excess soils are to be generated, the project leader must meet the following requirements to be in compliance with O. Reg. 406/19.

1. Preparation of an assessment of past uses (Phase One ESA complete – no further action required);
2. Preparation of a sample and analysis plan (Phase Two ESA complete – may require additional sampling to meet the requirements of O. Reg. 406/19);
3. Preparation of a soil characterization report (Phase Two ESA report complete – may require additional reporting based on Item 2 above);
4. Preparation of an excess soil destination assessment report; and
5. Development and implementation of a soil tracking system.

CM3 should be notified prior to the excavation of soils at the site to determine the additional requirements to be in compliance with O. Reg. 406/19.

8.0 CONCLUSIONS

CM3 was retained by the OCDSB to complete a Phase Two ESA for the property located at 150 Abbeyhill Drive in Kanata, Ontario. The purpose of the Phase Two ESA was to identify contaminants of concern, if present, in soil and groundwater on site in areas of potential environmental concern (APECs). The Phase Two ESA was undertaken for due diligence purposes in support of a Site Plan Control application for an addition to the on-site building. The Phase Two ESA was not completed in support of a record of site condition.

The investigation included the advancement of six boreholes, five of which were converted to monitoring wells to assess the soil and groundwater conditions on-site. The results of the Phase Two ESA and project specific soil sampling are summarized as follows:

Site Characterization

- The overburden soil generally encountered at the site consisted of asphalt and grass underlain by organic soil, clay, silty clay, and/or sandy clay to a maximum observed depth of 5.70 m bg. Depth to bedrock was not confirmed during the investigation.
- Groundwater was encountered from 0.63 m below TOC in MW6 to 2.47 m below TOC in MW4.
- The on-site groundwater flow direction was determined to be south.

Soil Quality

- Soil samples were collected from the five on-site APECs. Samples were analyzed for COCs. Concentrations were non-detectable in all samples and therefore are below the MECP Table 3 SCS (O. Reg. 153/04).

Groundwater Quality

- Groundwater samples were submitted from the five newly installed monitoring wells on-site. Samples were analyzed for contaminants of concern. Concentrations were non-detectable in all samples and therefore are below the MECP Table 3 SCS.

The Phase Two ESA did not identify any soil or groundwater impacts at the subject property. The analytical results showed that all COCs were not detected in any sample submitted for analysis and therefore meet the applicable MECP Table 3 SCS.

8.1 Signatures

This Phase Two ESA was completed under supervision of Mr. Marc MacDonald, P.Eng. of CM3 Environmental Inc. Mr. MacDonald is a Qualified Person as defined in O. Reg. 153/04 and confirms that this report includes all findings and conclusions of the Phase Two ESA.

We trust that the above is satisfactory for your purposes at this time. Please feel free to contact the undersigned if you have any questions.

Yours sincerely,

CM3 Environmental Inc.

Prepared By:

Kris Snider
Project Manager

Reviewed By:

Ethan Risk, B.Eng.
Project Manager

Reviewed by:

Marc MacDonald, P.Eng. QP_{ESA}, EP
Principal

9.0 LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by CM3 Environmental Inc. for the OCDSB. It is intended for the sole and exclusive use of the OCDSB, its affiliated companies and partners and their respective insurers, agents, employees and advisors. Any use, reliance on, or decision made by any person other than the OCDSB based on this report is the sole responsibility of such other person. CM3 Environmental Inc. and the OCDSB make no representation or warranty to any other person with regard to this report and the work referred to in this report, and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by CM3 Environmental Inc. with respect to this report and any conclusions or recommendations made in this report reflect CM3 Environmental Inc.'s judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site and substances addressed by the investigation may exist in areas of the site not investigated.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by the OCDSB, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of CM3 Environmental Inc. Nothing in this report is intended to constitute or provide a legal opinion.

10.0 REFERENCES

Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended, Ontario Ministry of Environment, 2004.

Guide for Completing Phase Two Site Assessments under Ontario Regulation 153/04, Ontario Ministry of Environment, June 2011.

Guide for Completing Phase One Site Assessments under Ontario Regulation 153/04, Ontario Ministry of Environment, June 2011.

Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, Ontario Ministry of Environment, December 1996.

Ontario Regulation 153/04 (made under the Environmental Protection Act), as amended, Ontario Ministry of Environment, 2004.

Ontario Regulation 903 (made under Ontario Water Resources Act, R.S.O. 1990, c. O.40), as amended, Ontario Ministry of Environment, 2003.

Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Ontario Ministry of Environment, April, 2011.

City of Ottawa Online Mapping Tool: geoOttawa. Available online at: https://maps.ottawa.ca/geoottawa/

3

FIGURES

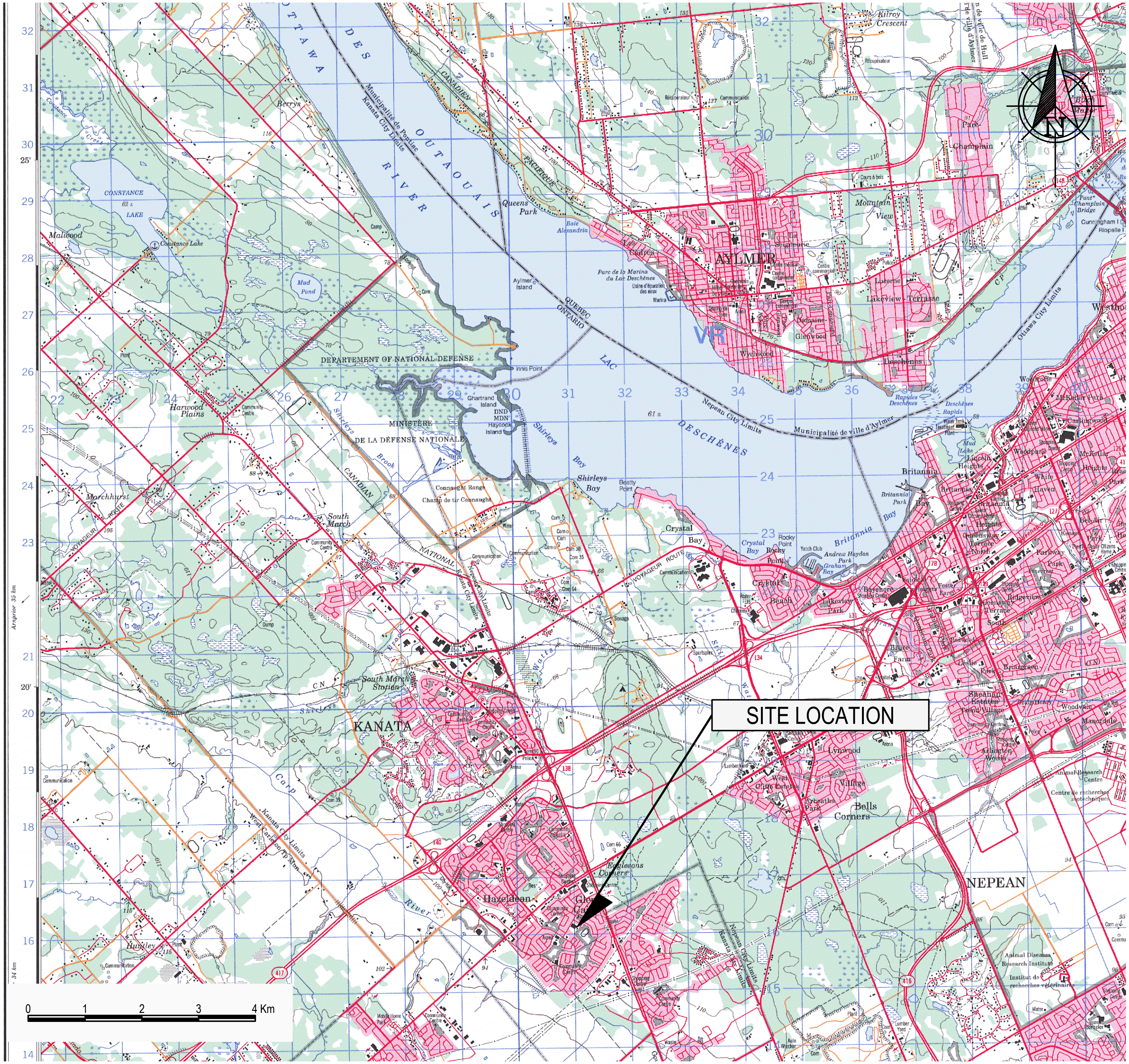
Phase Two Environmental Site Assessment

150 Abbeyhill Drive,

Kanata, Ontario

Ottawa-Carleton District School Board

ER1086



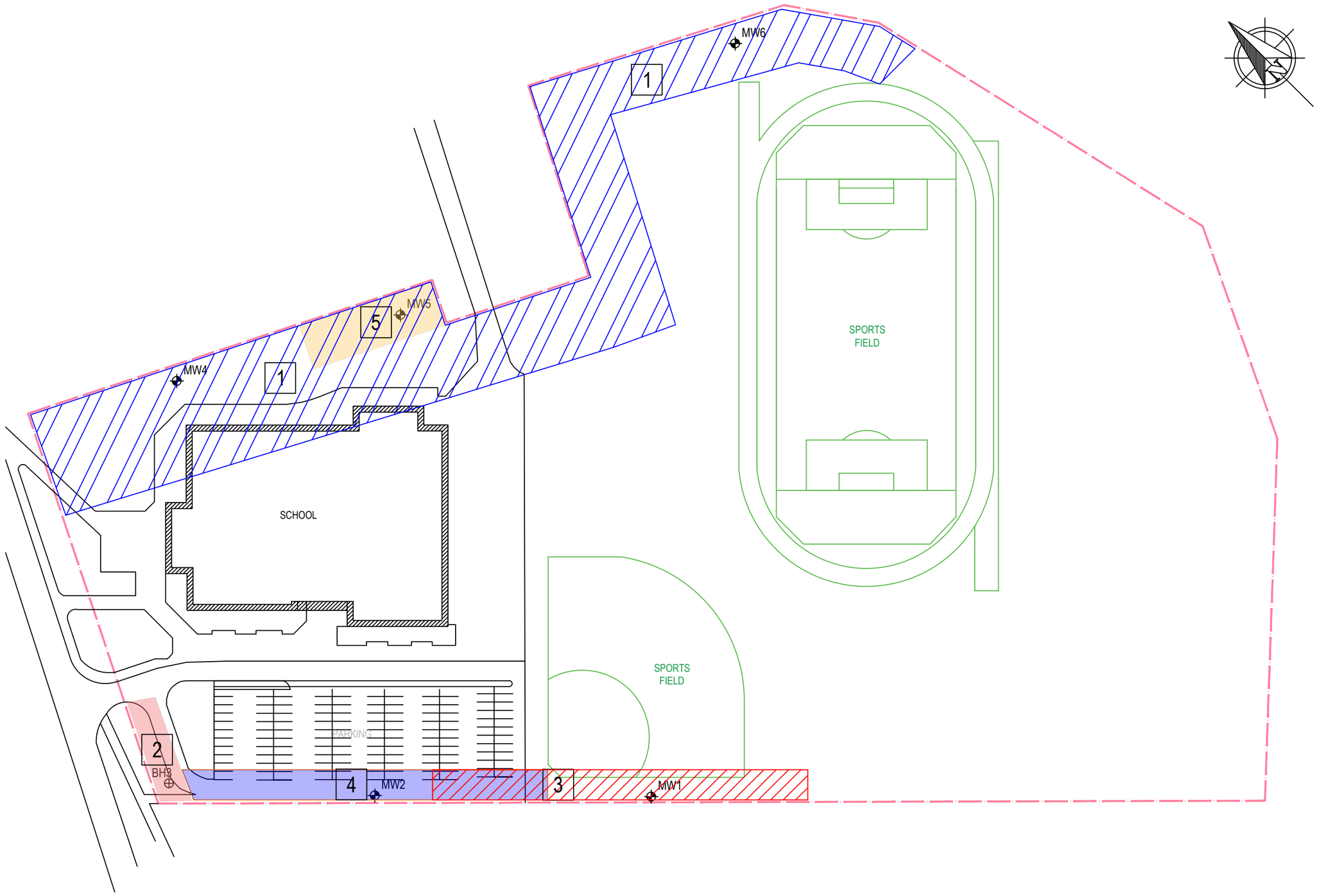
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

OTTAWA-CARLETON
DISTRICT SCHOOL BOARD

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
AY JACKSON SECONDARY SCHOOL
150 ABBEYHILL DRIVE,
KANATA, ONTARIO

SITE LOCATION

Project: ER1086	Drawn By: KS
Date: SEPT 2024	Reviewed By: ER
Scale: AS SHOWN	Figure: 1



LEGEND

- PHASE I SITE
- BOREHOLE
- MONITORING WELL

APEC:

- #1(PCA 2) - FORMER PUBLIC FUEL TRANSMISSION PIPELINE.
- #2 (PCA 3) - 140 OAKBURN AVE - SUBJECT PROPERTY TRANSFORMER OIL SPILL.
- #3 (PCA 4) - 70 STOKES CRES. - DELISTED GAS/DIESEL HIGHWAY FUEL TANK.
- #4 (PCA 5) - 100 CASTLEFRANK RD. FORMER MAXI BRITE CLEANERS.
- #5 (PCA 6) 113 SHERWOOD ST. - UNKNOWN QUANTITY STYRENE SPILL.

Scale 1:1250

0 10 20 30 40 m

(Approx. When plotted 11x17)

cm3 environmental

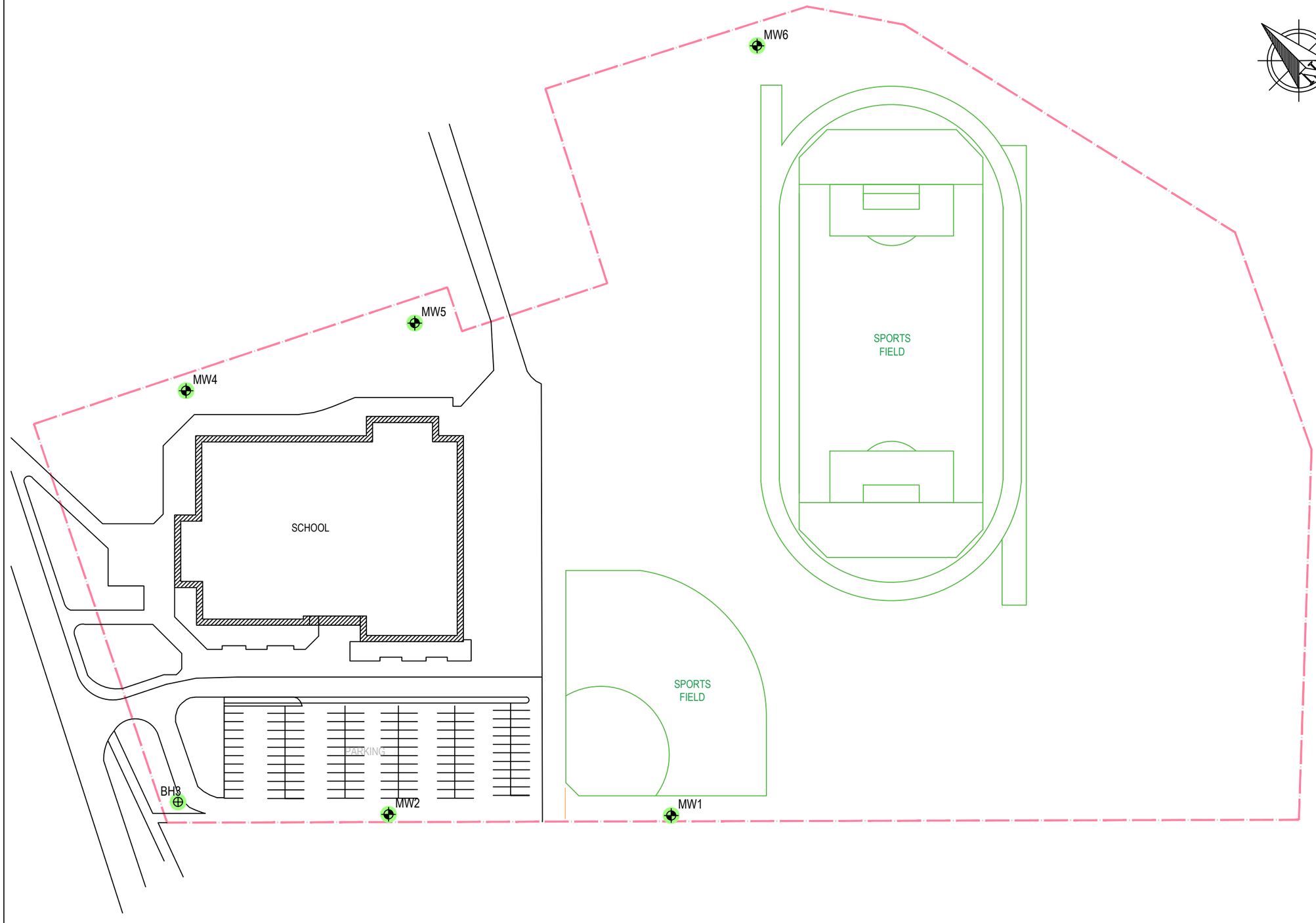
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

OTTAWA-CARLETON
DISTRICT SCHOOL BOARD

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
AY JACKSON SECONDARY SCHOOL
150 ABBEYHILL DRIVE,
KANATA, ONTARIO

AREA OF POTENTIAL ENVIRONMENTAL CONCERN

Project: ER1086	Drawn By: KS
Date: SEPT 2024	Reviewed By: ER
Scale: 1:1250	Figure: 2



LEGEND

- PHASE I SITE
- BOREHOLE
- MONITORING WELL

SOIL SAMPLES ANALYSED*:

- BTEX AND PHCs NOT DETECTED
- BTEX AND/OR PHCs < MECP TABLE 3 SCS
- BTEX AND/OR PHCs > MECP TABLE 3 SCS

Scale 1:1250

0 10 20 30 40 m

(Approx. When plotted 11x17)

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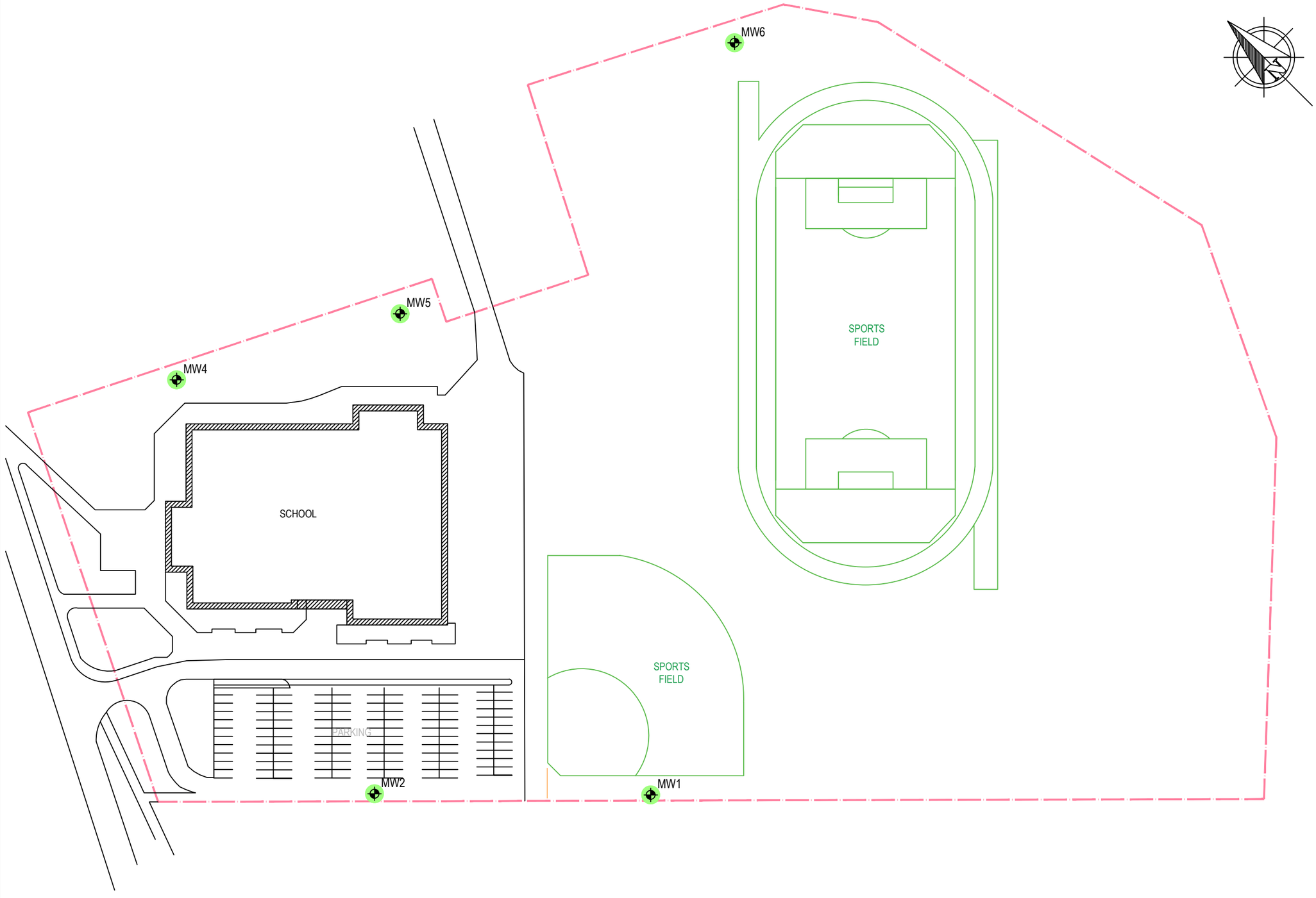
OTTAWA-CARLETON DISTRICT SCHOOL BOARD

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
AY JACKSON SECONDARY SCHOOL
150 ABBEYHILL DRIVE,
KANATA, ONTARIO

SOIL QUALITY

Project:	Drawn By:
ER1086	KS
Date:	Reviewed By:
SEPT 2024	ER
Scale:	Figure:
1:1250	3



LEGEND

PHASE I SITE

MONITORING WELL

GROUNDWATER SAMPLES ANALYSED*:

BTEX AND PHCs NOT DETECTED

BTEX AND/OR PHCs < MECP TABLE 3 SCS

BTEX AND/OR PHCs > MECP TABLE 3 SCS

Scale 1:1250

0 10 20 30 40 m

(Approx. When plotted 11x17)

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K2S 1B8

OTTAWA-CARLETON DISTRICT SCHOOL BOARD

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
AY JACKSON SECONDARY SCHOOL
150 ABBEYHILL DRIVE,
KANATA, ONTARIO

GROUNDWATER QUALITY

Project:	Drawn By:
ER1086	KS
Date:	Reviewed By:
SEPT 2024	ER
Scale:	Figure:
1:1250	4

TABLES

Phase Two Environmental Site Assessment

150 Abbeyhill Drive,

Kanata, Ontario

Ottawa-Carleton District School Board

ER1086

TABLE 1:
LPH and Groundwater Level Measurements
Phase II Environmental Site Assessment
150 Abbeyhill, Kanata, Ontario
ER1086

Well ID	Date	TOC (marl)	Grade (marl)	Depth to		
				LPH (mbtoc)	GW (mbtoc)	GW (marl)
MW1	22-Aug-24	97.299	97.473	NV	1.365	95.934
MW2	22-Aug-24	98.423	98.600	NV	2.225	96.198
MW4	22-Aug-24	100.000	100.162	NV	2.036	97.964
MW5	22-Aug-24	99.699	99.884	NV	2.558	97.141
MW6	22-Aug-24	97.657	97.815	NV	0.476	97.181

Notes:
TOC - top of casing
marl - metres above reference level
mbtoc - metres below top of casing
LPH - liquid phase hydrocarbons
GW - groundwater
NM - not measured
NV / -- - no value/LPH not present

TABLE 2
Summary of Soil Analytical Results
Phase Two Environmental Site Assessment
150 Abbeyhill Drive Kanata, Ontario
ER1086

Parameter	Sample ID > / Location/Primary APEC(s) > / Depth (m bg) > / HSVL (ppm) > / Sample Date >	MDL	MECP Table 3 SCS	MW1 SA5 3-3.76 m 25-Jul-24	MW2 SA5 3-3.76 m 25-Jul-24	BH3 SA5 3-3.76 m 25-Jul-24	MW4 SA5 3-3.76 m 12-Aug-24	MW5 SA5 3-3.76 m 12-Aug-24	MW6 SA6 3.76-4.52 12-Aug-24
Volatiles(VOCs)									
Acetone		0.5	**16**	ND (0.50)	N/A	N/A	N/A	ND (0.50)	N/A
Benzene		0.02	**0.21**	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Bromodichloromethane		0.05	**13**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Bromoform		0.05	**0.27**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Bromomethane		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Carbon Tetrachloride		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Chlorobenzene		0.05	**2.4**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Chloroform		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Dibromochloromethane		0.05	**9.4**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Dichlorodifluoromethane		0.05	**16**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,2-Dichlorobenzene		0.05	**3.4**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,3-Dichlorobenzene		0.05	**4.8**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,4-Dichlorobenzene		0.05	**0.083**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,1-Dichloroethane		0.05	**3.5**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,2-Dichloroethane		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,1-Dichloroethylene		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
cis-1,2-Dichloroethylene		0.05	**3.4**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
trans-1,2-Dichloroethylene		0.05	**0.084**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,2-Dichloropropane		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
cis-1,3-Dichloropropylene		0.05	**NV**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
trans-1,3-Dichloropropylene		0.05	**NV**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,3-Dichloropropene, total		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Ethylbenzene		0.05	**2**	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Ethylene dibromide (dibromoethane, 1,2-)		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Hexane		0.05	**2.8**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Methyl Ethyl Ketone (2-Butanone)		0.5	**16**	ND (0.50)	N/A	N/A	N/A	ND (0.50)	N/A
Methyl Isobutyl Ketone		0.5	**1.7**	ND (0.50)	N/A	N/A	N/A	ND (0.50)	N/A
Methyl tert-butyl ether		0.05	**0.75**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Methylene Chloride		0.05	**0.1**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Styrene		0.05	**0.7**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,1,1,2-Tetrachloroethane		0.05	**0.058**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,1,2,2-Tetrachloroethane		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Tetrachloroethylene		0.05	**0.28**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Toluene		0.05	**2.3**	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,1,1-Trichloroethane		0.05	**0.38**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
1,1,2-Trichloroethane		0.05	**0.05**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Trichloroethylene		0.05	**0.061**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Trichlorofluoromethane		0.05	**4**	ND (0.05)	N/A	N/A	N/A	ND (0.05)	N/A
Vinyl Chloride		0.02	**0.02**	ND (0.02)	N/A	N/A	N/A	ND (0.02)	N/A
m/p-Xylene		0.05	**NV**	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
o-Xylene		0.05	**NV**	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Xylenes, total		0.05	**3.1**	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Hydrocarbons (PHCs F1-F4)									
F1 PHCs (C6-C10)		7	**55**	ND (7)	N/A	ND (7)	ND (7)	ND (7)	ND (7)
F2 PHCs (C10-C16)		4	**98**	ND (4)	N/A	ND (4)	ND (4)	ND (4)	ND (4)
F3 PHCs (C16-C34)		8	**300**	ND (8)	N/A	ND (8)	ND (8)	ND (8)	ND (8)
F4 PHCs (C34-C50)		6	**2800**	ND (6)	N/A	ND (6)	ND (6)	ND (6)	ND (6)
Semi-Volatiles (PAHs)									
Acenaphthene		0.02	**7.9**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Acenaphthylene		0.02	**0.15**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Anthracene		0.02	**0.67**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Benzo[a]anthracene		0.02	**0.5**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Benzo[a]pyrene		0.02	**0.3**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Benzo[b]fluoranthene		0.02	**0.78**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Benzo[g,h,i]perylene		0.02	**6.6**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Benzo[k]fluoranthene		0.02	**0.78**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Chrysene		0.02	**7**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Dibenzo[a,h]anthracene		0.02	**0.1**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Fluoranthene		0.02	**0.69**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Fluorene		0.02	**62**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Indeno[1,2,3-cd]pyrene		0.02	**0.38**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
1-Methylnaphthalene		0.02	**0.99**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
2-Methylnaphthalene		0.02	**0.99**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Methylnaphthalene (1&2)		0.04	**0.99**	ND (0.04)	N/A	N/A	ND (0.04)	N/A	ND (0.04)
Naphthalene		0.01	**0.6**	ND (0.01)	N/A	N/A	ND (0.01)	N/A	ND (0.01)
Phenanthrene		0.02	**6.2**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
Pyrene		0.02	**78**	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)
PCBs									
PCBs, total		0.05	**0.35**	N/A	N/A	ND (0.05)	N/A	N/A	N/A

Notes:

mg/kg - all concentrations provided in parts per million (milligrams per kilogram)
MDL - reported analytical method detection limit
HSVL - headspace vapour level (combustible vapour meter, calibrated to hexane)
m bg - metres below grade
ppm - parts per million
NV - no standard listed
"<" or "ND ( )" - less than detection limits indicated (refer to laboratory report)
NA - not applicable
MECP Table 3 SCS - Ontario Ministry of Environment, Conservation and Parks (MECP) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. April, 2011.
Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, institutional land use, coarse textured soil.
Bold / Italic - indicates concentration above applicable MECP Table 3 SCS

TABLE 3
Summary of Groundwater Analytical Results
Phase II Environmental Site Assessment
150 Abbeyhill Drive, Kanata, Ontario
ER1086

Parameter / Sample ID > / Location/Primary APEC(s) > / Sample Date >	MDL	MECP Table 3 SCS	MW1 20-Aug-24	MW2 20-Aug-24	MW4 20-Aug-24	MW5 20-Aug-24	MW6 20-Aug-24
Volatiles (VOCs)							
Acetone	5.0	**130000**	NA	ND (5.0)	NA	ND (5.0)	NA
Benzene	0.5	**44**	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromodichloromethane	0.5	**85000**	NA	ND (0.5)	NA	ND (0.5)	NA
Bromoform	0.5	**380**	NA	ND (0.5)	NA	ND (0.5)	NA
Bromomethane	0.5	**5.6**	NA	ND (0.5)	NA	ND (0.5)	NA
Carbon Tetrachloride	0.2	**0.79**	NA	ND (0.2)	NA	ND (0.2)	NA
Chlorobenzene	0.5	**630**	NA	ND (0.5)	NA	ND (0.5)	NA
Chloroform	0.5	**2.4**	NA	ND (0.5)	NA	ND (0.5)	NA
Dibromochloromethane	0.5	**82000**	NA	ND (0.5)	NA	ND (0.5)	NA
Dichlorodifluoromethane	1.0	**4400**	NA	ND (1.0)	NA	ND (1.0)	NA
1,2-Dichlorobenzene	0.5	**4600**	NA	ND (0.5)	NA	ND (0.5)	NA
1,3-Dichlorobenzene	0.5	**9600**	NA	ND (0.5)	NA	ND (0.5)	NA
1,4-Dichlorobenzene	0.5	**8**	NA	ND (0.5)	NA	ND (0.5)	NA
1,1-Dichloroethane	0.5	**320**	NA	ND (0.5)	NA	ND (0.5)	NA
1,2-Dichloroethane	0.5	**1.6**	NA	ND (0.5)	NA	ND (0.5)	NA
1,1-Dichloroethylene	0.5	**1.6**	NA	ND (0.5)	NA	ND (0.5)	NA
cis-1,2-Dichloroethylene	0.5	**1.6**	NA	ND (0.5)	NA	ND (0.5)	NA
trans-1,2-Dichloroethylene	0.5	**1.6**	NA	ND (0.5)	NA	ND (0.5)	NA
1,2-Dichloropropane	0.5	**16**	NA	ND (0.5)	NA	ND (0.5)	NA
cis-1,3-Dichloropropylene	0.5	**NV**	NA	ND (0.5)	NA	ND (0.5)	NA
trans-1,3-Dichloropropylene	0.5	**NV**	NA	ND (0.5)	NA	ND (0.5)	NA
1,3-Dichloropropene, total	0.5	**5.2**	NA	ND (0.5)	NA	ND (0.5)	NA
Ethylbenzene	0.5	**2300**	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethylene dibromide (dibromoethane, 1,2-)	0.2	**0.25**	NA	ND (0.2)	NA	ND (0.2)	NA
Hexane	1.0	**51**	NA	ND (1.0)	NA	ND (1.0)	NA
Methyl Ethyl Ketone (2-Butanone)	5.0	**470000**	NA	ND (5.0)	NA	ND (5.0)	NA
Methyl Isobutyl Ketone	5.0	**140000**	NA	ND (5.0)	NA	ND (5.0)	NA
Methyl tert-butyl ether	2.0	**190**	NA	ND (2.0)	NA	ND (2.0)	NA
Methylene Chloride	5.0	**610**	NA	ND (5.0)	NA	ND (5.0)	NA
Styrene	0.5	**1300**	NA	ND (0.5)	NA	ND (0.5)	NA
1,1,1,2-Tetrachloroethane	0.5	**3.3**	NA	ND (0.5)	NA	ND (0.5)	NA
1,1,2,2-Tetrachloroethane	0.5	**3.2**	NA	ND (0.5)	NA	ND (0.5)	NA
Tetrachloroethylene	0.5	**1.6**	NA	ND (0.5)	NA	ND (0.5)	NA
Toluene	0.5	**18000**	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1,1-Trichloroethane	0.5	**640**	NA	ND (0.5)	NA	ND (0.5)	NA
1,1,2-Trichloroethane	0.5	**4.7**	NA	ND (0.5)	NA	ND (0.5)	NA
Trichloroethylene	0.5	**1.6**	NA	ND (0.5)	NA	ND (0.5)	NA
Trichlorofluoromethane	1.0	**2500**	NA	ND (1.0)	NA	ND (1.0)	NA
Vinyl Chloride	0.5	**0.5**	NA	ND (0.5)	NA	ND (0.5)	NA
m/p-Xylene	0.5	**NV**	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
o-Xylene	0.5	**NV**	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Xylenes, total	0.5	**4200**	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Hydrocarbons (PHCs F1-F4)							
F1 PHCs (C6-C10)	25	**750**	ND (25)	NA	ND (25)	ND (25)	ND (25)
F2 PHCs (C10-C16)	100	**150**	ND (100)	NA	ND (100)	ND (100)	ND (100)
F3 PHCs (C16-C34)	100	**500**	ND (100)	NA	ND (100)	ND (100)	ND (100)
F4 PHCs (C34-C50)	100	**500**	ND (100)	NA	ND (100)	ND (100)	ND (100)
Semi-Volatiles (PAHs)							
Acenaphthene	0.05	**600**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Acenaphthylene	0.05	**1.8**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Anthracene	0.01	**2.4**	ND (0.01)	N/A	ND (0.01)	N/A	ND (0.01)
Benzo[a]anthracene	0.01	**4.7**	ND (0.01)	N/A	ND (0.01)	N/A	ND (0.01)
Benzo[a]pyrene	0.01	**0.81**	ND (0.01)	N/A	ND (0.01)	N/A	ND (0.01)
Benzo[b]fluoranthene	0.05	**0.75**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Benzo[g,h,i]perylene	0.05	**0.2**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Benzo[k]fluoranthene	0.05	**0.4**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Chrysene	0.05	**1**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Dibenzo[a,h]anthracene	0.05	**0.52**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Fluoranthene	0.01	**130**	ND (0.01)	N/A	ND (0.01)	N/A	ND (0.01)
Fluorene	0.05	**400**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Indeno [1,2,3-cd] pyrene	0.05	**0.2**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
1-Methylnaphthalene	0.05	**1800**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
2-Methylnaphthalene	0.05	**1800**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Methylnaphthalene (1&2)	0.1	**1800**	ND (0.1)	N/A	ND (0.1)	N/A	ND (0.1)
Naphthalene	0.05	**1400**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Phenanthrene	0.05	**580**	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Pyrene	0.01	**68**	ND (0.01)	N/A	ND (0.01)	N/A	ND (0.01)

Notes:
µg/L - all concentrations provided in micrograms per litre (parts per billion)
MDL - reported analytical method detection limit
ppm - parts per million
NV - no standard listed
"<" or "ND ( )" - less than detection limits indicated (refer to laboratory report)
NA - not applicable or not analysed
MECP Table 3 SCS - Ontario Ministry of Environment, Conservation and Parks (MECP) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. April, 2011.
Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, institutional land use, coarse textured soil.
Bold / Italic - indicates concentration above applicable MECP Table 3 SCS
0.5 - MDL above applicable MECP Table 3 SCS (refer to laboratory reports)

APPENDIX A

BOREHOLE LOGS

Phase Two Environmental Site Assessment

150 Abbeyhill Drive,

Kanata, Ontario

Ottawa-Carleton District School Board

ER1086

Monitoring Well LOG

CLIENT: **OCDSB**
PROJECT: **Phase II Environmental Site Assessment**
150 Abbyhill Drive
Kanata, Ontario
AY Jackson Secondary School

CM³ JOB NO: ER1086

Monitoring Well NO: MW1

GROUND ELEVATION: *97.47 m*
TOP ELEVATION: *97.30 m*

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0.0										97
		MW1 SA1			**TOPSOIL** silty clay and organics, brown, dry **silty CLAY** brown, dry	0.0			roadbox, jplug, cement	
					sandy CLAY brown, dry				bentonite seal	
1.0		MW1 SA2			**CLAY** low plasticity, brown, moist	5.0			50 mm solid PVC pipe	96
									GW = 1.539 mbg (2024-08-25)	
		MW1 SA3				15.0				
2.0										95
		MW1 SA4			**silty CLAY** high plasticity, grey, wet	5.0				
3.0									50 mm 010 slot PVC pipe	94
		MW1 SA5				25.0				
									silica sand	
4.0		MW1 SA6				20.0				93
					silty CLAY fine to medium sand, Practical refusal at 4.69 m bg., grey, wet				end cap	
					End of monitoring well at 4.69 m					
5.0										
					Groundwater Information: Depth to groundwater from TOP = 1.365 m (2024-08-25)					
6.0										

DRILL DATE: 2024 July 24
DRILLED BY: OGS
DRILLING METHOD: CME Drill Rig
BOREHOLE DIAMETER: .15 m (OD)
LOGGED BY: KS
CHECKED BY: ER

NOTES: SPLIT SPOON NO RECOVERY

CM3LOG BH_MW AAXXXX BH LOG EXAMPLE.GPJ CM3 TEMPLATE V6.0.GDT 24-9-23

Monitoring Well LOG

CLIENT: **OCDSB**
PROJECT: **Phase II Environmental Site Assessment**
150 Abbyhill Drive
Kanata, Ontario
AY Jackson Secondary School

CM³ JOB NO: ER1086

Monitoring Well NO: MW2

GROUND ELEVATION: *98.60 m*
TOP ELEVATION: *98.43 m*

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0.0					**TOPSOIL** silty clay and organics, brown, dry				roadbox, jplug, cement	99
		MW2 SA1			**GRAVEL** construction fill, grey, dry	5.0				
					sandy CLAY trace gravel, brown, dry				bentonite seal	
1.0		MW2 SA2				5.0			50 mm solid PVC pipe	98
					SAND brown, moist					
		MW2 SA3			**CLAY** low plasticity, grey, moist					
2.0					**silty CLAY** fine to medium sand, tracd gravel at bottom, Practical refusal at 4.57 m bg., grey, wet					97
		MW2 SA4				20.0			GW = 2.393 mbg (2024-08-25)	
3.0									50 mm 010 slot PVC pipe	96
		MW2 SA5				20.0				
									silica sand	
4.0		MW2 SA6				15.0				95
									end cap	
					End of monitoring well at 4.56 m					
5.0					Groundwater Information: Depth to groundwater from TOP = 2.225 m (2024-08-25)					
6.0										

DRILL DATE: 2024 July 24
DRILLED BY: OGS
DRILLING METHOD: CME Drill Rig
BOREHOLE DIAMETER: .15 m (OD)
LOGGED BY: KS
CHECKED BY: ER

NOTES: SPLIT SPOON

CM3LOG BH_MW AAXXXX BH LOG EXAMPLE.GPJ CM3 TEMPLATE V6.0.GDT 24-9-23

cm3 environmental

CM³ JOB NO: ER1086

CLIENT: **OCDSB**
PROJECT: **Phase II Environmental Site Assessment**
150 Abbyhill Drive
Kanata, Ontario
AY Jackson Secondary School

Borehole LOG

Borehole NO: BH3

GROUND ELEVATION: *98.70 m*
TOP ELEVATION: *NA*

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 10 100 1000	BOREHOLE COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0					**TOPSOIL** silty clay and organics, brown, dry					
		BH3 SA1			**sandy CLAY** brown, dry					
1.0		BH3 SA2								98
					SAND fill, brown, dry					
		BH3 SA3			**CLAY** low plasticity, brown, dry					
2.0										97
		MW1 SA4								
3.0					End of borehole at 2.84 m Spilt spoon refulsal 2.84 m					
4.0										
5.0										
6.0										
7.0										

DRILL DATE: 2024 July 24
DRILLED BY: OGS
DRILLING METHOD: CME Drill Rig
BOREHOLE DIAMETER: .15 m (OD)
LOGGED BY: KS
CHECKED BY: ER

NOTES: SPLIT SPOON

CM3LOG BH_MW AAXXXX BH LOG EXAMPLE.GPJ CM3 TEMPLATE V6.0.GDT 24-9-23

cm3 environmental

CM³ JOB NO: ER1086

CLIENT: **OCDSB**
PROJECT: **Phase II Environmental Site Assessment**
150 Abbyhill Drive
Kanata, Ontario
AY Jackson Secondary School

Monitoring Well LOG

Monitoring Well NO: MW4

GROUND ELEVATION: *100.16 m*
TOP ELEVATION: *100.00 m*

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0.0						10 100 1000				100
		MW4 SA1			**TOPSOIL** silty clay and organics, brown, dry	0.0			roadbox, jplug, cement	
					CLAY low plasticity, brown, dry				bentonite seal	
1.0		MW4 SA2				0.0			50 mm solid PVC pipe	99
		MW4 SA3				5.0				98
2.0										
		MW4 SA4			**CLAY** high plasticity, grey, wet	15.0			GW = 2.468 mbg (2024-08-25)	
									50 mm 010 slot PVC pipe	
3.0		MW4 SA5				35.0				97
									silica sand	
4.0		MW4 SA6				20.0				96
									end cap	
					End of monitoring well at 4.42 m Split spoon refusal at 4.42 m					
5.0					Groundwater Information: Depth to groundwater from TOP = 2.306 m (2024-08-25)					
6.0										

DRILL DATE: 2024 August 12
DRILLED BY: OGS
DRILLING METHOD: CME Drill Rig
BOREHOLE DIAMETER: .15 m (OD)
LOGGED BY: KS
CHECKED BY: ER

NOTES: SPLIT SPOON

CM3LOG BH_MW AAXXXX BH LOG EXAMPLE.GPJ CM3 TEMPLATE V6.0.GDT 24-9-23

Monitoring Well LOG

CLIENT: **OCDSB**
PROJECT: **Phase II Environmental Site Assessment**
150 Abbyhill Drive
Kanata, Ontario
AY Jackson Secondary School

CM³ JOB NO: ER1086

Monitoring Well NO: MW5

GROUND ELEVATION: *99.62 m*
TOP ELEVATION: *99.88 m*

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0.0					**TOPSOIL** silty clay and organics, brown, dry					100
		MW5SA1			**CLAY** low plasticity, brown, dry	0.0			roadbox, jplug, cement bentonite seal	
1.0		MW5 SA2				0.0			50 mm solid PVC pipe	99
2.0		MW5 SA3								98
		MW5 SA4				5.0			GW = 2.296 mbg (2024-08-25) 50 mm 010 slot PVC pipe	
3.0					**CLAY** high plasticity, grey, wet					97
		MW5 SA5			**sandy CLAY** trace gravel, grey, wet				silica sand	
4.0		MW5 SA6							end cap	96
					End of monitoring well at 4.42 m					
5.0					Groundwater Information: Depth to groundwater from TOP = 2.558 m (2024-08-25)					
6.0										

DRILL DATE: 2024 August 12
DRILLED BY: OGS
DRILLING METHOD: CME Drill Rig
BOREHOLE DIAMETER: .15 m (OD)
LOGGED BY: KS
CHECKED BY: ER

NOTES: SPLIT SPOON

CM3LOG BH_MW AAXXXX BH LOG EXAMPLE.GPJ CM3 TEMPLATE V6.0.GDT 24-9-23

Monitoring Well LOG

CLIENT: **OCDSB**
PROJECT: **Phase II Environmental Site Assessment**
150 Abbyhill Drive
Kanata, Ontario
AY Jackson Secondary School

CM³ JOB NO: ER1086

Monitoring Well NO: MW6

GROUND ELEVATION: *97.82 m*
TOP ELEVATION: *97.66 m*

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0.0						10 100 1000				98
		MW6SA1			**TOPSOIL** silty clay and organics, brown, dry **CLAY** low plasticity, brown, dry	0.0			roadbox, jplug, cement	
1.0		MW6 SA2				5.0			GW = 0.634 mbg (2024-08-25) bentonite seal	97
2.0		MW6 SA3				5.0				96
					CLAY high plasticity, grey, wet				50 mm solid PVC pipe	
		MW6 SA4				15.0				
3.0										95
		MW6 SA5				25.0			silica sand	
4.0		MW6 SA6			**sandy CLAY** trace gravel, Practical refusal at 5.7 m bg., grey, wet	40.0			50 mm 010 slot PVC pipe	94
		MW6 SA7				40.0				
5.0									end cap	93
6.0					End of monitoring well at 5.70 m Groundwater Information: Depth to groundwater from TOP = 0.476 m (2024-08-25)					

DRILL DATE: 2024 August 12
DRILLED BY: OGS
DRILLING METHOD: CME Drill Rig
BOREHOLE DIAMETER: .15 m (OD)
LOGGED BY: KS
CHECKED BY: ER

NOTES: SPLIT SPOON NO RECOVERY

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSIS

Phase Two Environmental Site Assessment

150 Abbeyhill Drive,

Kanata, Ontario

Ottawa-Carleton District School Board

ER1086

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Certificate of Analysis

CM3 Environmental Inc.
5710 Akins Road
Ottawa, ON K2S 1B8
Attn: Ethan Risk

Client PO: ER1086 AY Jackson
Project: ER1086
Custody: 72050

Report Date: 28-Aug-2024
Order Date: 22-Aug-2024

Order #: 2434404

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2434404-01	MW1
2434404-02	MW2
2434404-03	MW4
2434404-04	MW5
2434404-05	MW6

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	23-Aug-24	23-Aug-24
PHC F1	CWS Tier 1 - P&T GC-FID	23-Aug-24	23-Aug-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	23-Aug-24	26-Aug-24
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	27-Aug-24	27-Aug-24
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	23-Aug-24	23-Aug-24

	Client ID:	MW1	MW2	MW4	MW5	-	-
	Sample Date:	22-Aug-24 09:00	22-Aug-24 09:00	22-Aug-24 09:00	22-Aug-24 09:00		
	Sample ID:	2434404-01	2434404-02	2434404-03	2434404-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
Acetone	5.0 ug/L	-	<5.0	-	<5.0	-	-
Benzene	0.5 ug/L	-	<0.5	-	<0.5	-	-
Bromodichloromethane	0.5 ug/L	-	<0.5	-	<0.5	-	-
Bromoform	0.5 ug/L	-	<0.5	-	<0.5	-	-
Bromomethane	0.5 ug/L	-	<0.5	-	<0.5	-	-
Carbon Tetrachloride	0.2 ug/L	-	<0.2	-	<0.2	-	-
Chlorobenzene	0.5 ug/L	-	<0.5	-	<0.5	-	-
Chloroform	0.5 ug/L	-	<0.5	-	<0.5	-	-
Dibromochloromethane	0.5 ug/L	-	<0.5	-	<0.5	-	-
Dichlorodifluoromethane	1.0 ug/L	-	<1.0	-	<1.0	-	-
1,2-Dichlorobenzene	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,3-Dichlorobenzene	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,4-Dichlorobenzene	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,1-Dichloroethane	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,2-Dichloroethane	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,1-Dichloroethylene	0.5 ug/L	-	<0.5	-	<0.5	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	-	<0.5	-	<0.5	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,2-Dichloropropane	0.5 ug/L	-	<0.5	-	<0.5	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	-	<0.5	-	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	-	<0.5	-	<0.5	-	-
Ethylene dibromide (dibromoethane,	0.2 ug/L	-	<0.2	-	<0.2	-	-
Ethylbenzene	0.5 ug/L	-	<0.5	-	<0.5	-	-
Hexane	1.0 ug/L	-	<1.0	-	<1.0	-	-

	Client ID:	MW1	MW2	MW4	MW5	-	-
	Sample Date:	22-Aug-24 09:00	22-Aug-24 09:00	22-Aug-24 09:00	22-Aug-24 09:00		
	Sample ID:	2434404-01	2434404-02	2434404-03	2434404-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	-	<5.0	-	<5.0	-	-
Methyl Isobutyl Ketone	5.0 ug/L	-	<5.0	-	<5.0	-	-
Methyl tert-butyl ether	2.0 ug/L	-	<2.0	-	<2.0	-	-
Methylene Chloride	5.0 ug/L	-	<5.0	-	<5.0	-	-
Styrene	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	-	<0.5	-	<0.5	-	-
Tetrachloroethylene	0.5 ug/L	-	<0.5	-	<0.5	-	-
Toluene	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,1,1-Trichloroethane	0.5 ug/L	-	<0.5	-	<0.5	-	-
1,1,2-Trichloroethane	0.5 ug/L	-	<0.5	-	<0.5	-	-
Trichloroethylene	0.5 ug/L	-	<0.5	-	<0.5	-	-
Trichlorofluoromethane	1.0 ug/L	-	<1.0	-	<1.0	-	-
Vinyl chloride	0.5 ug/L	-	<0.5	-	<0.5	-	-
m,p-Xylenes	0.5 ug/L	-	<0.5	-	<0.5	-	-
o-Xylene	0.5 ug/L	-	<0.5	-	<0.5	-	-
Xylenes, total	0.5 ug/L	-	<0.5	-	<0.5	-	-
4-Bromofluorobenzene	Surrogate	-	108%	-	109%	-	-
Toluene-d8	Surrogate	-	94.4%	-	93.8%	-	-
Dibromofluoromethane	Surrogate	-	88.7%	-	91.0%	-	-
Benzene	0.5 ug/L	<0.5	-	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	<0.5	-	-	-
Toluene	0.5 ug/L	<0.5	-	<0.5	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	<0.5	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	<0.5	-	-	-

	Client ID:	MW1	MW2	MW4	MW5	-	-
	Sample Date:	22-Aug-24 09:00	22-Aug-24 09:00	22-Aug-24 09:00	22-Aug-24 09:00		
	Sample ID:	2434404-01	2434404-02	2434404-03	2434404-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
Xylenes, total	0.5 ug/L	<0.5	-	<0.5	-	-	-
Toluene-d8	Surrogate	94.1%	-	94.8%	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	-	<25	<25	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	<100	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	<100	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	<100	<100	-	-
Semi-Volatiles							
Acenaphthene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Acenaphthylene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Anthracene	0.01 ug/L	<0.01	-	<0.01	-	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	-	<0.01	-	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	-	<0.01	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Chrysene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Fluoranthene	0.01 ug/L	<0.01	-	<0.01	-	-	-
Fluorene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	<0.05	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	-	<0.05	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	-	<0.10	-	-	-
Naphthalene	0.05 ug/L	<0.05	-	<0.05	-	-	-

	Client ID:	MW1	MW2	MW4	MW5	-	-
	Sample Date:	22-Aug-24 09:00	22-Aug-24 09:00	22-Aug-24 09:00	22-Aug-24 09:00		
	Sample ID:	2434404-01	2434404-02	2434404-03	2434404-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Semi-Volatiles							
Phenanthrene	0.05 ug/L	<0.05	-	<0.05	-	-	-
Pyrene	0.01 ug/L	<0.01	-	<0.01	-	-	-
2-Fluorobiphenyl	Surrogate	81.0%	-	122%	-	-	-
Terphenyl-d14	Surrogate	80.0%	-	81.2%	-	-	-

	Client ID:	MW6				-	-
	Sample Date:	22-Aug-24 09:00					
	Sample ID:	2434404-05					
	Matrix:	Ground Water					
	MDL/Units						
Volatiles							
Benzene	0.5 ug/L	<0.5	-	-	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-	-	-
Toluene	0.5 ug/L	<0.5	-	-	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-	-	-
Xylenes, total	0.5 ug/L	<0.5	-	-	-	-	-
Toluene-d8	Surrogate	95.0%	-	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-	-	-
Semi-Volatiles							
Acenaphthene	0.05 ug/L	<0.05	-	-	-	-	-
Acenaphthylene	0.05 ug/L	<0.05	-	-	-	-	-
Anthracene	0.01 ug/L	<0.01	-	-	-	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	-	-	-	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	-	-	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	-	-	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	-	-	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	-	-	-	-	-
Chrysene	0.05 ug/L	<0.05	-	-	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	-	-	-	-
Fluoranthene	0.01 ug/L	0.02	-	-	-	-	-
Fluorene	0.05 ug/L	<0.05	-	-	-	-	-

	Client ID:	MW6				-	-
	Sample Date:	22-Aug-24 09:00					
	Sample ID:	2434404-05					
	Matrix:	Ground Water					
	MDL/Units						
Semi-Volatiles							
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	-	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	-	-	-	-	-
Naphthalene	0.05 ug/L	<0.05	-	-	-	-	-
Phenanthrene	0.05 ug/L	<0.05	-	-	-	-	-
Pyrene	0.01 ug/L	0.03	-	-	-	-	-
2-Fluorobiphenyl	Surrogate	98.4%	-	-	-	-	-
Terphenyl-d14	Surrogate	77.5%	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F1 PHCs (C6-C10)	ND	25	ug/L					
F2 PHCs (C10-C16)	ND	100	ug/L					
F3 PHCs (C16-C34)	ND	100	ug/L					
F4 PHCs (C34-C50)	ND	100	ug/L					
Semi-Volatiles								
Acenaphthene	ND	0.05	ug/L					
Acenaphthylene	ND	0.05	ug/L					
Anthracene	ND	0.01	ug/L					
Benzo [a] anthracene	ND	0.01	ug/L					
Benzo [a] pyrene	ND	0.01	ug/L					
Benzo [b] fluoranthene	ND	0.05	ug/L					
Benzo [g,h,i] perylene	ND	0.05	ug/L					
Benzo [k] fluoranthene	ND	0.05	ug/L					
Chrysene	ND	0.05	ug/L					
Dibenzo [a,h] anthracene	ND	0.05	ug/L					
Fluoranthene	ND	0.01	ug/L					
Fluorene	ND	0.05	ug/L					
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L					
1-Methylnaphthalene	ND	0.05	ug/L					
2-Methylnaphthalene	ND	0.05	ug/L					
Methylnaphthalene (1&2)	ND	0.10	ug/L					
Naphthalene	ND	0.05	ug/L					
Phenanthrene	ND	0.05	ug/L					
Pyrene	ND	0.01	ug/L					
Surrogate: 2-Fluorobiphenyl	*18.9*		*%*	*94.6*	*50-140*			
Surrogate: Terphenyl-d14	*11.3*		*%*	*56.3*	*50-140*			
Volatiles								
Acetone	ND	5.0	ug/L					
Benzene	ND	0.5	ug/L					
Bromodichloromethane	ND	0.5	ug/L					
Bromoform	ND	0.5	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromomethane	ND	0.5	ug/L					
Carbon Tetrachloride	ND	0.2	ug/L					
Chlorobenzene	ND	0.5	ug/L					
Chloroform	ND	0.5	ug/L					
Dibromochloromethane	ND	0.5	ug/L					
Dichlorodifluoromethane	ND	1.0	ug/L					
1,2-Dichlorobenzene	ND	0.5	ug/L					
1,3-Dichlorobenzene	ND	0.5	ug/L					
1,4-Dichlorobenzene	ND	0.5	ug/L					
1,1-Dichloroethane	ND	0.5	ug/L					
1,2-Dichloroethane	ND	0.5	ug/L					
1,1-Dichloroethylene	ND	0.5	ug/L					
cis-1,2-Dichloroethylene	ND	0.5	ug/L					
trans-1,2-Dichloroethylene	ND	0.5	ug/L					
1,2-Dichloropropane	ND	0.5	ug/L					
cis-1,3-Dichloropropylene	ND	0.5	ug/L					
trans-1,3-Dichloropropylene	ND	0.5	ug/L					
1,3-Dichloropropene, total	ND	0.5	ug/L					
Ethylbenzene	ND	0.5	ug/L					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L					
Hexane	ND	1.0	ug/L					
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L					
Methyl Isobutyl Ketone	ND	5.0	ug/L					
Methyl tert-butyl ether	ND	2.0	ug/L					
Methylene Chloride	ND	5.0	ug/L					
Styrene	ND	0.5	ug/L					
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L					
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L					
Tetrachloroethylene	ND	0.5	ug/L					
Toluene	ND	0.5	ug/L					
1,1,1-Trichloroethane	ND	0.5	ug/L					
1,1,2-Trichloroethane	ND	0.5	ug/L					
Trichloroethylene	ND	0.5	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Trichlorofluoromethane	ND	1.0	ug/L					
Vinyl chloride	ND	0.5	ug/L					
m,p-Xylenes	ND	0.5	ug/L					
o-Xylene	ND	0.5	ug/L					
Xylenes, total	ND	0.5	ug/L					
Surrogate: 4-Bromofluorobenzene	*83.7*		*%*	*105*	*50-140*			
Surrogate: Dibromofluoromethane	*63.4*		*%*	*79.3*	*50-140*			
Surrogate: Toluene-d8	*75.3*		*%*	*94.1*	*50-140*			
Benzene	ND	0.5	ug/L					
Ethylbenzene	ND	0.5	ug/L					
Toluene	ND	0.5	ug/L					
m,p-Xylenes	ND	0.5	ug/L					
o-Xylene	ND	0.5	ug/L					
Xylenes, total	ND	0.5	ug/L					
Surrogate: Toluene-d8	*75.3*		*%*	*94.1*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*86.4*		*%*		*108*	*50-140*			
Surrogate: Dibromofluoromethane	*71.9*		*%*		*89.9*	*50-140*			
Surrogate: Toluene-d8	*74.9*		*%*		*93.6*	*50-140*			
Benzene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: Toluene-d8	*74.9*		*%*		*93.6*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1740	25	ug/L	ND	86.9	85-115			
F2 PHCs (C10-C16)	1660	100	ug/L	ND	104	60-140			
F3 PHCs (C16-C34)	4300	100	ug/L	ND	110	60-140			
F4 PHCs (C34-C50)	2180	100	ug/L	ND	87.9	60-140			
Semi-Volatiles									
Acenaphthene	3.10	0.05	ug/L	ND	62.0	50-140			
Acenaphthylene	3.26	0.05	ug/L	ND	65.1	50-140			
Anthracene	4.90	0.01	ug/L	ND	98.0	50-140			
Benzo [a] anthracene	4.67	0.01	ug/L	ND	93.4	50-140			
Benzo [a] pyrene	4.47	0.01	ug/L	ND	89.4	50-140			
Benzo [b] fluoranthene	5.99	0.05	ug/L	ND	120	50-140			
Benzo [g,h,i] perylene	3.85	0.05	ug/L	ND	76.9	50-140			
Benzo [k] fluoranthene	6.60	0.05	ug/L	ND	132	50-140			
Chrysene	4.54	0.05	ug/L	ND	90.8	50-140			
Dibenzo [a,h] anthracene	3.91	0.05	ug/L	ND	78.2	50-140			
Fluoranthene	3.97	0.01	ug/L	ND	79.4	50-140			
Fluorene	3.01	0.05	ug/L	ND	60.1	50-140			
Indeno [1,2,3-cd] pyrene	4.15	0.05	ug/L	ND	83.1	50-140			
1-Methylnaphthalene	4.77	0.05	ug/L	ND	95.5	50-140			
2-Methylnaphthalene	3.97	0.05	ug/L	ND	79.3	50-140			
Naphthalene	6.00	0.05	ug/L	ND	120	50-140			
Phenanthrene	3.94	0.05	ug/L	ND	78.8	50-140			
Pyrene	4.03	0.01	ug/L	ND	80.6	50-140			
Surrogate: 2-Fluorobiphenyl	*18.9*		*%*		*94.4*	*50-140*			
Surrogate: Terphenyl-d14	*22.9*		*%*		*114*	*50-140*			
Volatiles									
Acetone	65.9	5.0	ug/L	ND	65.9	50-140			
Benzene	45.3	0.5	ug/L	ND	113	60-130			
Bromodichloromethane	31.6	0.5	ug/L	ND	78.9	60-130			
Bromoform	29.8	0.5	ug/L	ND	74.4	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromomethane	42.9	0.5	ug/L	ND	107	50-140			
Carbon Tetrachloride	25.0	0.2	ug/L	ND	62.5	60-130			
Chlorobenzene	35.9	0.5	ug/L	ND	89.8	60-130			
Chloroform	38.3	0.5	ug/L	ND	95.6	60-130			
Dibromochloromethane	27.7	0.5	ug/L	ND	69.3	60-130			
Dichlorodifluoromethane	35.8	1.0	ug/L	ND	89.6	50-140			
1,2-Dichlorobenzene	34.1	0.5	ug/L	ND	85.2	60-130			
1,3-Dichlorobenzene	33.5	0.5	ug/L	ND	83.8	60-130			
1,4-Dichlorobenzene	36.3	0.5	ug/L	ND	90.7	60-130			
1,1-Dichloroethane	36.2	0.5	ug/L	ND	90.6	60-130			
1,2-Dichloroethane	35.7	0.5	ug/L	ND	89.2	60-130			
1,1-Dichloroethylene	33.9	0.5	ug/L	ND	84.8	60-130			
cis-1,2-Dichloroethylene	32.7	0.5	ug/L	ND	81.6	60-130			
trans-1,2-Dichloroethylene	32.8	0.5	ug/L	ND	81.9	60-130			
1,2-Dichloropropane	39.1	0.5	ug/L	ND	97.7	60-130			
cis-1,3-Dichloropropylene	33.6	0.5	ug/L	ND	83.9	60-130			
trans-1,3-Dichloropropylene	35.9	0.5	ug/L	ND	89.8	60-130			
Ethylbenzene	40.5	0.5	ug/L	ND	101	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	36.5	0.2	ug/L	ND	91.3	60-130			
Hexane	33.3	1.0	ug/L	ND	83.2	60-130			
Methyl Ethyl Ketone (2-Butanone)	64.8	5.0	ug/L	ND	64.8	50-140			
Methyl Isobutyl Ketone	108	5.0	ug/L	ND	108	50-140			
Methyl tert-butyl ether	109	2.0	ug/L	ND	109	50-140			
Methylene Chloride	39.2	5.0	ug/L	ND	98.0	60-130			
Styrene	32.4	0.5	ug/L	ND	81.0	60-130			
1,1,1,2-Tetrachloroethane	31.2	0.5	ug/L	ND	78.0	60-130			
1,1,2,2-Tetrachloroethane	33.8	0.5	ug/L	ND	84.4	60-130			
Tetrachloroethylene	32.1	0.5	ug/L	ND	80.3	60-130			
Toluene	35.9	0.5	ug/L	ND	89.8	60-130			
1,1,1-Trichloroethane	30.1	0.5	ug/L	ND	75.2	60-130			
1,1,2-Trichloroethane	37.6	0.5	ug/L	ND	94.0	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Trichloroethylene	35.1	0.5	ug/L	ND	87.6	60-130			
Trichlorofluoromethane	38.7	1.0	ug/L	ND	96.7	60-130			
Vinyl chloride	36.3	0.5	ug/L	ND	90.7	50-140			
m,p-Xylenes	63.0	0.5	ug/L	ND	78.8	60-130			
o-Xylene	38.6	0.5	ug/L	ND	96.6	60-130			
Surrogate: 4-Bromofluorobenzene	*83.9*		*%*		*105*	*50-140*			
Surrogate: Dibromofluoromethane	*87.6*		*%*		*109*	*50-140*			
Surrogate: Toluene-d8	*75.9*		*%*		*94.9*	*50-140*			
Benzene	45.3	0.5	ug/L	ND	113	60-130			
Ethylbenzene	40.5	0.5	ug/L	ND	101	60-130			
Toluene	35.9	0.5	ug/L	ND	89.8	60-130			
m,p-Xylenes	63.0	0.5	ug/L	ND	78.8	60-130			
o-Xylene	38.6	0.5	ug/L	ND	96.6	60-130			
Surrogate: Toluene-d8	*75.9*		*%*		*94.9*	*50-140*			

Certificate of Analysis

Report Date: 28-Aug-2024

Client: **CM3 Environmental Inc.**

Order Date: 22-Aug-2024

Client PO: **ER1086 AY Jackson**

Project Description: ER1086

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

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Certificate of Analysis

CM3 Environmental Inc.
5710 Akins Road
Ottawa, ON K2S 1B8
Attn: Ethan Risk

Client PO: ER1086 OCDSB AY Jackson
Project: ER1086
Custody: 142741

Report Date: 31-Jul-2024
Order Date: 25-Jul-2024

Order #: 2430494

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2430494-01	MW1 SA5
2430494-02	MW2 SA5
2430494-03	MW3 SA5

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	29-Jul-24	30-Jul-24
PCBs, total	SW846 8082A - GC-ECD	29-Jul-24	30-Jul-24
PHC F1	CWS Tier 1 - P&T GC-FID	29-Jul-24	30-Jul-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	27-Jul-24	30-Jul-24
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	27-Jul-24	28-Jul-24
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	29-Jul-24	30-Jul-24
Solids, %	CWS Tier 1 - Gravimetric	26-Jul-24	29-Jul-24

	Client ID:	MW1 SA5	MW2 SA5	MW3 SA5	-	-	-
	Sample Date:	25-Jul-24 12:00	25-Jul-24 13:30	25-Jul-24 14:00	-		
	Sample ID:	2430494-01	2430494-02	2430494-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	60.7	89.8	82.0	-	-	-
Volatiles							
Acetone	0.50 ug/g	-	<0.50	-	-	-	-
Benzene	0.02 ug/g	-	<0.02	-	-	-	-
Bromodichloromethane	0.05 ug/g	-	<0.05	-	-	-	-
Bromoform	0.05 ug/g	-	<0.05	-	-	-	-
Bromomethane	0.05 ug/g	-	<0.05	-	-	-	-
Carbon Tetrachloride	0.05 ug/g	-	<0.05	-	-	-	-
Chlorobenzene	0.05 ug/g	-	<0.05	-	-	-	-
Chloroform	0.05 ug/g	-	<0.05	-	-	-	-
Dibromochloromethane	0.05 ug/g	-	<0.05	-	-	-	-
Dichlorodifluoromethane	0.05 ug/g	-	<0.05	-	-	-	-
1,2-Dichlorobenzene	0.05 ug/g	-	<0.05	-	-	-	-
1,3-Dichlorobenzene	0.05 ug/g	-	<0.05	-	-	-	-
1,4-Dichlorobenzene	0.05 ug/g	-	<0.05	-	-	-	-
1,1-Dichloroethane	0.05 ug/g	-	<0.05	-	-	-	-
1,2-Dichloroethane	0.05 ug/g	-	<0.05	-	-	-	-
1,1-Dichloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
cis-1,2-Dichloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
trans-1,2-Dichloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
1,2-Dichloropropane	0.05 ug/g	-	<0.05	-	-	-	-
cis-1,3-Dichloropropylene	0.05 ug/g	-	<0.05	-	-	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	-	<0.05	-	-	-	-
1,3-Dichloropropene, total	0.05 ug/g	-	<0.05	-	-	-	-
Ethylbenzene	0.05 ug/g	-	<0.05	-	-	-	-

	Client ID:	MW1 SA5	MW2 SA5	MW3 SA5	-	-	-
	Sample Date:	25-Jul-24 12:00	25-Jul-24 13:30	25-Jul-24 14:00	-		
	Sample ID:	2430494-01	2430494-02	2430494-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Volatiles							
Ethylene dibromide (dibromoethane,	0.05 ug/g	-	<0.05	-	-	-	-
Hexane	0.05 ug/g	-	<0.05	-	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g	-	<0.50	-	-	-	-
Methyl Isobutyl Ketone	0.50 ug/g	-	<0.50	-	-	-	-
Methyl tert-butyl ether	0.05 ug/g	-	<0.05	-	-	-	-
Methylene Chloride	0.05 ug/g	-	<0.05	-	-	-	-
Styrene	0.05 ug/g	-	<0.05	-	-	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g	-	<0.05	-	-	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g	-	<0.05	-	-	-	-
Tetrachloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
Toluene	0.05 ug/g	-	<0.05	-	-	-	-
1,1,1-Trichloroethane	0.05 ug/g	-	<0.05	-	-	-	-
1,1,2-Trichloroethane	0.05 ug/g	-	<0.05	-	-	-	-
Trichloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
Trichlorofluoromethane	0.05 ug/g	-	<0.05	-	-	-	-
Vinyl chloride	0.02 ug/g	-	<0.02	-	-	-	-
m,p-Xylenes	0.05 ug/g	-	<0.05	-	-	-	-
o-Xylene	0.05 ug/g	-	<0.05	-	-	-	-
Xylenes, total	0.05 ug/g	-	<0.05	-	-	-	-
Toluene-d8	Surrogate	-	122%	-	-	-	-
Dibromofluoromethane	Surrogate	-	123%	-	-	-	-
4-Bromofluorobenzene	Surrogate	-	106%	-	-	-	-
Benzene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Ethylbenzene	0.05 ug/g	<0.05	-	<0.05	-	-	-
Toluene	0.05 ug/g	<0.05	-	<0.05	-	-	-

Certificate of Analysis

Report Date: 31-Jul-2024

Client: **CM3 Environmental Inc.**

Order Date: 25-Jul-2024

Client PO: **ER1086 OCDSB AY Jackson**

Project Description: ER1086

	Client ID:	MW1 SA5	MW2 SA5	MW3 SA5	-		
	Sample Date:	25-Jul-24 12:00	25-Jul-24 13:30	25-Jul-24 14:00	-	-	-
	Sample ID:	2430494-01	2430494-02	2430494-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Volatiles							
m,p-Xylenes	0.05 ug/g	<0.05	-	<0.05	-	-	-
o-Xylene	0.05 ug/g	<0.05	-	<0.05	-	-	-
Xylenes, total	0.05 ug/g	<0.05	-	<0.05	-	-	-
Toluene-d8	Surrogate	134%	-	126%	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	-	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g	<4	-	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g	<8	-	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g	<6	-	<6	-	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	-	-	-	-	-
Acenaphthylene	0.02 ug/g	<0.02	-	-	-	-	-
Anthracene	0.02 ug/g	<0.02	-	-	-	-	-
Benzo [a] anthracene	0.02 ug/g	<0.02	-	-	-	-	-
Benzo [a] pyrene	0.02 ug/g	<0.02	-	-	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	<0.02	-	-	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	-	-	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	<0.02	-	-	-	-	-
Chrysene	0.02 ug/g	<0.02	-	-	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	-	-	-	-	-
Fluoranthene	0.02 ug/g	<0.02	-	-	-	-	-
Fluorene	0.02 ug/g	<0.02	-	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	-	-	-	-	-
1-Methylnaphthalene	0.02 ug/g	<0.02	-	-	-	-	-
2-Methylnaphthalene	0.02 ug/g	<0.02	-	-	-	-	-

	Client ID:	MW1 SA5	MW2 SA5	MW3 SA5	-		
	Sample Date:	25-Jul-24 12:00	25-Jul-24 13:30	25-Jul-24 14:00	-	-	-
	Sample ID:	2430494-01	2430494-02	2430494-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Semi-Volatiles							
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	-	-	-	-	-
Naphthalene	0.01 ug/g	<0.01	-	-	-	-	-
Phenanthrene	0.02 ug/g	<0.02	-	-	-	-	-
Pyrene	0.02 ug/g	<0.02	-	-	-	-	-
2-Fluorobiphenyl	Surrogate	67.3%	-	-	-	-	-
Terphenyl-d14	Surrogate	95.3%	-	-	-	-	-
PCBs							
PCBs, total	0.05 ug/g	-	-	<0.05	-	-	-
Decachlorobiphenyl	Surrogate	-	-	135%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
PCBs								
PCBs, total	ND	0.05	ug/g					
Surrogate: Decachlorobiphenyl	*0.129*		*%*	*129*	*60-140*			
Semi-Volatiles								
Acenaphthene	ND	0.02	ug/g					
Acenaphthylene	ND	0.02	ug/g					
Anthracene	ND	0.02	ug/g					
Benzo [a] anthracene	ND	0.02	ug/g					
Benzo [a] pyrene	ND	0.02	ug/g					
Benzo [b] fluoranthene	ND	0.02	ug/g					
Benzo [g,h,i] perylene	ND	0.02	ug/g					
Benzo [k] fluoranthene	ND	0.02	ug/g					
Chrysene	ND	0.02	ug/g					
Dibenzo [a,h] anthracene	ND	0.02	ug/g					
Fluoranthene	ND	0.02	ug/g					
Fluorene	ND	0.02	ug/g					
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g					
1-Methylnaphthalene	ND	0.02	ug/g					
2-Methylnaphthalene	ND	0.02	ug/g					
Methylnaphthalene (1&2)	ND	0.04	ug/g					
Naphthalene	ND	0.01	ug/g					
Phenanthrene	ND	0.02	ug/g					
Pyrene	ND	0.02	ug/g					
Surrogate: 2-Fluorobiphenyl	*1.01*		*%*	*76.1*	*50-140*			
Surrogate: Terphenyl-d14	*1.09*		*%*	*81.7*	*50-140*			
Volatiles								
Acetone	ND	0.50	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzene	ND	0.02	ug/g					
Bromodichloromethane	ND	0.05	ug/g					
Bromoform	ND	0.05	ug/g					
Bromomethane	ND	0.05	ug/g					
Carbon Tetrachloride	ND	0.05	ug/g					
Chlorobenzene	ND	0.05	ug/g					
Chloroform	ND	0.05	ug/g					
Dibromochloromethane	ND	0.05	ug/g					
Dichlorodifluoromethane	ND	0.05	ug/g					
1,2-Dichlorobenzene	ND	0.05	ug/g					
1,3-Dichlorobenzene	ND	0.05	ug/g					
1,4-Dichlorobenzene	ND	0.05	ug/g					
1,1-Dichloroethane	ND	0.05	ug/g					
1,2-Dichloroethane	ND	0.05	ug/g					
1,1-Dichloroethylene	ND	0.05	ug/g					
cis-1,2-Dichloroethylene	ND	0.05	ug/g					
trans-1,2-Dichloroethylene	ND	0.05	ug/g					
1,2-Dichloropropane	ND	0.05	ug/g					
cis-1,3-Dichloropropylene	ND	0.05	ug/g					
trans-1,3-Dichloropropylene	ND	0.05	ug/g					
1,3-Dichloropropene, total	ND	0.05	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g					
Hexane	ND	0.05	ug/g					
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g					
Methyl Isobutyl Ketone	ND	0.50	ug/g					
Methyl tert-butyl ether	ND	0.05	ug/g					
Methylene Chloride	ND	0.05	ug/g					
Styrene	ND	0.05	ug/g					
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g					
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g					
Tetrachloroethylene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,1-Trichloroethane	ND	0.05	ug/g					
1,1,2-Trichloroethane	ND	0.05	ug/g					
Trichloroethylene	ND	0.05	ug/g					
Trichlorofluoromethane	ND	0.05	ug/g					
Vinyl chloride	ND	0.02	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: 4-Bromofluorobenzene	*8.29*		*%*	*104*	*50-140*			
Surrogate: Dibromofluoromethane	*8.10*		*%*	*101*	*50-140*			
Surrogate: Toluene-d8	*9.14*		*%*	*114*	*50-140*			
Benzene	ND	0.02	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: Toluene-d8	*9.14*		*%*	*114*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	21	8	ug/g	26			24.0	30	
F4 PHCs (C34-C50)	ND	6	ug/g	15			NC	30	
PCBs									
PCBs, total	ND	0.05	ug/g	ND			NC	40	
Surrogate: Decachlorobiphenyl	*0.0877*		*%*		*72.0*	*60-140*			
Physical Characteristics									
% Solids	78.8	0.1	% by Wt.	78.5			0.5	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.27*		*%*		*72.8*	*50-140*			
Surrogate: Terphenyl-d14	*1.49*		*%*		*85.4*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	ND	0.50	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g	ND			NC	50	
m,p-Xylenes	0.166	0.05	ug/g	0.199			18.4	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*11.1*		*%*		*113*	*50-140*			
Surrogate: Dibromofluoromethane	*12.0*		*%*		*122*	*50-140*			
Surrogate: Toluene-d8	*12.0*		*%*		*122*	*50-140*			
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	0.166	0.05	ug/g	0.199			18.4	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: Toluene-d8	*12.0*		*%*		*122*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	183	7	ug/g	ND	107	85-115			
F2 PHCs (C10-C16)	97	4	ug/g	ND	88.6	60-140			
F3 PHCs (C16-C34)	263	8	ug/g	26	88.6	60-140			
F4 PHCs (C34-C50)	133	6	ug/g	15	69.6	60-140			
PCBs									
PCBs, total	0.572	0.05	ug/g	ND	118	60-140			
Surrogate: Decachlorobiphenyl	*0.158*		*%*		*130*	*60-140*			
Semi-Volatiles									
Acenaphthene	0.175	0.02	ug/g	ND	80.1	50-140			
Acenaphthylene	0.153	0.02	ug/g	ND	70.1	50-140			
Anthracene	0.188	0.02	ug/g	ND	86.3	50-140			
Benzo [a] anthracene	0.147	0.02	ug/g	ND	67.5	50-140			
Benzo [a] pyrene	0.123	0.02	ug/g	ND	56.3	50-140			
Benzo [b] fluoranthene	0.174	0.02	ug/g	ND	80.0	50-140			
Benzo [g,h,i] perylene	0.128	0.02	ug/g	ND	58.6	50-140			
Benzo [k] fluoranthene	0.227	0.02	ug/g	ND	104	50-140			
Chrysene	0.168	0.02	ug/g	ND	77.1	50-140			
Dibenzo [a,h] anthracene	0.124	0.02	ug/g	ND	57.0	50-140			
Fluoranthene	0.187	0.02	ug/g	ND	85.5	50-140			
Fluorene	0.159	0.02	ug/g	ND	72.7	50-140			
Indeno [1,2,3-cd] pyrene	0.132	0.02	ug/g	ND	60.4	50-140			
1-Methylnaphthalene	0.123	0.02	ug/g	ND	56.5	50-140			
2-Methylnaphthalene	0.126	0.02	ug/g	ND	58.0	50-140			
Naphthalene	0.150	0.01	ug/g	ND	68.6	50-140			
Phenanthrene	0.159	0.02	ug/g	ND	72.8	50-140			
Pyrene	0.175	0.02	ug/g	ND	80.4	50-140			
Surrogate: 2-Fluorobiphenyl	*1.18*		*%*		*67.6*	*50-140*			
Surrogate: Terphenyl-d14	*1.73*		*%*		*98.9*	*50-140*			
Volatiles									
Acetone	10.2	0.50	ug/g	ND	102	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzene	4.55	0.02	ug/g	ND	114	60-130			
Bromodichloromethane	4.87	0.05	ug/g	ND	122	60-130			
Bromoform	3.94	0.05	ug/g	ND	98.4	60-130			
Bromomethane	4.23	0.05	ug/g	ND	106	50-140			
Carbon Tetrachloride	4.96	0.05	ug/g	ND	124	60-130			
Chlorobenzene	4.54	0.05	ug/g	ND	113	60-130			
Chloroform	4.64	0.05	ug/g	ND	116	60-130			
Dibromochloromethane	4.65	0.05	ug/g	ND	116	60-130			
Dichlorodifluoromethane	4.10	0.05	ug/g	ND	103	50-140			
1,2-Dichlorobenzene	4.34	0.05	ug/g	ND	109	60-130			
1,3-Dichlorobenzene	4.42	0.05	ug/g	ND	110	60-130			
1,4-Dichlorobenzene	4.26	0.05	ug/g	ND	106	60-130			
1,1-Dichloroethane	4.72	0.05	ug/g	ND	118	60-130			
1,2-Dichloroethane	4.81	0.05	ug/g	ND	120	60-130			
1,1-Dichloroethylene	4.35	0.05	ug/g	ND	109	60-130			
cis-1,2-Dichloroethylene	4.53	0.05	ug/g	ND	113	60-130			
trans-1,2-Dichloroethylene	4.49	0.05	ug/g	ND	112	60-130			
1,2-Dichloropropane	4.64	0.05	ug/g	ND	116	60-130			
cis-1,3-Dichloropropylene	4.77	0.05	ug/g	ND	119	60-130			
trans-1,3-Dichloropropylene	4.92	0.05	ug/g	ND	123	60-130			
Ethylbenzene	4.90	0.05	ug/g	ND	122	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	4.56	0.05	ug/g	ND	114	60-130			
Hexane	4.96	0.05	ug/g	ND	124	60-130			
Methyl Ethyl Ketone (2-Butanone)	10.9	0.50	ug/g	ND	109	50-140			
Methyl Isobutyl Ketone	11.2	0.50	ug/g	ND	112	50-140			
Methyl tert-butyl ether	10.7	0.05	ug/g	ND	107	50-140			
Methylene Chloride	3.86	0.05	ug/g	ND	96.5	60-130			
Styrene	4.74	0.05	ug/g	ND	118	60-130			
1,1,1,2-Tetrachloroethane	4.56	0.05	ug/g	ND	114	60-130			
1,1,2,2-Tetrachloroethane	4.19	0.05	ug/g	ND	105	60-130			
Tetrachloroethylene	4.60	0.05	ug/g	ND	115	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	4.77	0.05	ug/g	ND	119	60-130			
1,1,1-Trichloroethane	4.91	0.05	ug/g	ND	123	60-130			
1,1,2-Trichloroethane	4.29	0.05	ug/g	ND	107	60-130			
Trichloroethylene	4.32	0.05	ug/g	ND	108	60-130			
Trichlorofluoromethane	4.55	0.05	ug/g	ND	114	50-140			
Vinyl chloride	4.30	0.02	ug/g	ND	108	50-140			
m,p-Xylenes	9.83	0.05	ug/g	ND	123	60-130			
o-Xylene	4.80	0.05	ug/g	ND	120	60-130			
Surrogate: 4-Bromofluorobenzene	*8.18*		*%*		*102*	*50-140*			
Surrogate: Dibromofluoromethane	*7.89*		*%*		*98.7*	*50-140*			
Surrogate: Toluene-d8	*8.15*		*%*		*102*	*50-140*			
Benzene	4.55	0.02	ug/g	ND	114	60-130			
Ethylbenzene	4.90	0.05	ug/g	ND	122	60-130			
Toluene	4.77	0.05	ug/g	ND	119	60-130			
m,p-Xylenes	9.83	0.05	ug/g	ND	123	60-130			
o-Xylene	4.80	0.05	ug/g	ND	120	60-130			
Surrogate: Toluene-d8	*8.15*		*%*		*102*	*50-140*			

Certificate of Analysis

Report Date: 31-Jul-2024

Client: **CM3 Environmental Inc.**

Order Date: 25-Jul-2024

Client PO: **ER1086 OCDSB AY Jackson**

Project Description: ER1086

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

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Certificate of Analysis

CM3 Environmental Inc.
5710 Akins Road
Ottawa, ON K2S 1B8
Attn: Ethan Risk

Client PO: ER1086
Project: ER1086
Custody: 142744

Report Date: 28-Aug-2024
Order Date: 12-Aug-2024

Revised Report

Order #: 2433241

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2433241-01	MW4 SA5
2433241-02	MW5 SA5
2433241-03	MW6 SA6

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	15-Aug-24	16-Aug-24
PHC F1	CWS Tier 1 - P&T GC-FID	15-Aug-24	16-Aug-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	16-Aug-24	17-Aug-24
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	19-Aug-24	20-Aug-24
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	15-Aug-24	16-Aug-24
Solids, %	CWS Tier 1 - Gravimetric	16-Aug-24	19-Aug-24

Certificate of Analysis

Report Date: 28-Aug-2024

Client: **CM3 Environmental Inc.**

Order Date: 12-Aug-2024

Client PO: **ER1086**

Project Description: ER1086

	Client ID:	MW4 SA5	MW5 SA5	MW6 SA6	-	-	-
	Sample Date:	12-Aug-24 09:00	12-Aug-24 09:00	12-Aug-24 09:00	-		
	Sample ID:	2433241-01	2433241-02	2433241-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	62.6	85.3	84.8	-	-	-
Volatiles							
Acetone	0.50 ug/g	-	<0.50	-	-	-	-
Benzene	0.02 ug/g	-	<0.02	-	-	-	-
Bromodichloromethane	0.05 ug/g	-	<0.05	-	-	-	-
Bromoform	0.05 ug/g	-	<0.05	-	-	-	-
Bromomethane	0.05 ug/g	-	<0.05	-	-	-	-
Carbon Tetrachloride	0.05 ug/g	-	<0.05	-	-	-	-
Chlorobenzene	0.05 ug/g	-	<0.05	-	-	-	-
Chloroform	0.05 ug/g	-	<0.05	-	-	-	-
Dibromochloromethane	0.05 ug/g	-	<0.05	-	-	-	-
Dichlorodifluoromethane	0.05 ug/g	-	<0.05	-	-	-	-
1,2-Dichlorobenzene	0.05 ug/g	-	<0.05	-	-	-	-
1,3-Dichlorobenzene	0.05 ug/g	-	<0.05	-	-	-	-
1,4-Dichlorobenzene	0.05 ug/g	-	<0.05	-	-	-	-
1,1-Dichloroethane	0.05 ug/g	-	<0.05	-	-	-	-
1,2-Dichloroethane	0.05 ug/g	-	<0.05	-	-	-	-
1,1-Dichloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
cis-1,2-Dichloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
trans-1,2-Dichloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
1,2-Dichloropropane	0.05 ug/g	-	<0.05	-	-	-	-
cis-1,3-Dichloropropylene	0.05 ug/g	-	<0.05	-	-	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	-	<0.05	-	-	-	-
1,3-Dichloropropene, total	0.05 ug/g	-	<0.05	-	-	-	-
Ethylene dibromide (dibromoethane,	0.05 ug/g	-	<0.05	-	-	-	-

	Client ID:	MW4 SA5	MW5 SA5	MW6 SA6	-	-	-
	Sample Date:	12-Aug-24 09:00	12-Aug-24 09:00	12-Aug-24 09:00	-		
	Sample ID:	2433241-01	2433241-02	2433241-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Volatiles							
Ethylbenzene	0.05 ug/g	-	<0.05	-	-	-	-
Hexane	0.05 ug/g	-	<0.05	-	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g	-	<0.50	-	-	-	-
Methyl Isobutyl Ketone	0.50 ug/g	-	<0.50	-	-	-	-
Methyl tert-butyl ether	0.05 ug/g	-	<0.05	-	-	-	-
Methylene Chloride	0.05 ug/g	-	<0.05	-	-	-	-
Styrene	0.05 ug/g	-	<0.05	-	-	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g	-	<0.05	-	-	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g	-	<0.05	-	-	-	-
Tetrachloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
Toluene	0.05 ug/g	-	<0.05	-	-	-	-
1,1,1-Trichloroethane	0.05 ug/g	-	<0.05	-	-	-	-
1,1,2-Trichloroethane	0.05 ug/g	-	<0.05	-	-	-	-
Trichloroethylene	0.05 ug/g	-	<0.05	-	-	-	-
Trichlorofluoromethane	0.05 ug/g	-	<0.05	-	-	-	-
Vinyl chloride	0.02 ug/g	-	<0.02	-	-	-	-
m,p-Xylenes	0.05 ug/g	-	<0.05	-	-	-	-
o-Xylene	0.05 ug/g	-	<0.05	-	-	-	-
Xylenes, total	0.05 ug/g	-	<0.05	-	-	-	-
Dibromofluoromethane	Surrogate	-	109%	-	-	-	-
4-Bromofluorobenzene	Surrogate	-	110%	-	-	-	-
Toluene-d8	Surrogate	-	118%	-	-	-	-
Benzene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Ethylbenzene	0.05 ug/g	<0.05	-	<0.05	-	-	-
Toluene	0.05 ug/g	<0.05	-	<0.05	-	-	-

Certificate of Analysis

Report Date: 28-Aug-2024

Client: **CM3 Environmental Inc.**

Order Date: 12-Aug-2024

Client PO: **ER1086**

Project Description: ER1086

	Client ID:	MW4 SA5	MW5 SA5	MW6 SA6	-	-	-
	Sample Date:	12-Aug-24 09:00	12-Aug-24 09:00	12-Aug-24 09:00	-		
	Sample ID:	2433241-01	2433241-02	2433241-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Volatiles							
m,p-Xylenes	0.05 ug/g	<0.05	-	<0.05	-	-	-
o-Xylene	0.05 ug/g	<0.05	-	<0.05	-	-	-
Xylenes, total	0.05 ug/g	<0.05	-	<0.05	-	-	-
Toluene-d8	Surrogate	130%	-	120%	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	<7	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g	<4	<4	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g	<8	<8	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g	<6	<6	<6	-	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Acenaphthylene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Anthracene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [a] anthracene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [a] pyrene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Chrysene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Fluoranthene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Fluorene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	-	<0.02	-	-	-
1-Methylnaphthalene	0.02 ug/g	<0.02	-	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g	<0.02	-	<0.02	-	-	-

	Client ID:	MW4 SA5	MW5 SA5	MW6 SA6	-		
	Sample Date:	12-Aug-24 09:00	12-Aug-24 09:00	12-Aug-24 09:00	-	-	-
	Sample ID:	2433241-01	2433241-02	2433241-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Semi-Volatiles							
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	-	<0.04	-	-	-
Naphthalene	0.01 ug/g	<0.01	-	<0.01	-	-	-
Phenanthrene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Pyrene	0.02 ug/g	<0.02	-	<0.02	-	-	-
2-Fluorobiphenyl	Surrogate	86.7%	-	61.2%	-	-	-
Terphenyl-d14	Surrogate	92.3%	-	98.1%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
Semi-Volatiles								
Acenaphthene	ND	0.02	ug/g					
Acenaphthylene	ND	0.02	ug/g					
Anthracene	ND	0.02	ug/g					
Benzo [a] anthracene	ND	0.02	ug/g					
Benzo [a] pyrene	ND	0.02	ug/g					
Benzo [b] fluoranthene	ND	0.02	ug/g					
Benzo [g,h,i] perylene	ND	0.02	ug/g					
Benzo [k] fluoranthene	ND	0.02	ug/g					
Chrysene	ND	0.02	ug/g					
Dibenzo [a,h] anthracene	ND	0.02	ug/g					
Fluoranthene	ND	0.02	ug/g					
Fluorene	ND	0.02	ug/g					
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g					
1-Methylnaphthalene	ND	0.02	ug/g					
2-Methylnaphthalene	ND	0.02	ug/g					
Methylnaphthalene (1&2)	ND	0.04	ug/g					
Naphthalene	ND	0.01	ug/g					
Phenanthrene	ND	0.02	ug/g					
Pyrene	ND	0.02	ug/g					
Surrogate: 2-Fluorobiphenyl	*0.957*		*%*	*71.7*	*50-140*			
Surrogate: Terphenyl-d14	*1.32*		*%*	*99.0*	*50-140*			
Volatiles								
Acetone	ND	0.50	ug/g					
Benzene	ND	0.02	ug/g					
Bromodichloromethane	ND	0.05	ug/g					
Bromoform	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromomethane	ND	0.05	ug/g					
Carbon Tetrachloride	ND	0.05	ug/g					
Chlorobenzene	ND	0.05	ug/g					
Chloroform	ND	0.05	ug/g					
Dibromochloromethane	ND	0.05	ug/g					
Dichlorodifluoromethane	ND	0.05	ug/g					
1,2-Dichlorobenzene	ND	0.05	ug/g					
1,3-Dichlorobenzene	ND	0.05	ug/g					
1,4-Dichlorobenzene	ND	0.05	ug/g					
1,1-Dichloroethane	ND	0.05	ug/g					
1,2-Dichloroethane	ND	0.05	ug/g					
1,1-Dichloroethylene	ND	0.05	ug/g					
cis-1,2-Dichloroethylene	ND	0.05	ug/g					
trans-1,2-Dichloroethylene	ND	0.05	ug/g					
1,2-Dichloropropane	ND	0.05	ug/g					
cis-1,3-Dichloropropylene	ND	0.05	ug/g					
trans-1,3-Dichloropropylene	ND	0.05	ug/g					
1,3-Dichloropropene, total	ND	0.05	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g					
Hexane	ND	0.05	ug/g					
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g					
Methyl Isobutyl Ketone	ND	0.50	ug/g					
Methyl tert-butyl ether	ND	0.05	ug/g					
Methylene Chloride	ND	0.05	ug/g					
Styrene	ND	0.05	ug/g					
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g					
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g					
Tetrachloroethylene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
1,1,1-Trichloroethane	ND	0.05	ug/g					
1,1,2-Trichloroethane	ND	0.05	ug/g					
Trichloroethylene	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Trichlorofluoromethane	ND	0.05	ug/g					
Vinyl chloride	ND	0.02	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: 4-Bromofluorobenzene	*8.25*		*%*	*103*	*50-140*			
Surrogate: Dibromofluoromethane	*5.89*		*%*	*73.6*	*50-140*			
Surrogate: Toluene-d8	*7.96*		*%*	*99.4*	*50-140*			
Benzene	ND	0.02	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: Toluene-d8	*7.96*		*%*	*99.4*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	36	8	ug/g	35			4.0	30	
F4 PHCs (C34-C50)	90	6	ug/g	84			6.7	30	
Physical Characteristics									
% Solids	75.4	0.1	% by Wt.	74.4			1.4	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.38*		*%*		*71.6*	*50-140*			
Surrogate: Terphenyl-d14	*1.93*		*%*		*99.9*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*9.55*		*%*		*105*	*50-140*			
Surrogate: Dibromofluoromethane	*7.68*		*%*		*84.4*	*50-140*			
Surrogate: Toluene-d8	*10.3*		*%*		*113*	*50-140*			
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: Toluene-d8	*10.3*		*%*		*113*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	189	7	ug/g	ND	94.4	85-115			
F2 PHCs (C10-C16)	102	4	ug/g	ND	88.0	60-140			
F3 PHCs (C16-C34)	297	8	ug/g	35	92.2	60-140			
F4 PHCs (C34-C50)	212	6	ug/g	84	70.8	60-140			
Semi-Volatiles									
Acenaphthene	0.160	0.02	ug/g	ND	66.3	50-140			
Acenaphthylene	0.164	0.02	ug/g	ND	67.8	50-140			
Anthracene	0.160	0.02	ug/g	ND	66.1	50-140			
Benzo [a] anthracene	0.174	0.02	ug/g	ND	72.2	50-140			
Benzo [a] pyrene	0.143	0.02	ug/g	ND	59.2	50-140			
Benzo [b] fluoranthene	0.147	0.02	ug/g	ND	60.8	50-140			
Benzo [g,h,i] perylene	0.130	0.02	ug/g	ND	53.9	50-140			
Benzo [k] fluoranthene	0.149	0.02	ug/g	ND	61.7	50-140			
Chrysene	0.186	0.02	ug/g	ND	77.0	50-140			
Dibenzo [a,h] anthracene	0.136	0.02	ug/g	ND	56.4	50-140			
Fluoranthene	0.222	0.02	ug/g	ND	91.9	50-140			
Fluorene	0.150	0.02	ug/g	ND	62.1	50-140			
Indeno [1,2,3-cd] pyrene	0.132	0.02	ug/g	ND	54.7	50-140			
1-Methylnaphthalene	0.168	0.02	ug/g	ND	69.5	50-140			
2-Methylnaphthalene	0.177	0.02	ug/g	ND	73.4	50-140			
Naphthalene	0.203	0.01	ug/g	ND	84.1	50-140			
Phenanthrene	0.170	0.02	ug/g	ND	70.4	50-140			
Pyrene	0.196	0.02	ug/g	ND	81.3	50-140			
Surrogate: 2-Fluorobiphenyl	*1.29*		*%*		*67.0*	*50-140*			
Surrogate: Terphenyl-d14	*1.88*		*%*		*97.0*	*50-140*			
Volatiles									
Acetone	7.49	0.50	ug/g	ND	74.9	50-140			
Benzene	4.30	0.02	ug/g	ND	107	60-130			
Bromodichloromethane	3.17	0.05	ug/g	ND	79.1	60-130			
Bromoform	2.91	0.05	ug/g	ND	72.9	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromomethane	4.07	0.05	ug/g	ND	102	50-140			
Carbon Tetrachloride	3.21	0.05	ug/g	ND	80.2	60-130			
Chlorobenzene	4.03	0.05	ug/g	ND	101	60-130			
Chloroform	3.81	0.05	ug/g	ND	95.3	60-130			
Dibromochloromethane	3.00	0.05	ug/g	ND	75.1	60-130			
Dichlorodifluoromethane	4.52	0.05	ug/g	ND	113	50-140			
1,2-Dichlorobenzene	3.94	0.05	ug/g	ND	98.6	60-130			
1,3-Dichlorobenzene	3.80	0.05	ug/g	ND	95.0	60-130			
1,4-Dichlorobenzene	3.78	0.05	ug/g	ND	94.6	60-130			
1,1-Dichloroethane	4.69	0.05	ug/g	ND	117	60-130			
1,2-Dichloroethane	3.99	0.05	ug/g	ND	99.8	60-130			
1,1-Dichloroethylene	4.24	0.05	ug/g	ND	106	60-130			
cis-1,2-Dichloroethylene	3.86	0.05	ug/g	ND	96.5	60-130			
trans-1,2-Dichloroethylene	4.22	0.05	ug/g	ND	106	60-130			
1,2-Dichloropropane	3.85	0.05	ug/g	ND	96.3	60-130			
cis-1,3-Dichloropropylene	3.07	0.05	ug/g	ND	76.8	60-130			
trans-1,3-Dichloropropylene	3.29	0.05	ug/g	ND	82.2	60-130			
Ethylbenzene	4.09	0.05	ug/g	ND	102	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	2.90	0.05	ug/g	ND	72.5	60-130			
Hexane	3.95	0.05	ug/g	ND	98.9	60-130			
Methyl Ethyl Ketone (2-Butanone)	7.85	0.50	ug/g	ND	78.5	50-140			
Methyl Isobutyl Ketone	8.04	0.50	ug/g	ND	80.4	50-140			
Methyl tert-butyl ether	12.7	0.05	ug/g	ND	127	50-140			
Methylene Chloride	4.53	0.05	ug/g	ND	113	60-130			
Styrene	3.57	0.05	ug/g	ND	89.3	60-130			
1,1,1,2-Tetrachloroethane	3.01	0.05	ug/g	ND	75.3	60-130			
1,1,2,2-Tetrachloroethane	3.51	0.05	ug/g	ND	87.6	60-130			
Tetrachloroethylene	3.89	0.05	ug/g	ND	97.3	60-130			
Toluene	4.28	0.05	ug/g	ND	107	60-130			
1,1,1-Trichloroethane	3.18	0.05	ug/g	ND	79.5	60-130			
1,1,2-Trichloroethane	3.59	0.05	ug/g	ND	89.9	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Trichloroethylene	3.54	0.05	ug/g	ND	88.6	60-130			
Trichlorofluoromethane	4.57	0.05	ug/g	ND	114	50-140			
Vinyl chloride	3.71	0.02	ug/g	ND	92.8	50-140			
m,p-Xylenes	7.89	0.05	ug/g	ND	98.7	60-130			
o-Xylene	4.05	0.05	ug/g	ND	101	60-130			
Surrogate: 4-Bromofluorobenzene	*7.86*		*%*		*98.2*	*50-140*			
Surrogate: Dibromofluoromethane	*7.94*		*%*		*99.2*	*50-140*			
Surrogate: Toluene-d8	*7.89*		*%*		*98.6*	*50-140*			
Benzene	4.30	0.02	ug/g	ND	107	60-130			
Ethylbenzene	4.09	0.05	ug/g	ND	102	60-130			
Toluene	4.28	0.05	ug/g	ND	107	60-130			
m,p-Xylenes	7.89	0.05	ug/g	ND	98.7	60-130			
o-Xylene	4.05	0.05	ug/g	ND	101	60-130			
Surrogate: Toluene-d8	*7.89*		*%*		*98.6*	*50-140*			

Certificate of Analysis

Report Date: 28-Aug-2024

Client: **CM3 Environmental Inc.**

Order Date: 12-Aug-2024

Client PO: **ER1086**

Project Description: ER1086

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

Revision-1: This report includes additional volatile organic compound (VOC) data for sample MW5 SA5 as per client request.

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.