



**JBPA Developments Inc.**

**Phase II Environmental Site Assessment  
12-18 Hawthorne Avenue  
Ottawa, Ontario**

**SDC1007**

**Aug 12, 2022**

**CM3 Environmental Inc.**

*5710 Akins Road, Ottawa, Ontario, K2S 1B8*

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## 1 INTRODUCTION

CM3 Environmental was retained by JBPA Developments Inc. to conduct a Phase II Environmental Site Assessment (ESA) for the properties located at 12-18 Hawthorne Avenue, Ottawa, Ontario (“site” or “subject property”). The properties are residential with two storey duplex style residential buildings. The purpose of the Phase II ESA was to assess the presence of potential contaminants of concern related to Areas of Potential Environmental Concern (APECs) identified in the Phase I ESA report completed by CM3 under the title “*Phase I Environmental Site Assessment 12-24 Hawthorne Avenue, Ottawa Ontario*” dated June 30, 2022. The work was completed for due diligence purposes in support of a potential real estate transaction and Site Control Plan application.

The initial Phase I ESA report identified four areas of potential environmental concern on the subject properties. The four areas of potential environmental concern on the property were related to the current use or historic use of fuel storage tanks within the basements of the residences onsite. The Phase II ESA scope of work included the drilling and installation of three boreholes to be completed as monitoring wells for the purpose of environmental sampling.

The Phase II ESA was not completed in support of a record of site condition.

The location of the site is provided on **Figure 1**. A site plan showing the APECs is provided as **Figure 2**.

## 2 BACKGROUND

The subject properties are rectangular in shape and is bounded by Hawthorne Avenue to the north, mixed use residential and commercial properties to the east, south and west. The subject property area is approximately 730 m<sup>2</sup> (0.73 hectares). There is one two storey building with a basement on each site constructed as a duplex multi tenant residence. The main building on each property is north facing and located along the sidewalk of Hawthorne avenue. The buildings on each site are of similar construction. They are brick-clad with asphalt shingled roofs. The foundations are cinderblock and stone construction on the interior.

A small detached shed is located at the southeast corner of the property at 18 Hawthorne.

Areas of potential environmental concern (APEC) were identified based on the evaluation of the potentially contaminating activities and site assessment. The APECs and contaminants of concern (COCs) are summarized in the following table.

Areas of Potential Environmental Concern			
APEC	Location	Cause of Concern	COCs
1	West side of Unit 12.	PCA 2 – Current aboveground fuel storage tank.	BTEX and PHCs F1-F4 fractions
2	South-east corner of Unit 14.	PCA 3 – Former aboveground fuel storage tank.	BTEX and PHCs F1-F4 fractions

Areas of Potential Environmental Concern			
APEC	Location	Cause of Concern	COCs
3	South-west corner of Unit 16.	PCA 4 – Former aboveground fuel storage tank.	BTEX and PHCs F1-F4 fractions
4	North-east corner of Unit 18.	PCA 5 – Current aboveground fuel storage tank.	BTEX and PHCs F1-F4 fractions

BTEX - Benzene, toluene, ethylbenzene, xylenes  
 PHCs F1-F4 - Petroleum hydrocarbons F1 to F4 fractions

Areas of potential environmental concern were identified on the subject properties related to the above ground storage tanks located in the basements of unit 12 and Unit 18 and the former above ground storage tanks located in the basements of Unit 14 and Unit 16. The contaminants of concern include BTEX and PHCs F1-F4 fractions. The potentially contaminated media is soil and groundwater.

### 3 APPLICABLE SITE CONDITION STANDARDS

The analytical results were compared to the Ontario Ministry of Environment, Conservation and Parks Ontario Regulation (O.Reg.) 153/04 “Soil, Ground Water and Sediment standards for Use Under Part XV.1 of the Environmental Protection Act”, dated April 15, 2011. The following site conditions were used in the selection of the appropriate MECP site condition standards (SCS) to assess the soil analytical results:

- The property is more than 30 meters from a body of water;
- Bedrock is more than 2 meters from grade;
- The site and surrounding land use is considered to be residential;
- Water is supplied from a municipal source; and,
- Soils at the site are considered coarse textured.

The MECP Table 3: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition for residential property use and coarse textured soils were used for the evaluation of the analytical results, based on the above.

### 4 SCOPE OF THE INVESTIGATION

The purpose of this Phase II ESA was to confirm or refute the presence of the contaminants of concern at the APECs.

The Phase II was completed for due diligence purposes in support of a potential real estate transaction and a Site Control Plan Application. The Phase II was not completed in support of the filing of a record of site condition (RSC) and was completed following the requirements of the Canadian Standards Association (CSA) Standard Z769-00 (R2008) and in general accordance with Ontario Regulation (O. Reg.) 153/04. The scope of work for the investigation included:

- A preliminary site visit to assess property access and to confirm or identify the proposed borehole/monitoring well locations,

- The determination of the locations of all underground utilities by a third-party utility locator,
- The advancement of three boreholes completed as monitoring wells as close as physically possible to APECs 1,2, 3 and 4.
- The continuous collection of soil samples during the environmental drilling (where possible) and on-site field screening of soil samples for vapours with a combustible gas meter (APECs 1, 2, 3 and 4),
- The submission of one soil samples from each borehole (when possible) for laboratory analysis of contaminants of concern (APECs 1, 2, 3, and 4),
- The measurement of the depth to groundwater and possible presence of Liquid Phase Hydrocarbons (LPH) in all monitoring wells,
- The collection of groundwater samples from the three newly installed monitoring wells for laboratory analysis of contaminants of concern,

## **5 INVESTIGATION METHODOLOGY**

### **5.1 Borehole Drilling**

A total of three boreholes (MW1 through MW3) were completed on July 15, 2022, by CCC Geotechnical & Environmental Drilling Ltd. (CCC) of Ottawa, Ontario, under supervision of CM3 personnel. Three boreholes were advanced using a track mounted drill rig with split spoon sampling equipment for soil sampling and hollow stem augers to advance boreholes to maximum depth of 4.57 meters below grade (m bg). The three boreholes were completed to assess soil and groundwater conditions in APECs 1,2, 3 and 4. Borehole/monitoring well locations are illustrated on **Figure 3**.

### **5.2 Soil Sampling**

#### *Borehole Soil Sampling (APEC 1, 2, 3 and 4)*

When possible, samples were collected continuously from grade to refusal of the split spoon sampling equipment. Soil samples were collected directly from the spoon and logged at the time of drilling for grain size, colour, moisture content, and visual or olfactory evidence of impacts.

A portion of each sample was placed into a polyethylene bag for relative combustible organic vapour analysis. The remainder of each sample was placed into the appropriate laboratory supplied sample containers for the required analyses, following MECP sampling protocols. The sample containers were placed into an iced chilled cooler pending submission to the laboratory for analysis. The bagged samples were used for field screening of relative combustible vapours.

### **5.3 Field Screening**

The bagged soil samples were allowed to equilibrate to ambient temperature prior to combustible vapour measurements. 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.

## 5.4 Monitoring Well Installation

The three boreholes were completed as monitoring wells (MW1 to MW3). Well completion consisted of 32 mm outside diameter, flush-threaded schedule 40 PVC well screens and risers. At each borehole, a 10-slot well screen was placed to intercept the water table to allow for the detection of LPH. A silica sand pack was placed around the outside of the well screen in the annular space of the borehole to a minimum of 0.3 m above the screened interval. A bentonite seal was placed above the sand pack to approximately 0.3 m bg. MW1 through MW3 were capped with lockable j-plugs and finished below grade in flush-mounted manhole protective casings set in concrete.

The monitoring well locations are provided on **Figure 3**. Borehole/monitoring well completion details are included in **Appendix A**.

## 5.5 LPH and Water Level Measurement

The depth to groundwater and presence of LPH was measured in all monitoring wells on July 29, 2022, using a Solinst® electronic oil/water interface meter. The depth to LPH (if present) and water 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.

## 5.6 Groundwater Sampling

Groundwater samples were collected from all three monitoring wells (MW1 through MW3) on July 29, 2022. Prior to sampling, each well was purged to remove stagnant water from within the well bore and surrounding annulus to obtain samples that were representative of formation groundwater. Groundwater sampling was conducted using dedicated high density polyethylene tubing installed at each well and a peristaltic pump. Water samples were collected into the appropriate laboratory supplied sample containers following MECP sampling protocols. The groundwater samples were placed into an iced chilled cooler pending submission to the laboratory for analysis.

## 5.7 Site Survey

The locations of all newly installed boreholes/monitoring wells were referenced to existing site buildings and structures. The ground surface and monitoring well top of pipe elevations were referenced to the building's floor elevation using a TopCon AT-B4 automatic level. The ground surface and top of pipe elevations are included in borehole logs (**Appendix A**).

# 6 RESULTS AND EVALUATION

## 6.1 Site Geology

The site stratigraphy was determined based on the borehole drilling and site investigation completed within the APECs. The soil profile was determined to be 0.1 meters of topsoil overlying

1.0 to 1.5 meters of fine-grained laminated sand overlying a grey clay to a depth of 4.5 meters. Bedrock was not encountered during the drilling.

The stratigraphy is provided on the borehole logs (**Appendix A**).

## 6.2 Site Hydrogeology

### 6.2.1 Groundwater Elevations and Flow

The depth to water and presence of LPH was measured in monitoring wells MW1 through MW3 on July 29, 2022. LPH was not detected in any of the monitoring wells. The water levels were measured prior to purging the wells. Initial depth to groundwater was measured at 2.116 meters below top of well riser (m btoc) in monitoring well MW1 and 2.052 m btoc in MW2 and 2.221 m btoc in MW3. The groundwater flow direction was determined to be south based on the groundwater data. Additional wells and groundwater level monitoring is required to interpret the groundwater flow direction. The water levels and calculated groundwater elevations are provided in **Table 1**. The groundwater elevations, contours and flow direction are provided on **Figure 3**.

## 6.3 Soil Field Screening

The results of combustible organic vapour concentrations on samples with from MW1 were all between 20 and 30 parts per million (ppm). Concentrations from MW2 were between 0 and 40 ppm and concentrations from MW3 were between 120 and 150 ppm.

No field evidence of soil impacts was observed by CM3 personnel.

Borehole sample combustible vapour concentrations are included on the borehole logs (**Appendix A**).

## 6.4 Soil Quality

One soil sample from each borehole was analysed for BTEX and PHCs F1-F4:

- Laboratory results indicated that BTEX and PHCs F1 to F4 were non-detectable in all soil samples and therefore below the MECP Table 3 SCS.

The soil sample analytical results are summarized in **Table 2**. The borehole soil sample locations and soil quality are provided on **Figure 4**. The soil sample laboratory reports are provided in **Appendix B**.

## 6.5 Groundwater Quality

Each borehole was completed as a groundwater monitoring well. Groundwater samples were collected and submitted from each location and analysed for BTEX and PHCs (F1-F4):

- Laboratory results showed that BTEX and PHCs were non-detectable in all groundwater samples and therefore below the MECP Table 3 SCS.



The groundwater sample analytical results are summarized in **Table 3**. The monitoring well locations and groundwater quality are provided on **Figure 5**. The groundwater sample laboratory reports are provided in **Appendix B**.

## 7 SUMMARY AND CONCLUSIONS

CM3 Environmental was retained by JBPA Developments Inc. to conduct a Phase II Environmental Site Assessment (ESA) for the properties located at 12-18 Hawthorne Avenue, Ottawa, Ontario (“site” or “subject property”). The purpose of the Phase II ESA was to assess the presence of potential contaminants of concern related to Areas of Potential Environmental Concern (APECs) identified in the CM3 Phase I ESA report “*Phase I Environmental Site Assessment 12-24 Hawthorne Avenue, Ottawa Ontario*” dated June 30, 2022. The work was completed for due diligence purposes in support of a potential real estate transaction and a Site Control Plan Application.

The Phase II ESA included the advancement of three boreholes completed as monitoring wells to assess the soil and groundwater conditions in areas of potential environmental concern at the site.

The results of the Phase II ESA are summarized as follows:

### Site Characterization

- The soil profile was determined to be 0.1 meters of topsoil overlying 1.0 to 1.5 meters of fine-grained laminated sand overlying a grey clay to a depth of 4.5 meters. Bedrock was not encountered.
- LPH was not present in any monitoring wells during groundwater monitoring. Groundwater flow was determined to be towards the south, based on the groundwater data.

### **Soil Quality**

- One soil sample was submitted from each borehole for BTEX and PHCs (F1-F4) analysis.
  - BTEX and PHCs (F1- F4) were not detected and therefore were below the MECP Table 3 SCS in the sampled APEC areas.

### **Groundwater Quality**

- Each borehole was completed as a monitoring well. Groundwater samples were collected from each monitoring wells (MW1 to MW3) and analyzed for BTEX and PHCs (F1-F4);
  - Concentrations of BTEX and PHCs (F1-F4) were not detected and therefore are below the MECP Table 3 SCS in the sampled APEC areas.

### **Conclusions**

All soil and groundwater samples analysed during the Phase II ESA were not detected and therefore below the MECP SCS. Based on these results, CM3 has no environmental concerns with the APECs previously identified in the Phase I ESA.

## **8 LIMITATIONS**

This report has been prepared and the work referred to in this report has been undertaken by CM3 Environmental Inc. for JBPA Developments Inc. It is intended for the sole and exclusive use of JBPA Developments Inc., 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 JBPA Developments Inc. based on this report is the sole responsibility of such other person. CM3 Environmental Inc. and JBPA Developments Inc. 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 JBPA Developments Inc., 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.

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.**



Spencer Cochrane  
Environmental Technician



Bruce Cochrane P.Geo., QP, EP  
Principal



# **FIGURES**

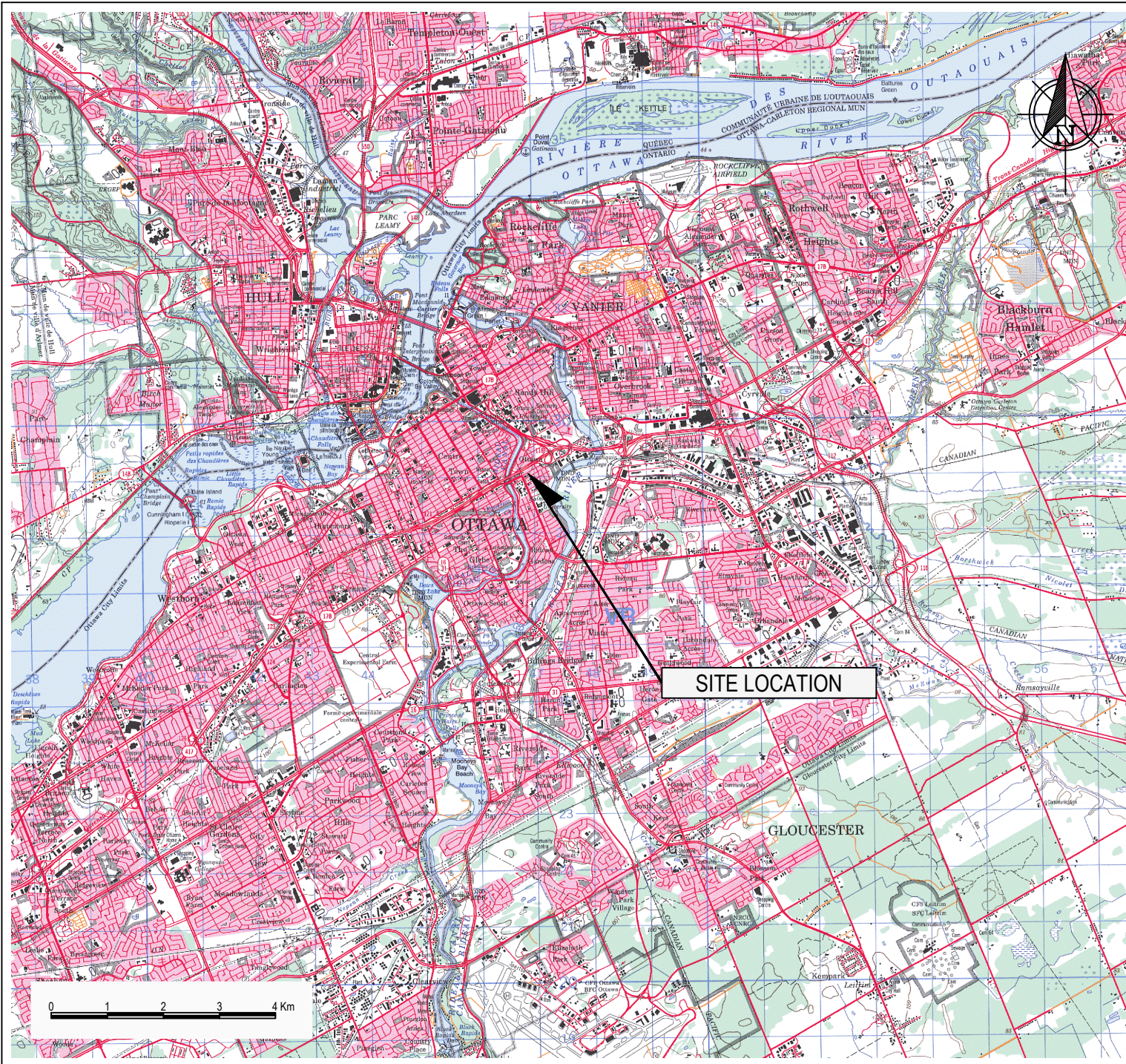
**Phase II Environmental Site Assessment**

**12-18 Hawthorne Avenue,**

**Ottawa, Ontario**

**SDC1007**





CM3 ENVIRONMENTAL  
5710 AKINS ROAD, OTTAWA, ON  
K2S 1B8

JBPA DEVELOPMENTS INC.

PHASE II  
ENVIRONMENTAL SITE ASSESSMENT  
12-24 HAWTHORNE AVENUE,  
OTTAWA, ONTARIO

SITE LOCATION

Project:	SDC1007	Drawn By:	SDC
Date:	AUG 2022	Reviewed By:	BDC
Scale:	AS SHOWN	Figure:	1
		Revision:	

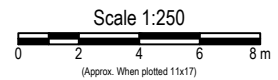


- LIST OF APECS**
1. PCA 2: BASEMENT OF 12 HAWTHORNE. ABOVE GROUND FUEL STORAGE TANK.
  2. PCA 3: BASEMENT OF 14 HAWTHORNE. FORMER ABOVE GROUND FUEL STORAGE TANK.
  3. PCA 4: BASEMENT OF 16 HAWTHORNE. FORMER ABOVE GROUND FUEL STORAGE TANK.
  4. PCA 5: BASEMENT OF 18 HAWTHORNE. ABOVE GROUND FUEL STORAGE TANK.

HAWTHORNE AVENUE



- LEGEND**
- PROPERTY BOUNDARY
  - SUBJECT PROPERTY
  - RESIDENCE/BUILDINGS
  - FORMER RESIDENCE/BUILDINGS
  - EXISTING FENCES
  - AST
  - FORMER AST
  - UTILITIES/SERVICES
  - GAS
  - OVERHEAD HYDRO
  - OVERHEAD COMMUNICATIONS
  - HYDRO POLE
  - TRANSFORMER
  - CATCH BASIN
  - MANHOLE (STORM)
  - APEC



**cm<sup>3</sup>**  
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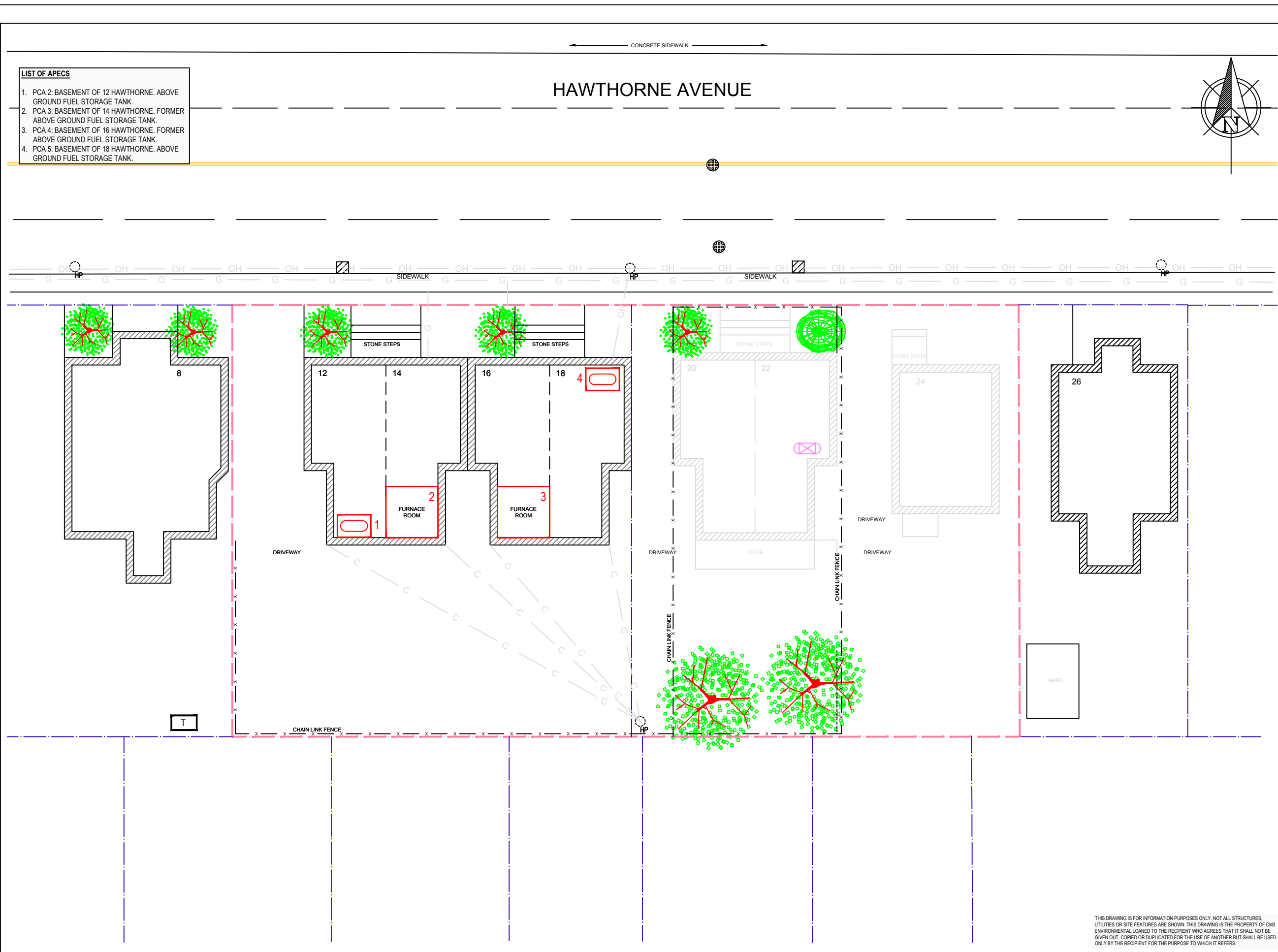
JBPA DEVELOPMENTS INC.

PHASE II  
ENVIRONMENTAL SITE ASSESSMENT  
12-24 HAWTHORNE AVENUE,  
OTTAWA, ONTARIO

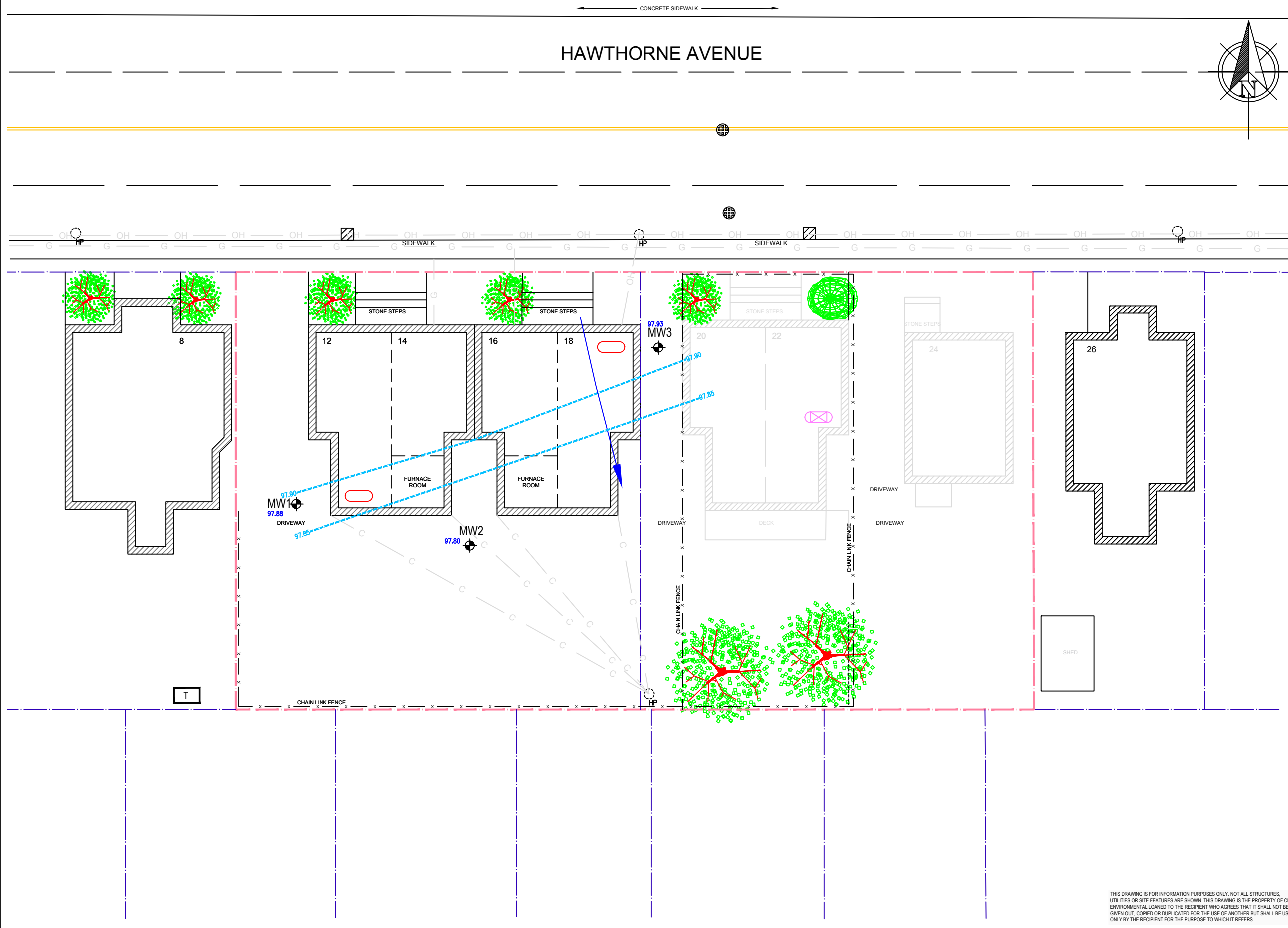
SITE PLAN  
AREAS OF POTENTIAL ENVIRONMENTAL  
CONCERN

Project:	SDC1007	Drawn By:	SDC
Date:	AUG 2022	Reviewed By:	BDC
Scale:	1:250	Figure:	2
		Revision:	

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# HAWTHORNE AVENUE



**LEGEND**

- PROPERTY BOUNDARY
- SUBJECT PROPERTY
- RESIDENCE/BUILDINGS
- FORMER RESIDENCE/BUILDINGS
- EXISTING FENCES
- AST
- FORMER AST
- UTILITIES/SERVICES**
- GAS
- OVERHEAD HYDRO
- OVERHEAD COMMUNICATIONS
- HYDRO POLE
- TRANSFORMER
- CATCH BASIN
- MANHOLE (STORM)
- APEC
- MONITORING WELL
- 94.66 GROUNDWATER ELEVATION (m.a.r.l)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- INFERRED GROUNDWATER FLOW DIRECTION

Scale 1:250  
0 2 4 6 8 m  
(Approx. When plotted 11x17)

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12-24 HAWTHORNE AVENUE,  
OTTAWA, ONTARIO

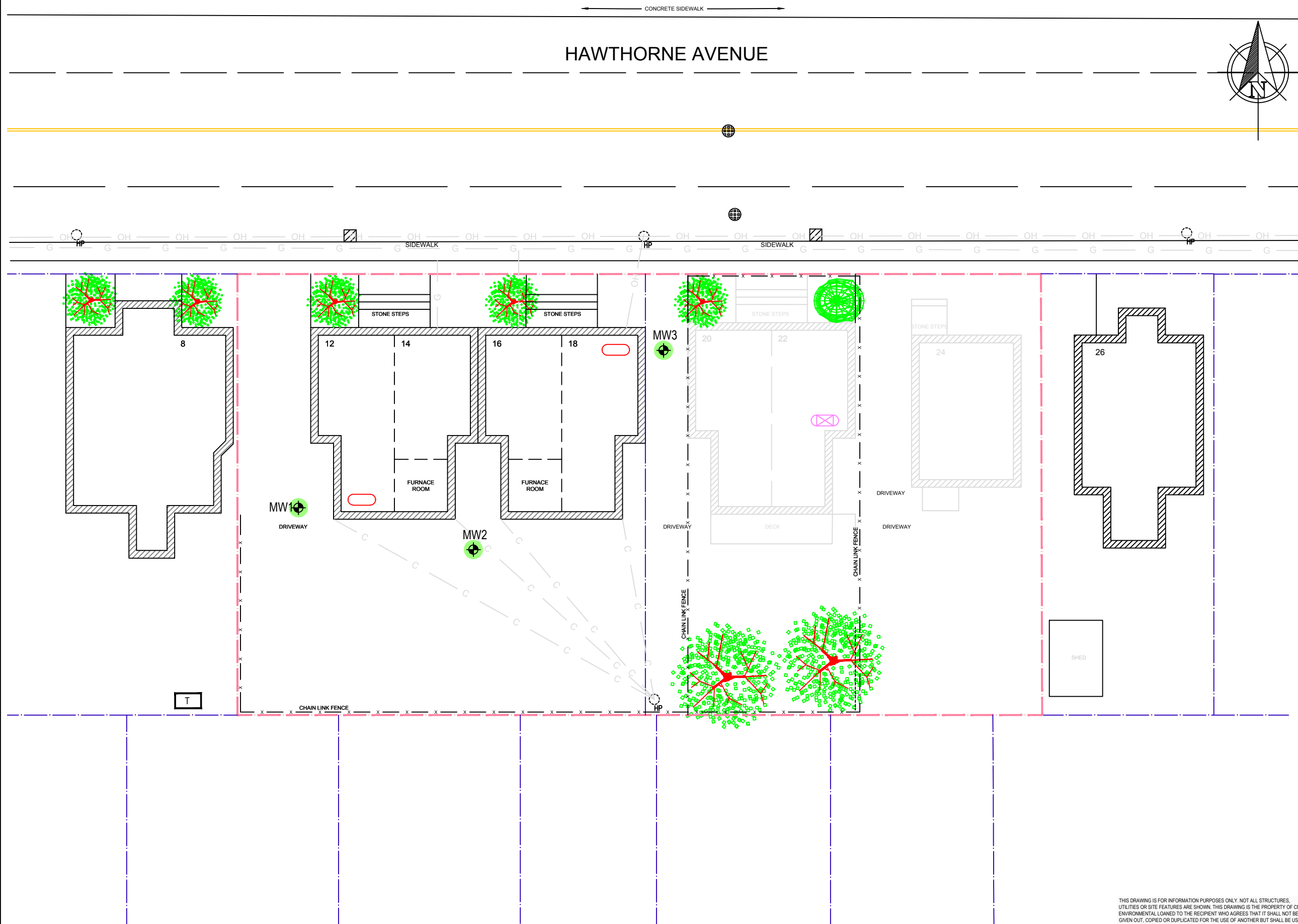
MONITORING WELL  
GROUNDWATER FLOW  
JULY 29 2022

Project:	SDC1007	Drawn By:	SDC
Date:	AUG 2022	Reviewed By:	BDC
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		Revision:	

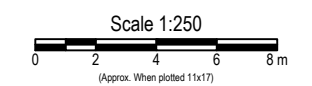
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HAWTHORNE AVENUE



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  - 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



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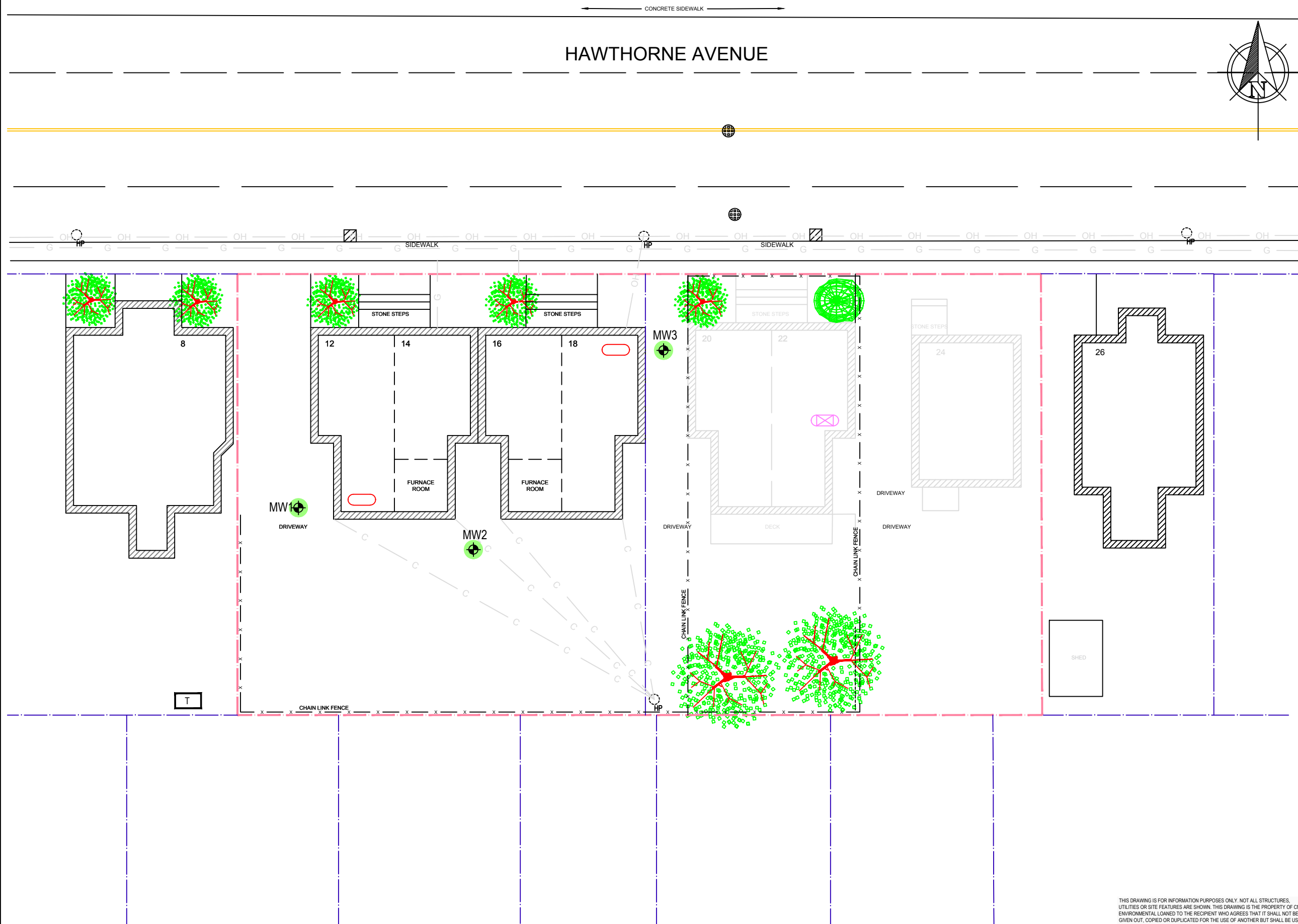
PHASE II  
ENVIRONMENTAL SITE ASSESSMENT  
12-24 HAWTHORNE AVENUE,  
OTTAWA, ONTARIO

SOIL QUALITY

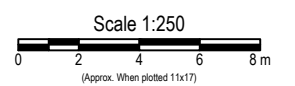
Project:	SDC1007	Drawn By:	SDC
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CM3 ENVIRONMENTAL  
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ENVIRONMENTAL SITE ASSESSMENT  
12-24 HAWTHORNE AVENUE,  
OTTAWA, ONTARIO

GROUNDWATER QUALITY

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# **TABLES**

**Phase II Environmental Site Assessment**

**12-18 Hawthorne Avenue,**

**Ottawa, Ontario**

**SDC1007**

**TABLE 1:  
LPH and Groundwater Level Measurements  
Phase II ESA  
12-18 Hawthorne Avenue, Ottawa  
SDC1007**

Well ID	Date	TOC (marl)	Grade (marl)	Depth to		Elevation			LPH Thickness (m)	Comments
				LPH (mbtoc)	GW (mbtoc)	LPH (marl)	GW (marl)	Corr. GW (marl)		
MW1	29-Jul-22	100.000	100.049	--	2.116	--	97.884	97.884	--	
MW2	29-Jul-22	99.850	99.938	--	2.052	--	97.798	97.798	--	
MW3	29-Jul-22	100.150	100.201	--	2.221	--	97.929	97.929	--	

**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  
BTEX and Petroleum Hydrocarbons (PHCs) F1-F4 Fractions  
Phase II ESA  
12-18 Hawthorne Avenue, Ottawa  
SDC1007**

Sample ID	Sample Date	Depth (m bg)	HSVL (ppm)	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Xylene (Total)	PHC F1 (C6-C10)	PHC F2 (C10-C16)	PHC F3 (C16-C34)	PHC F4 (>C34)
MDL >													
<i>MECP Table 3 SCS &gt;</i>				0.17	6	15	NV	NV	25	65	150	1300	5600
<b>Boreholes</b>													
<b>MW1SA3</b>	15-Jul-22	1.52 - 2.29	25	ND (0.02)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (7)	ND (4)	ND (8)	ND (6)
<b>MW2SA5</b>	15-Jul-22	3.05 - 3.65	40	ND (0.02)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (7)	ND (4)	ND (8)	ND (6)
<b>MW3SA4</b>	15-Jul-22	1.82 - 2.44	200	ND (0.02)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (7)	ND (4)	ND (8)	ND (6)

**Notes:**

- mg/kg - all concentrations provided in milligrams per kilogram (parts per million)
- 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" or "-" - 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, residential land use, fine 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)

**TABLE 3: Summary of Groundwater Analytical Results  
BTEX and Petroleum Hydrocarbons (PHCs) F1-F4 Fractions  
Phase II ESA  
12-18 Hawthorne Avenue, Ottawa  
SDC1007**

Sample ID	Sample Date	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Xylene (Total)	PHC F1 (C6-C10)	PHC F2 (C10-C16)	PHC F3 (C16-C34)	PHC F4 (>C34)
MDL >											
MECP Table 3 SCS >		430	18000	2300	NV	NV	4200	750	150	500	500
<b>Monitoring Wells</b>											
<b>MW1</b>	29-Jul-22	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (25)	ND (100)	ND (100)	ND (100)
<b>MW2</b>	29-Jul-22	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (25)	ND (100)	ND (100)	ND (100)
<b>MW3</b>	29-Jul-22	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (25)	ND (100)	ND (100)	ND (100)

**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
- 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, residential land use, fine 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)
- [1] - elevated detection/reporting limits and/or modified analytical protocol (e.g. limited sample volume, sediment in sample, etc.); refer to laboratory reports

# **APPENDIX A**

## **BOREHOLE LOGS**

**Phase II Environmental Site Assessment**

**12-18 Hawthorne Avenue,**

**Ottawa, Ontario**

**SDC1007**



CLIENT: **JBPA DEVELOPMENTS INC.**

PROJECT: **12-18 Hawthorne Avenue  
Ottawa Ontario**

# BOREHOLE LOG

BOREHOLE NO: **MW1**  
SURFACE ELEVATION: 100.05 m

CM<sup>3</sup> JOB NO: SDC1007

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA			WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
						1	10	100				
-1												101
0					Ground Surface							100
0		SA1		Gravel	gravel, some sand (fill), grey and brown, dry						flushmount in concrete j-plug	100
0.5				Sand	fine to medium sand, some silt, compact, laminated, brown, moist						bentonite seal	99.5
1		SA2		Clay	clay, some silt, firm, low to medium plasticity, grey, moist						32 mm solid PVC pipe	99
1.5												98.5
2		SA3										98
2.5											GW = 97.93 m (7/22/2029)	97.5
3		SA4										97
3.5					wet at 3m soft, high plasticity						32 mm 010 slot PVC pipe	96.5
4		SA5									silica sand	96
4.5												95.5
4.57		SA6									bottom cap	95
4.57					End of borehole at 4.57 m							95

DRILLING METHOD: Hollow Stem Auger and Split Spoon  
BOREHOLE DIAMETER: 0.03 m (OD)

Notes: SPLIT SPOON

DRILL DATE: July 15, 2022      LOGGED BY: SDC





CLIENT: JBPA DEVELOPMENTS INC.

PROJECT: 12-18 Hawthorne Avenue  
Ottawa Ontario

# BOREHOLE LOG

BOREHOLE NO: MW2  
SURFACE ELEVATION: 99.94 m

CM JOB NO: SDC1007

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA			WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
						ORGANIC VAPOUR LEVEL (ppmv)						
						1	10	100				
-1												101
0					Ground Surface							100
0		SA1		Topsoil black, dry							flushmount in concrete j-plug	
0.5		SA2		Sand fine to medium sand, some silt, compact, laminated, brown, moist							bentonite seal	99
1.5		SA3		Clay firm, low to medium plasticity, grey, moist							32 mm solid PVC pipe	98
2.5		SA4									GW = 97.89 m (7/22/2029)	97
3.5		SA5			wet at 3m						32 mm 010 slot PVC pipe	96
4.5					End of borehole at 4.57 m						silica sand	
											bottom cap	

DRILLING METHOD: Hollow Stem Auger and Split Spoon  
BOREHOLE DIAMETER: 0.03 m (OD)

Notes: SPLIT SPOON

DRILL DATE: July 15, 2022 LOGGED BY: SDC



CLIENT: **JBPA DEVELOPMENTS INC.**

PROJECT: **12-18 Hawthorne Avenue  
Ottawa Ontario**

# BOREHOLE LOG

BOREHOLE NO: **MW3**  
SURFACE ELEVATION: 100.20 m

CM JOB NO: SDC1007

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA				WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)	
						ORGANIC VAPOUR LEVEL (ppmv)								
						1	10	100	1000					
-1													101	
0					Ground Surface								100	
0		SA1		Asphalt	Asphalt							flushmount in concrete j-plug		
0				Gravel	gravel, some sand (fill), grey and brown, dry							bentonite seal		
0				Sand	fine to medium sand, some silt, compact, laminated, brown, moist							32 mm solid PVC pipe		
1		SA2		Clay	clay, some silt, firm, low to medium plasticity, grey, moist							32 mm 010 slot PVC pipe		
1		SA3												
2		SA4												
2		SA5												
3		SA6												
3														
					End of borehole at 3.35 m							bottom cap		

DRILLING METHOD: Hollow Stem Auger and Split Spoon  
BOREHOLE DIAMETER: 0.03 m (OD)

DRILL DATE: July 15, 2022      LOGGED BY: SDC

Notes: AUGER SAMPLE  
 SPLIT SPOON

# **APPENDIX B**

## **LABORATORY REPORTS**

**Phase II Environmental Site Assessment**

**12-18 Hawthorne Avenue,**

**Ottawa, Ontario**

**SDC1007**

## Certificate of Analysis

**CM3 Environmental Inc.**

5710 Akins Road  
Ottawa, ON K2S 1B8  
Attn: Spencer Cochrane

Client PO: Hawthorne  
Project: SDC1007  
Custody: 137658

Report Date: 22-Jul-2022  
Order Date: 15-Jul-2022

**Order #: 2230017**

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

Parcel ID	Client ID
2230017-01	MW1 SA3
2230017-02	MW2 SA5
2230017-03	MW3 SA4

Approved By:



Dale Robertson, BSc  
Laboratory Director

Certificate of Analysis

Report Date: 22-Jul-2022

Client: **CM3 Environmental Inc.**

Order Date: 15-Jul-2022

Client PO: Hawthorne

Project Description: **SDC1007**

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	19-Jul-22	20-Jul-22
PHC F1	CWS Tier 1 - P&T GC-FID	19-Jul-22	20-Jul-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	18-Jul-22	22-Jul-22
Solids, %	Gravimetric, calculation	19-Jul-22	19-Jul-22

Certificate of Analysis

Report Date: 22-Jul-2022

Client: CM3 Environmental Inc.

Order Date: 15-Jul-2022

Client PO: Hawthorne

Project Description: SDC1007

<b>Client ID:</b>	MW1 SA3	MW2 SA5	MW3 SA4	-
<b>Sample Date:</b>	15-Jul-22 09:00	15-Jul-22 09:00	15-Jul-22 09:00	-
<b>Sample ID:</b>	2230017-01	2230017-02	2230017-03	-
<b>MDL/Units</b>	Soil	Soil	Soil	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	83.9	67.5	73.1	-
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**Volatiles**

Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene-d8	Surrogate	128%	135%	127%	-

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	-

Certificate of Analysis

Report Date: 22-Jul-2022

Client: CM3 Environmental Inc.

Order Date: 15-Jul-2022

Client PO: Hawthorne

Project Description: SDC1007

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
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						
<b>Volatiles</b>									
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	9.17		ug/g		115	50-140			

Certificate of Analysis

Report Date: 22-Jul-2022

Client: CM3 Environmental Inc.

Order Date: 15-Jul-2022

Client PO: Hawthorne

Project Description: SDC1007

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
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)	150	8	ug/g	119			22.6	30	
F4 PHCs (C34-C50)	360	6	ug/g	392			8.4	30	
<b>Physical Characteristics</b>									
% Solids	77.3	0.1	% by Wt.	77.2			0.0	25	
<b>Volatiles</b>									
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	12.6		ug/g		125	50-140			



Certificate of Analysis

Report Date: 22-Jul-2022

Client: CM3 Environmental Inc.

Order Date: 15-Jul-2022

Client PO: Hawthorne

Project Description: SDC1007

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	194	7	ug/g	ND	97.1	80-120			
F2 PHCs (C10-C16)	107	4	ug/g	ND	126	60-140			
F3 PHCs (C16-C34)	234	8	ug/g	ND	119	80-120			
F4 PHCs (C34-C50)	148	6	ug/g	ND	119	80-120			
<b>Volatiles</b>									
Benzene	4.54	0.02	ug/g	ND	114	60-130			
Ethylbenzene	4.72	0.05	ug/g	ND	118	60-130			
Toluene	4.67	0.05	ug/g	ND	117	60-130			
m,p-Xylenes	7.97	0.05	ug/g	ND	99.6	60-130			
o-Xylene	4.54	0.05	ug/g	ND	113	60-130			
Surrogate: Toluene-d8	7.26		ug/g		90.7	50-140			

Certificate of Analysis

Report Date: 22-Jul-2022

Client: **CM3 Environmental Inc.**

Order Date: 15-Jul-2022

Client PO: Hawthorne

Project Description: **SDC1007**

**Qualifier Notes:**

None

**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.

## Certificate of Analysis

**CM3 Environmental Inc.**

5710 Akins Road  
Ottawa, ON K2S 1B8  
Attn: Spencer Cochrane

Client PO: Hawthorne  
Project: SDC1007  
Custody: 133301

Report Date: 3-Aug-2022  
Order Date: 29-Jul-2022

**Order #: 2231544**

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

Parcel ID	Client ID
2231544-01	MW1
2231544-02	MW2
2231544-03	MW3

Approved By:



Mark Foto, M.Sc.  
Lab Supervisor

Certificate of Analysis  
Client: **CM3 Environmental Inc.**  
Client PO: **Hawthorne**

Report Date: 03-Aug-2022

Order Date: 29-Jul-2022

Project Description: **SDC1007**

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	2-Aug-22	2-Aug-22
PHC F1	CWS Tier 1 - P&T GC-FID	2-Aug-22	2-Aug-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	2-Aug-22	3-Aug-22

Certificate of Analysis

Report Date: 03-Aug-2022

Client: CM3 Environmental Inc.

Order Date: 29-Jul-2022

Client PO: Hawthorne

Project Description: SDC1007

<b>Client ID:</b>	MW1	MW2	MW3	-
<b>Sample Date:</b>	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00	-
<b>Sample ID:</b>	2231544-01	2231544-02	2231544-03	-
<b>MDL/Units</b>	Water	Water	Water	-

**Volatiles**

Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene-d8	Surrogate	101%	102%	101%	-

**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	-

Certificate of Analysis

Report Date: 03-Aug-2022

Client: CM3 Environmental Inc.

Order Date: 29-Jul-2022

Client PO: Hawthorne

Project Description: SDC1007

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
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						
<b>Volatiles</b>									
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	82.0		ug/L		102	50-140			

Certificate of Analysis  
 Client: **CM3 Environmental Inc.**  
 Client PO: **Hawthorne**

Report Date: 03-Aug-2022  
 Order Date: 29-Jul-2022  
 Project Description: **SDC1007**

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
<b>Volatiles</b>									
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	80.9		ug/L		101	50-140			

Certificate of Analysis

Report Date: 03-Aug-2022

Client: CM3 Environmental Inc.

Order Date: 29-Jul-2022

Client PO: Hawthorne

Project Description: SDC1007

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	2050	25	ug/L	ND	102	68-117			
F2 PHCs (C10-C16)	2000	100	ug/L	ND	125	60-140			
F3 PHCs (C16-C34)	4130	100	ug/L	ND	105	60-140			
F4 PHCs (C34-C50)	2750	100	ug/L	ND	111	60-140			
<b>Volatiles</b>									
Benzene	38.9	0.5	ug/L	ND	97.2	60-130			
Ethylbenzene	38.3	0.5	ug/L	ND	95.8	60-130			
Toluene	37.7	0.5	ug/L	ND	94.4	60-130			
m,p-Xylenes	74.1	0.5	ug/L	ND	92.6	60-130			
o-Xylene	37.9	0.5	ug/L	ND	94.7	60-130			
Surrogate: Toluene-d8	79.0		ug/L		98.8	50-140			



Certificate of Analysis

Report Date: 03-Aug-2022

Client: CM3 Environmental Inc.

Order Date: 29-Jul-2022

Client PO: Hawthorne

Project Description: SDC1007

**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.