

**COMMERCIAL PROPERTY
642 DUNLOP STREET WEST
BARRIE, ONTARIO
L4N 9W5**

**Phase Two
Environmental Site Assessment**

PREPARED FOR:

Manjit Banwait
2507517 Ontario Inc.
12 Chiavatti Drive
Markham, ON
L3R 1E2

Rubicon Job Number • R64018.2

Report Date • March 23, 2023



"....Environmental Solutions."

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Rubicon Environmental (2008) Inc.

Manjit Banwait
2507517 Ontario Inc.
12 Chiavatti Drive
Markham, ON
L3R 1E2

March 23, 2023

Attention: Mr. Manjit Banwait

R64018.2 Phase Two Environmental Site Assessment
Commercial Property
642 Dunlop Street West, Barrie Ontario

Dear Sir,

Please find enclosed the results for the above-mentioned investigation conducted on your behalf. Please feel free to contact me at 519-924-0003 if you require any additional information.

Sincerely,

RUBICON ENVIRONMENTAL (2008) INC.

Paul Rew, P. Eng., QP

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TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY	2
2.0	INTRODUCTION	2
3.0	BACKGROUND INFORMATION.....	4
4.0	SCOPE OF THE INVESTIGATION	6
5.0	INVESTIGATION METHOD	9
6.0	REVIEW AND EVALUATION	11
7.0	CONCLUSIONS	21
8.0	REFERENCES	23
9.0	LIMITATIONS	24

FIGURES

FIGURE 1:	SITE LOCATION
FIGURE 2:	RSC STUDY AREA
FIGURE 3:	RSC SITE PLAN
FIGURE 4:	RSC SITE PLAN – CONTRIBUTING POTENTIAL CONTAMINATING ACTIVITIES (PCAs)
FIGURE 5:	RSC SITE PLAN – NON-CONTRIBUTING POTENTIAL CONTAMINATING ACTIVITIES (PCAs)
FIGURE 6:	RSC SITE PLAN - AREAS OF POTENTIAL ENVIRONMENTAL CONCERN (APECs)
FIGURE 7:	RSC SITE INVESTIGATION
FIGURE 8:	GROUNDWATER FLOW DIRECTION
FIGURE 9:	CROSS SECTIONS A-A' Layout
FIGURE 10:	CROSS SECTION : CROSS SECTION A-A'

TABLES

Table 1:	Borehole, Soil and Groundwater Sample Notes
Table 2:	Soil Chemical Analysis – VOCs (including BTEX) / PHC / Sieve
Table 3:	Soil Chemical Analysis – METALS
Table 4:	Soil Chemical Analysis – PAHs
Table 5:	Groundwater Chemical Analysis – VOCs (including BTEX) / PHC
Table 6:	Groundwater Monitoring Well Construction Details
Table 7:	Monitoring Well and Groundwater Elevations

APPENDICES

APPENDIX 1 –	FIELD SAMPLING & ANALYSIS PLAN
APPENDIX 2 –	BOREHOLE LOGS
APPENDIX 3 –	LABORATORY CERTIFICATES OF ANALYSIS
APPENDIX 4 –	RSC PROPERTY SURVEY



1.0 EXECUTIVE SUMMARY

Rubicon Environmental (2008) Inc. (Rubicon) was retained by Mr. Manjit Banwait on behalf of 2507517 Ontario Inc. to undertake a Phase II Environmental Site Assessment (ESA) at the commercial property located at 642 Dunlop Street West, Barrie, Ontario. (hereby referred to as the 'subject property or RSC property'). The environmental assessment was completed to ascertain and fully explore surficial and subsurface soil and groundwater conditions in the vicinity of the APECs identified in a Phase One ESA completed by Rubicon. The investigation was completed in accordance with O. Reg 153/04 (as amended 2011, 2019) for the purpose of filing a record of site condition with the MECP (Ministry of the Environment Conservation and Parks), in order to meet the requirements for the proposed Residential / Commercial Land Use.

The subject property was assessed using the Table 1: Full Depth Background Site Condition Standards for Residential Land Use, Potable Groundwater Condition, Coarse Textured Soil from the Ministry of Environment Conservation and Parks (MECP) document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (April 15, 2011), referred to as MECP Table 1 Site Condition Standards.

Based on the findings of Rubicon's Phase One ESA, four (4) Areas of Potential Environmental Concern were identified on the subject property. The APEC's identified on site included the following:

APEC #1 includes the perimeter of an onsite building being utilized as an automotive repair facility.

APEC #2 is located just west of the onsite auto repair building and is associated with two (2) x 200 L above ground storage tanks (AST) used for waste oil.

APEC #3 is located across the subject property and is associated with a layer of suspected imported fill.

APEC #4 is located along the western property boundary of the subject property and is associated with an offsite retail petroleum outlet (gas station) and car wash.

The five (5) contaminants of potential concern (COPC) were identified at the Site with respect to the four (4) areas of potential environmental concern: Petroleum Hydrocarbons (PHC F1-F4), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Volatile Organic Compounds (VOC's), Metals and Polycyclic Aromatic Hydro compounds (PAHs) identified on the RSC property. These contaminants of potential concern were identified using the Method Groups as outlined in the, Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011.

The Phase II ESA drilling investigation was conducted on April 22, 2022. In total, six (6) boreholes were advanced on-site to a maximum depth 3.75 m below grade level (mbgl), to ascertain the surficial and subsurface soil conditions, in the vicinity of the APECS identified in the previous Phase One ESA. The soil samples collected as part of the field screening methods were examined using both visual and olfactory senses. Field-testing was also conducted using an RKI Eagle calibrated against hexane gas. Three (3) of the boreholes were developed as groundwater monitoring wells and were sampled. A total of six (6) verification soil samples, one (1) duplicate sample and one (1) trip blank were submitted for laboratory analysis.

The laboratory analytical results for all the soil samples analyzed showed that each of the locations and depths of samples submitted were below the applicable site conditions standards. None of the potential contaminants of concerns which included Petroleum Hydrocarbons (PHC F1-F4), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Volatile Organic Compounds (VOC's), Metals and Polycyclic Aromatic Hydro compounds (PAHs) were present at concentrations greater than the applicable site condition standard, at any of the sampling locations.

On May 10, 2022, with the use of peristaltic pump, all three (3) groundwater monitoring wells onsite (MW1, MW2, and MW3) were sampled. None of the potential contaminants of concerns which included Petroleum Hydrocarbons (PHC F1-F4), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOC's) were present at concentrations greater than the applicable site condition standard, at any of the sampling locations.

Based on the findings of the Phase II ESA, the areas investigated on the subject property meets the applicable and / or proposed Table 1: Full Depth Background Site Condition Standards for Residential Land Use, Potable Groundwater Condition, Coarse Textured Soil from the Ministry of Environment Conservation and Parks (MECP) document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (April 15, 2011), referred to as MECP Table 1 Site Condition Standards.

As a result of the findings of the Phase II ESA, it is the opinion of Rubicon Environmental (2008) Inc. that there are no known environmental conditions within the areas investigated on the subject property to warrant further environmental investigation at this time.



2.0 INTRODUCTION

2.1 Site Description

The RSC property is located at 642 Dunlop Street West in Barrie, Ontario, on the northeast corner of the intersection between Dunlop Street West and Miller Drive in Barrie/ ON. The total area of the RSC site encompasses approximately 8084.59 m² (1.9977 acres or 0.808459 hectares).

642 Dunlop Street West: PART OF WEST PART OF LOT 25 CON 7 VESPRA DESIGNATED AS PART 3, 51R-14958; SAVE & EXCEPT PART 1, 51R-40157; VESPRA

PIN: 58765-1406 (LT)

Contact information

Property owner: Mr. Manjit Banwait on behalf of 2507517 Ontario Inc.
12 Chiavatti Drive
Markham, Ontario, L3R 1E2

Authorized Person: Manjit Banwait (Subject Property Owner), manjit@pgrealty.ca
Site Contact Person: Manjit Banwait (Subject Property Owner), manjit@pgrealty.ca

2.2 Current and Proposed Future Uses

Based on the information and data collected as part of the Phase One ESA, the subject property was first developed for commercial use in the 1980s as an automotive repair facility. The current use remains commercial with an automotive repair operation and a used car sales business.

Rubicon Environmental (2008) Inc. was informed by the authorized individual that 642 Dunlop Street West is proposed to be a multi-unit commercial/residential development. The proposed development plans are as followed: One (1) 7071.35 m² condo building with a maximum height of 13.95 m high is proposed to be constructed. There will be commercial retail units on the ground floor and seventy-two (72) residential units in total. The proposed development consists of residential and commercial land use.

2.3 Applicable Site Condition Standard

The RSC property was assessed using the subject property was assessed using the Table 1: Full Depth Background Site Condition Standards for Residential Land Use, Potable Groundwater Condition, Coarse Textured Soil from the Ministry of Environment Conservation and Parks (MECP) document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (April 15, 2011), referred to as MECP Table 1 Site Condition Standards.

The following rationale was used to determine the applicable site condition standard for use at this site: **Under Section 35: Non-potable and potable groundwater conditions** of the regulation, the RSC property meets the following conditions to warrant the use of potable groundwater criteria;

- (a) the property, and all other properties located, in whole or in part, within 250 metres of the boundaries of the property, are not supplied by a municipal drinking water system, as defined in the *Safe Drinking Water Act, 2002*;
- (b) the property is located within an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of ground water, or
- (c) the record of site condition does not specify agricultural or other use as the type of property use;
- (d) The City of Barrie is a single tier municipality. As per O. Reg. 153/04, The City of Barrie was not notified of designating the RSC property as the more conservative Table 1 SCS was used for comparison.
- (e) As a result of the above mentioned, a non-objection notification letter from the City of Barrie is not required for use of Table 1 potable ground water site condition standards for the subject property.



Section 41: Site condition standards, environmentally sensitive areas of the regulation, does apply to the RSC property due to the following conditions;

(a) the property is,

(i) within an area of natural significance,

(ii) includes or is adjacent to an area of natural significance or part of such an area, or

(iii) includes land that is within 30 metres of an area of natural significance or part of such an area;

(b) the soil at the property does **not** have a pH value as follows:

(i) for surface soil, less than 5 or greater than 9,

(ii) for sub-surface soil, less than 5 or greater than 11; or

The surface pH value ranged from 7.25 - 7.54 and the subsurface pH value ranged from 7.32 – 7.47. Refer to Appendix 3 – Laboratory Certificates of Analysis.

Section 43.1: Site condition standards, shallow soil property or water body of the regulation does **not** apply to the RSC property for the following conditions;

(a) the property is **not** a shallow soil property; or

(b) the property does **not** include all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body. O. Reg. 511/09, s. 21.

(c) In this section,

“shallow soil property” means a property of which 1/3 or more of the area consists of soil equal to or less than 2 metres in depth beneath the soil surface, excluding any non-soil surface treatment such as asphalt, concrete or aggregate;

“soil” means, for the purposes of the definition of shallow soil property, unconsolidated naturally occurring mineral particles and other naturally occurring material resulting from the natural breakdown of rock or organic matter by physical, chemical, or biological processes that are smaller than 2 millimetres in size or that pass the US #10 sieve and includes a mixture of soil and rock if less than 50 per cent by mass of the mixture is rock. O. Reg. 511/09, s. 21.

Property Use: Current property use is commercial. The proposed property use will change to commercial/residential land use.

Soil Texture Criteria: Based on a particle size analysis completed for the RSC property the coarse textured soil standard will apply based on the following results;

Particle size analysis completed by ALS Environmental Laboratories determined the soils to be coarse textured; MUST PSA % >75 um – 94.7

Refer to Appendix 3 - Laboratory Certificates of Analysis.

“coarse textured soil” means soil that contains more than 50 per cent by mass of particles that are 75 micrometres or larger in mean diameter;

“medium and fine textured soil” means soil that contains 50 per cent or more by mass of particles that are smaller than 75 micrometres in mean diameter. O. Reg. 153/04, s. 42 (2); O. Reg. 511/09, s. 19.

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

The subject property is located on the northeast corner of the intersection between Dunlop Street West and Miller Drive in Barrie/ ON. The total area of the RSC site encompasses approximately 8084.59 m² (1.9977 acres or 0.808459 hectares). Refer to Figure 1 for the site location and Figure 2 for the Current Site Plan. An area of natural significance (wetland) was identified within the Phase Two study area. Although the majority of all properties within the Phase II study area are serviced with municipal water supply by the City of Barrie, there does exist some domestic and commercial potable wells located in the study area.



Based on a topographic survey of 642 Dunlop Street West, the topography of the subject property appears to be relatively flat with a slight 1 m slope in the north, west and south directions. The highest elevation point recorded is 236.081 m asl located in the southwest section by Dunlop Street West and the lowest recorded elevation point is 234.275 m asl located at the bottom of the south-eastern bank on the subject property.

Surface water drainage infrastructures were observed on 642 Dunlop Street West.

3.2 Past Investigations

Rubicon Environmental (2008) Inc. determined that information and data contained within the following previous Geotechnical Investigation and Engineering Report and Phase Two ESA investigation was relied upon for the purpose of providing additional site condition information as part of the current Phase Two ESA investigation.

A report entitled, 'Commercial Property 642 Dunlop Street West, Barrie, Ontario, L4N 9W5 Phase I Environmental Site Assessment, dated December 16, 2022, completed by Rubicon Environmental (2008) Inc.

Based on the findings of this Phase One ESA, sufficient evidence and documentation has been evaluated to verify that four (4) APECs were identified on the subject property based on four (4) contributing PCAs.

APEC #1 includes the perimeter of an onsite building being utilized as an automotive repair facility.

APEC #2 is located just west of the onsite auto repair building and is associated with two (2) x 200 L above ground storage tanks (AST) used for waste oil.

APEC #3 is located across the subject property and is associated with a layer of suspected imported fill.

APEC #4 is located along the western property boundary of the subject property and is associated with an offsite retail petroleum outlet (gas station) and car wash.

The five (5) contaminants of potential concern associated with the four (4) areas of potential environmental concern: Petroleum Hydrocarbons (PHC F₁-F₄), Volatile organic compounds (VOCs), BTEX (Benzene, Toluene, Ethylbenzene and Xylene), Polycyclic aromatic hydrocarbons (PAHs) and Metals.

Based on the findings of the Phase One ESA completed by Rubicon Environmental (2008) Inc., it is our opinion that a Phase Two Environmental Site Assessment is required on the subject property to fully assess the quality of the subsurface soil and groundwater conditions within the identified areas of potential environmental concern before a record of site condition can be filed with the Ministry of the Environment, Conservation and Parks (MECP).

A report entitled, 'Geotechnical Investigation and Engineering Report Proposed Mixed-Use Development 42 Dunlop Street West, Barrie, Ontario, dated February, 2022, completed by Terraprobe Inc. The following is a summary of the conclusions:

Terraprobe Inc. was retained by 25707517 Ontario Inc. to conduct a subsurface investigation and to prepare the findings in a geotechnical design report for the proposed re-development at the parcel of land located at 642 Dunlop Street West, City of Barrie, Ontario.

The investigation between January 18 and 20, 2021 and consisted of advancing a total of nine (9) exploratory boreholes, six (6) being installed with groundwater monitoring wells across the site. Boreholes were advanced to a maximum depth of 12.6 m below existing ground level. Groundwater levels were observed in the open boreholes upon completion of drilling, six (6) groundwater monitoring wells were installed in boreholes 1 to 5 and 9.

The borehole logs indicate that the soil on site largely consists of silt to sand. The borehole logs also detail fill to be present at depths from 0.25 m to 2.2 m. This represents an APEC on the site.

Based on the findings of the Geotechnical Investigation and Engineering Report completed on the subject property one (1) potential contaminating Activities (PCAs) was identified: the unknown quality of the existing fill material.



A report entitled, 'Commercial Property 642 Dunlop Street West, Barrie, Ontario, L4N 9W5 Phase II Environmental Site Assessment, dated December, 2017, completed by Rubicon Environmental (2008) Inc. The following is a summary of the conclusions:

Rubicon was retained by Mr. Harry Dhingra on behalf of 2507517 Ontario Inc. in order to undertake a Phase II Environmental Site Assessment at the commercial property located at 642 Dunlop Street West in Barrie, Ontario. The investigation was completed in order to ascertain and fully assess the areas of potential environmental concern identified by Rubicon.

The subject property was assessed using the Table 2 Full Depth Generic Site Condition Standards for commercial land use, potable groundwater condition, coarse textured soil from the Ministry of Environment (MOE) document "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (April 15, 2011), referred to as MOE Table 2 Site Condition Standards. This assessment was not completed for the purpose of filing a Record of Site Condition.

Rubicon's background evaluation of the subject property revealed two (2) Areas of Potential Environmental Concern: APEC #1 is located within the perimeter of the western building onsite and relates to a current auto garage. APEC #2 is located in the vicinity of two waste oil ASTS along the western side of the western building and relates to the current auto garage. Three (3) contaminants of concern were identified relating to the two (2) areas of potential environmental concern: Petroleum Hydrocarbons (PHC F1-F4), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOCs).

Rubicon completed the borehole drilling program on November 24, 2017. The drilling program consisted of the advancement of five (5) boreholes with three (3) of them developed as temporary groundwater monitoring wells to a maximum of 3.0 m below grade level.

In total, five (5) representative soil samples were selected for laboratory analysis. On November 27, 2017, a total of three (3) groundwater samples were collected from the three (3) temporary monitoring wells using dedicated disposable bailers and submitted for analyses.

The laboratory analytical results for all the soil and groundwater samples showed that each of the samples submitted were below the applicable site condition standards. None of the potential contaminants of concerns which included; Petroleum Hydrocarbons (PHC F1-F4), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOCs) were present at concentrations greater than the applicable site condition standard.

Rubicon concludes that there are no known environmental conditions in the land or water on, in or under the subject property to warrant further environmental investigation at this time.

Based on the findings of the Phase II ESA Investigation completed on the subject property no potential contaminating Activities (PCAs) were identified.

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of Site Investigation

Based on the findings of the Phase I ESA investigation completed by Rubicon Environmental (2008) Inc., a judgemental sampling approach was implemented based on the potentially contaminating activities and areas of environmental concerns identified on the RSC property. The Phase Two ESA investigation completed on the RSC property included the advancement of six (6) boreholes (BH) and the installation and sampling of three (3) groundwater monitoring wells. Due to the orientation of the six (6) boreholes advanced in a line on the RSC property, the groundwater elevations of the three (3) groundwater monitoring wells on 642 Dunlop Street West were included as part of this investigation in order to determine the groundwater contour to later calculate the groundwater flow direction during the Phase Two RSC CSM. The locations of the boreholes were strategically placed to fully investigate and identify any contaminants of concern which may be present on, in or under the Phase Two RSC ESA property. Refer to Figure 5 – Site Investigation.



4.2 Media Investigated

Soil and groundwater media were deemed relevant to the Phase Two ESA based on the potentially contaminating activities, the areas of environmental concerns and potential contaminants of concern including; Petroleum Hydrocarbons (PHC F₁-F₄), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Volatile Organic Compounds (VOC's), Polycyclic Aromatic Hydrocarbons (PAHs) and Metals for the soil identified on the RSC property.

4.3 Phase One Conceptual Site Model

The following outlines the key findings pertaining to the RSC property as part of the Phase One ESA report completed by Rubicon Environmental (2008) Inc.

Based on the findings of the Phase One ESA completed by Rubicon Environmental (2008) Inc. potentially contaminating activities (PCA's) were identified on the RSC property and surrounding that are outlined in the following table; also refer to Figure 4 and Figure 5 for an illustration of the PCA's pertaining the RSC property.

Potentially Contaminating Activities Directly Contributing to APEC on the Subject Property

Note: PCA # - as per Clause 16 (2) (a) of Schedule D, Table 2 - Refer to Figure 3

PCA Identifier #	Address (Address)	Location of Activity	Potentially Contaminating Activity (PCA)	Comments	Contributes to APEC (Yes or No)
1	On Site (642 Dunlop Street West)	Perimeter of western building	(52) – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Based on the records review and site inspection during a Phase I ESA, it was determined that the footprint of the western building has been operating as a automotive repair facility since the 1980's when it was first developed.	Yes
2	On Site (642 Dunlop Street West)	Two 200 L Above Ground Waste Oil Tanks	(28) - Gasoline and Associated Products Storage in Fixed Tanks	Based on the records review and site inspection during a Phase I ESA, two (2) 200 L aboveground storage tanks (ASTs) used for waste oil were observed just west (outside) of the auto repair building	Yes
3	On Site (642 Dunlop Street West)	Across the RSC property	(30) - Importation of Fill Material of Unknown Quality	Based on site visit it was determined that there is a layer of suspected fill material present across the subject property. It is suspected that this fill material was imported at the time of the site being developed in the 1980's.	Yes
4	Off Site (630 Dunlop Street)	Approx. 45 m west of the RSC property across Miller Drive	(28) - Gasoline and Associated Products Storage in Fixed Tanks n/a – Car Wash	Based on the records review and site inspection during a Phase I ESA, a retail petroleum outlet (gas station) and car wash was observed offsite and west of the RSC property	Yes



“TABLE OF AREAS OF POTENTIAL ENVIRONMENTAL CONCERN”

(Refer to clause 16(2) (a), Schedule D, O. Reg. 153/04)

Refer to Figure 4 for the location of areas of potential environmental concern.

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground water, soil and/or sediment)
APEC 1 Automotive Repair Facility	Perimeter of automotive repair facility site building (western building)	(52) – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	On-site	PHCs BTEX VOCs	Soil Groundwater
APEC 2 Two (2) Waste Oil ASTs	Just west (outside) of the automotive repair facility site building	(28) - Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs BTEX VOCs	Soil Groundwater
APEC 3 Suspected Layer of Fill Material	Across the RSC site	(30) - Importation of Fill Material of Unknown Quality	On-site	PHCs BTEX VOCs Metals PAHs	Soil
APEC 4 Retail Petroleum Outlet (gas station) and car wash Approx. 45 m west of the RSC property across Miller Drive	Along the western property line	(28) - Gasoline and Associated Products Storage in Fixed Tanks n/a – Car Wash	Off-site	PHCs BTEX VOCs	Soil Groundwater

The five (5) contaminants of potential concern were identified at the Site with respect to the four (4) areas of potential environmental concern: Petroleum Hydrocarbons (PHC F₁-F₄), Volatile organic compounds (VOCs), BTEX (Benzene, Toluene, Ethylbenzene and Xylene), Polycyclic Aromatic Hydrocarbon (PAHs), and Metals.

4.4 Deviations from Sampling and Analysis Plan

No deviations from the sampling and analysis plan were necessary during the completion of the Phase Two ESA on the RSC property. Refer to Appendix 5 – Field Sampling and Analysis Plan.

4.5 Impediments

No physical impediments including site access restrictions were encountered during the completion of the Phase Two ESA on the RSC property.



5.0 INVESTIGATION METHOD

5.1 General

The Phase Two ESA investigation was conducted in accordance with the criteria meeting O. Reg. 153/04, as amended by O. Reg. 511/09, for the purpose of filing a Record of Site Condition (RSC) with the Ontario Ministry of the Environment.

The RSC property was assessed using the Table 1 Site Condition Standards for residential land use, potable groundwater, coarse textured soil from the Ministry of Environment (MOE) document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*" (April 15, 2011), referred to as MOE Table 1 Site Condition Standards.

All Chemical analyses were conducted by ALS Environmental Laboratories of Waterloo, Ontario. ALS Environmental Laboratories is a member of the Canadian Association for Laboratory Accreditation Inc. (CALA) and meets the requirements of Section 47 of O.Reg. 153/04 certifying that the analytical laboratory be accredited in accordance with the International Standard ISO/IEC 17025 and with standards developed by the Standards Council of Canada.

Deviations from the standard operating procedures, outlined in the above-mentioned methods were not necessary.

5.2 Drilling and Excavating

(i) Rubicon Environmental (2008) Inc. retained the services of Sonic Soil Sampling (Ontario) Inc., 441 Carlingview Dr, Etobicoke, Ontario, M9W 5G8, to complete the borehole drilling program at the RSC property on April 22, 2022

(ii) A truck mounted drill rig equipped with a combination of solid stem augers and split spoon samplers was utilized by Sonic Soil Sampling to complete the boreholes.

(iii) All equipment that came into contact with subsurface conditions (augers and split spoon samplers) during the drilling program was thoroughly cleansed with 'Alconox' powder mixed with water by the licensed drillers between each sampling interval to prevent possible cross contamination.

(iv) Soil samples were collected at 0.75 m intervals using a 76 cm long, 5 cm diameter split spoon sampler.

5.3 Soil Sampling

(i) Soil samples were collected at 0.75 m intervals using a 76 cm long, 5 cm diameter split spoon sampler. All field screening soil samples were collected with the use of dedicated nitrile gloves and were placed in 1 litre dedicated sterile bags as part of the field sampling procedure. All representative soil samples selected for laboratory analysis were placed in dedicated sterile sample jars using a dedicated sterile T-Core soil sampler, all provided in advance by the laboratory, and placed in ice packed coolers at a temperature of approximately 3-10 degrees Celsius.

(ii) A geological description of the soil samples encountered within the overburden investigated is generally characterized as follows (from surface: ~235 m.a.s.l. to depth: ~232 m.a.s.l.); Asphalt/Topsoil followed by dark brown sandy silt to 233.781 m a.s.l. followed by saturated silty sand to a the maximum depth of ~232 m.a.s.l. Refer to Appendix 2 – Borehole Logs.

5.4 Field Screening Measurements

The headspace vapours of each sample were tested for petroleum vapour concentrations using a RKI Eagle 2 portable handheld VOC instrument, calibrated against hexane. The RKI Eagle 2 was bump calibrated on April 22, 2022. As part of the field screening method, all soils encountered were also examined for olfactory and visual indicators of impairment such as petroleum odours and staining. No deviations from standard operating procedures relating to the proposed field-screening methods were necessary.

5.5 Groundwater: Monitoring Well Installation

Three (3) groundwater monitoring wells were installed on the RSC subject property on April 22, 2022. None of the well screens exceeded 3.00 m. Refer to Table 8 for well information and Refer to Appendix 2 - Borehole Logs for the groundwater monitoring wells.



5.6 Groundwater: Field Measurement of Water Quality Parameters

The headspace vapours of each sample were tested for petroleum vapour concentrations using a RKI Eagle 2 portable handheld VOC instrument, calibrated against hexane. The RKI Eagle 2 was calibrated on May 10, 2022. As part of the field investigation method, all monitoring wells were examined for VOC vapour concentrations prior to groundwater sampling. No VOC vapour concentrations were detected in the monitoring wells.

5.7 Groundwater: Sampling

Prior to sampling approximately three (3) well water volumes were purged from each of the groundwater monitoring wells. All purged groundwater was placed in sealed containers and stored at 642 Dunlop Street West. On May 10, 2022 with the use of a Spectra Field Pro – Peristaltic Pump, groundwater samples were collected from each of the newly installed groundwater monitoring wells onsite (MW1, MW2 and MW3), including one (1) duplicate and one (1) trip blank samples. All representative groundwater samples collected for laboratory analysis were placed in specified sampling bottles/vials provided by the laboratory and placed in ice packed coolers at a temperature of approximately 3-10 degrees Celsius.

5.8 Sediment Sampling

Sediment sampling was not completed as part of the Phase Two ESA investigation on the RSC property.

5.9 Analytical Testing

The chemical analyses of all soil and groundwater samples were completed by ALS, a member of the Canadian Association for Laboratory Accreditation Inc. (CALA) and meet the requirements of Section 47 of O.Reg. 153/04 certifying that the analytical laboratory be accredited in accordance with the International Standard ISO/IEC 17025 and with standards developed by the Standards Council of Canada.

5.10 Residual Management Procedures

All residual soil clippings from each borehole advanced, all purged groundwater volumes, and all fluids from equipment cleaning, were placed in sealed drums and water containers and stored at the back of 642 Dunlop Street West for future disposal.

5.11 Elevation Surveying

Elevations were obtained from a survey provided to Rubicon Environmental (2008) Inc. by the authorized individual, completed by Omari Mwinyi Surveying Ltd., on September 21, 2016. Benchmark elevations are referred to having an elevation of 235 metres. Bearing Note: Bearings are MTM Grid, derived from simultaneous GPS Observations from A B and C based on the Ontario Coordinate System (MTM) Central Meridian 79°30'W Longitude, Zone 10, NAD83(CSRS). Distances shown on this plan are adjusted ground level distances and can be used to compute grid coordinates by multiplying the distances by a combined scale factor 0.999924.

Refer to Appendix 4.

5.12 Quality Assurance and Quality Control Measures

(i) Description of sample containers and preservation.

For soil samples submitted for chemical analyses:

Parameter	Container / Field Preservative Information
PAHS, BTEX, PHCs (F ₁ -F ₄) and VOCs	2 x 40 ml glass vials charged with methanol preservative, pre-weighed and 1 x 125 ml glass jar
METALS	1 x 125 ml glass jar
pH	1 x 125 ml glass jar



For groundwater samples submitted for chemical analyses:

Parameter	Container / Field Preservative Information
BTEX, PHCs (F ₁) and VOCs	2 x 40 ml glass vials with no headspace, field preservative NaHSO ₄
PHCs (F ₂ -F ₄)	2 x 100 ml amber glass bottle, Teflon lined lid, field preservative NaHSO ₄

No deviation from the sampling and analysis plan was necessary. Refer to Appendix 5 - Sampling Plan.

Each sample selected for analysis were placed in the laboratory provided containers/vials/jars and labelled according to the borehole/monitoring well location and/or split spoon sample ID, as per the proposed investigation and analysis plan.

(ii) All equipment that came into contact with subsurface conditions (augers and split spoon samplers) during the drilling program was thoroughly cleansed with 'Alconox' powder mixed with water by the licensed drillers between each sampling interval to prevent possible cross contamination.

All field screening soil samples were collected with the use of dedicated nitrile gloves and were placed in 1 litre dedicated sterile bags as part of the field sampling procedure. All representative soil samples selected for laboratory analysis were placed in dedicated sterile sample jars using a dedicated sterile T-Core soil sampler, all provided in advance by the laboratory, and placed in ice packed coolers at a temperature of approximately 3-10 degrees Celsius.

All groundwater samples were collected with the use of dedicated HDPE disposable bailers. All representative groundwater samples collected for laboratory analysis were placed in specified sampling bottles/vials provided by the laboratory and placed in ice packed coolers at a temperature of approximately 3-10 degrees Celsius.

(iii) All non-dedicated sampling and monitoring equipment was cleaned following each use. One (1) trip blank was submitted for laboratory analysis (VOC/F1 parameters) for each soil and groundwater laboratory submission. For every ten (10) soil and groundwater sample submitted for laboratory analysis, one (1) duplicate soil and groundwater was submitted. Calibration checks on field instruments were conducted regularly to ensure accuracy of measurements.

(iv) No deviation from the procedures set out in the quality assurance and quality control programs set out in the sampling and analysis plan was necessary.

6.0 REVIEW AND EVALUATION

6.1 Geology

Based on the sub surface investigations conducted by Rubicon Environmental (2008) Inc. during the Phase Two ESA, is generally characterized as follows (from surface: ~235 m.a.s.l. to depth: ~232 m.a.s.l.); Asphalt/Topsoil followed by dark brown sandy silt to 233.781 m a.s.l. followed by saturated silty sand to a maximum depth of ~232 m.a.s.l.

Based on a particle size analysis completed for the RSC property the coarse textured soil standard will apply based on the following results; Particle size analysis completed by ALS Environmental Laboratories determined the soils to be coarse textured; MUST PSA % >75 µm – 94.7.

The sites are located in a physiographic region known as the Sand Plain (Physiography of Southern Ontario, Chapman and Putnam, 1984). The terrain of the subject property is relatively flat, with a slight decline to the south.

"Quaternary Geology of Ontario, Southern Sheet" Map 2556, shows the sites to be within an area known as Glaciolacustrine deposits, defined by: sand, gravelly sand and gravel; near shore and beach deposits.



"Bedrock Geology of Ontario, Southern Sheet" Map 2544, shows that the bedrock in the area of the site is comprised of Ordovician: Middle Ordovician, defined by: Limestone, dolostone, shale, arkose and sandstone of the Ottawa Group; Simcoe Group and Shadow Lake Formation.

The mapping available as Sediment Thickness of the Greater Toronto & Oak Ridges Moraine Areas, southern Ontario, Natural Resources Canada, Ontario Ministry of Northern Development and Mines, and MOE, indicated that bedrock in the general area of the subject property is approximately 100 m below grade.

Based on elevation points marked on a current topographic survey of the subject property the subject property ranges from 236 – 234 m asl.

No other aquifer was investigated on the RSC property, as no known releases, potentially migrating contaminants, or potentially contaminating activities were identified that could potentially result in an impact beyond the shallow sub-surface groundwater table.

6.2 Groundwater: Elevations and Flow Direction

The three (3) groundwater monitoring wells on the RSC property were used for interpreting the groundwater flow direction using groundwater levels on the RSC property at the time of this investigation.

On May 10, 2022, with the use of a Solinst 101 Water Level Meter - P7 Probe with PVDF flat tape, the depth to groundwater in each of the groundwater monitoring wells on the RSC property were recorded as; MW1 at 1.08 m bgl, MW2 at 1.34 m bgl and MW3 at 1.20 m bgl. The relative elevations for the onsite monitoring wells ranged from 234.869 m asl to 235.603 masl.

There was no indication of free-flowing product encountered in any of the groundwater monitoring wells investigated as part of this Phase Two ESA. The groundwater levels were determined by use of a Solinst 101 Water Level Meter with P7 Probe with PVDF flat tape and were measured from the grade level to the top of the groundwater in the monitoring well water volume.

There are two (2) buildings on the RSC property, a single storey automotive repair facility located towards the west end of the property, and a one-storey building used as a dealership located towards the east side of the subject property along with a fast food shack. Bell, hydro utilities are serviced above ground with municipal water, storm sewer, and natural gas serviced below ground. Based on the depth to groundwater recorded on the RSC property (ranging between 1.08 m – 1.34 m below grade level) in May 2022 and the evaluation of buried utilities for the property (estimated to range between 0.61 m – 2.33 m below grade), there is a potential for interaction between known buried utilities in or under the Phase Two property and the water table. Although there is a potential for interaction between known buried utilities and the water table resulting in the presence of potential distribution through season changes and pathways, it is the opinion of Rubicon that this interaction represents a low risk due to the fact that no contaminants were present in the subsurface soil and groundwater at concentrations greater than the applicable site condition.

6.3 Groundwater: Hydraulic Gradients

No contaminants were present in the groundwater aquifer investigated on the RSC property.

$$\text{Hydraulic Gradient} = h_a - h_b / d$$

$$\text{Hydraulic Gradient} = 234.263 \text{ m} - 233.78 \text{ m} / 88.5 \text{ m}$$

$$\text{Hydraulic Gradient} = 0.0055$$

Refer to Figure 8.

6.4 Coarse-Medium Soil Texture

Based on a site condition encountered during the field observations and particle size analysis completed for the RSC property the coarse textured soil was used in determining the applicable site condition standards. Due to the consistency of the underlying sub-surface soils encountered in all boreholes advanced on the RSC property, one (1) soil sample was submitted for particle size analysis. Particle size analysis completed by ALS Environmental Laboratories determined the soils to be coarse textured; MUST PSA % >75 µm – 94.7. Refer to Appendix 3 - Laboratory Certificates of Analysis.



6.5 Soil: Field Screening

The headspace vapours of each sample were tested for petroleum vapour concentrations using a RKI Eagle 2 portable handheld VOC instrument, calibrated against hexane. The RKI Eagle 2 was calibrated on April 22, 2022. As part of the field screening method, all soils encountered were also examined for olfactory and visual indicators of impairment such as petroleum odours and staining. As part of the field screening method, all soils encountered were also examined for olfactory and visual indicators of impairment such as petroleum odours and staining.

No indication and / or evidence of soil impairment was encountered during the field screening methods. Refer to Table 1.

6.6 Soil Quality

The location of soil sampling points and the depths of soil samples are presented in Figure 7, and Appendix 2 - Borehole Logs.

The RSC property was assessed using the Table 1 Standards for residential land use, potable groundwater, coarse textured soil from the Ministry of Environment (MOE) document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*" (April 15, 2011), referred to as MOE Table 1 Site Condition Standards.

The laboratory analytical results for all the soil samples analyzed showed that each of the locations and depths of samples submitted were below the applicable site conditions standards.

None of the potential contaminants of concerns which included Petroleum Hydrocarbons (PHC F₁-F₄), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), polycyclic Aromatic Hydrocarbons (PAH), Volatile Organic Compounds (VOC's), and Metals were present at concentrations greater than the applicable site condition standard at any of the sampling locations. Refer to Tables 2 – 4. The analytical results do not indicate that soil serves as a source of contaminant mass contributing to ground water and do not indicate the presence of light or dense non-aqueous phase liquids.

6.7 Groundwater Quality

The locations of the groundwater monitoring well, and groundwater sample locations are outlined in Figure 8.

The RSC property was assessed using the Table 1 Standards for residential land use, potable groundwater, coarse textured soil from the Ministry of Environment (MOE) document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*" (April 15, 2011), referred to as MOE Table 1 Site Condition Standards.

The laboratory analytical results for all the groundwater samples analyzed showed that each of the samples submitted were below the applicable site conditions standards.

None of the potential contaminants of concerns which included Petroleum Hydrocarbons (PHC F₁-F₄), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOC's) were present at concentrations greater than the applicable site condition standard at any of the sampling locations. Refer to Table 5 – 7.

6.8 Sediment Quality

Sediment sampling and / or investigation was not part of the Phase Two ESA.



6.9 Quality Assurance and Quality Control Results

As part of the quality control procedures for soil sampling, of the eight (8) soil samples submitted for laboratory analysis, one (1) was a duplicate soil sample and one (1) was a trip blank. This ensured that sufficient duplicate samples were met (one for every ten samples) and adequate trip blank samples were also submitted (one per laboratory submission). All samples were handled in accordance with analytical protocols with respect to holding times, preservation methods, storage requirements, and container types.

As part of the quality control procedures for groundwater sampling, of the five (5) groundwater samples submitted for laboratory analysis; one (1) was a duplicate groundwater sample and one (1) was a trip blank. This ensured that sufficient duplicate samples were met (one for every ten samples) and adequate trip blank samples (if analyzing for VOCs, one trip blank for every laboratory submission) were also submitted. All samples were handled in accordance with analytical protocols with respect to holding times, preservation methods, storage requirements, and container types.

Meeting the minimum requirements for quality control sampling ensured that a higher level of accuracy could be developed in determining whether the RSC property meets the applicable site condition standards.

All certificates of analysis or analytical reports received pursuant to clause 47 (2) (b) of the regulation comply with subsection 47(3). A certificate of analysis or analytical report has been received for each sample submitted for analysis. All certificates of analysis or analytical reports received have been included in full in Appendix 3 - Laboratory Certificates of Analysis.

It is the opinion of Rubicon Environmental (2008) Inc. that the overall quality of the field data was adequate and accurately reflects the site conditions in a manner that any decision making was not affected, and the overall objectives of the investigation and the assessment were met.

6.10 Phase Two Conceptual Site Model

6.11 Areas of Potentially Contaminating Activity and Concerns

The Phase Two Conceptual Site Model has been prepared based on information and data collected as part of Rubicon Environmental (2008) Inc.'s Phase One ESA and Phase Two ESA completed at the Site.

The subject property located at 642 Dunlop Street West has a total area of approximately 8084.59 m² (1.9977 acres or 0.808459 hectares) with two (2) single-storey commercial buildings and a fast-food shack. The subject property is located on the northeast corner of the intersection between Dunlop Street West and Miller Drive in Barrie, ON.

Based on the information and data collected as part of the Phase One ESA, the subject property was first developed for commercial use in the 1980s. The site has operated as an automotive repair facility since the 1980's and remained to present day.

Based on the findings of a Phase One Environmental Site Assessment (ESA) completed by Rubicon Environmental (2008) Inc., in accordance with O.Reg 153/04, potentially contaminating activities (PCAs) were identified both on site and within the Phase I ESA study boundary of 250m. Four (4) PCAs that were identified on the subject property were found to represent four (4) Areas of Potential Environmental Concern (APEC) on the site. Each of the PCAs identified within the Phase One Study area were further evaluated by Rubicon in order to determine if the individual PCA represented an APEC on the subject property. All off-site PCAs identified within the Phase One Study area which represented an APEC are presented in the table below. Also refer to Figure 3 for an illustration of the locations of the PCA's pertaining to the RSC property.



Potentially Contaminating Activities Pertaining to the RSC Property

Note: PCA # - as per Clause 16 (2) (a) of Schedule D, Table 2

PCA Identifier #	Address (Address)	Location of Activity	Potentially Contaminating Activity (PCA)	Comments	Contributes to APEC (Yes or No)
1	On Site (642 Dunlop Street West)	Perimeter of western building	(52) – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Based on the records review and site inspection during a Phase I ESA, it was determined that the footprint of the western building has been operating as a automotive repair facility since the 1980's when it was first developed.	Yes
2	On Site (642 Dunlop Street West)	Two 200 L Above Ground Waste Oil Tanks	(28) - Gasoline and Associated Products Storage in Fixed Tanks	Based on the records review and site inspection during a Phase I ESA, two (2) 200 L aboveground storage tanks (ASTs) used for waste oil were observed just west (outside) of the auto repair building	Yes
3	On Site (642 Dunlop Street West)	Across the RSC property	(30) - Importation of Fill Material of Unknown Quality	Based on site visit it was determined that there is a layer of suspected fill material present across the subject property. It is suspected that this fill material was imported at the time of the site being developed in the 1980's.	Yes
4	Off Site (630 Dunlop Street)	Approx. 45 m west of the RSC property across Miller Drive	(28) - Gasoline and Associated Products Storage in Fixed Tanks n/a – Car Wash	Based on the records review and site inspection during a Phase I ESA, a retail petroleum outlet (gas station) and car wash was observed offsite and west of the RSC property	Yes

As part of the Phase One ESA, Rubicon Environmental (2008) Inc.; four (4) areas of potential environmental concern were identified and are listed in the Table of Areas of Potential Environmental Concern. Refer to Figure 4 for an illustration of the APEC's on the RSC property. The scope of work for the Phase Two ESA was designed in order to assess the environmental quality of soil and groundwater at identified APECs, respectively.



“TABLE OF AREAS OF POTENTIAL ENVIRONMENTAL CONCERN”

(Refer to clause 16(2) (a), Schedule D, O. Reg. 153/04)

Refer to Figure 4 for the location of areas of potential environmental concern.

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground water, soil and/or sediment)
APEC 1 Automotive Repair Facility	Perimeter of automotive repair facility site building (western building)	(52) – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	On-site	PHCs BTEX VOCs	Soil Groundwater
APEC 2 Two (2) Waste Oil ASTs	Just west (outside) of the automotive repair facility site building	(28) - Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs BTEX VOCs	Soil Groundwater
APEC 3 Suspected Layer of Fill Material	Across the RSC site	(30) - Importation of Fill Material of Unknown Quality	On-site	PHCs BTEX VOCs Metals PAHs	Soil
APEC 4 Retail Petroleum Outlet (gas station) and car wash Approx. 45 m west of the RSC property across Miller Drive	Along the western property line	(28) - Gasoline and Associated Products Storage in Fixed Tanks n/a – Car Wash	Off-site	PHCs BTEX VOCs	Soil Groundwater

The five (5) potential contaminants of concern were identified at the Site: Petroleum Hydrocarbons (PHC F₁-F₄), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Volatile Organic Compounds (VOC's), polycyclic Aromatic Hydrocarbons (PAH), and Metals.

The Phase Two Environmental Site Assessment and Supplementary Phase Two ESA completed by Rubicon Environmental (2008) Inc., in accordance with O.Reg 153/04 was designed to investigate the environmental quality of the surficial and subsurface soil and groundwater conditions on the site; with respect to the potential contaminants of concern identified within areas of potential environmental concern on the subject property. The following table summarizes the sampling details from the Phase Two ESA completed on the RSC property:



Sampling Details Summary

SAMPLE ID	SAMPLE DEPTH	COMMENTS
BH1-SS3	1.50 – 2.25	- Located within APEC #3, as close as possible to APEC #4. - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, PHC, PAHs and Sieve parameters
BH2-SS4	2.25 – 3.00 m	- Located within APEC #2 and #3. - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, and PHC parameters
BH3-SS2	0.75 – 1.50	- Located within APEC #1, #2, and #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, PHC, PAHs parameters
BH3-SS2-DUP	0.75 – 1.50	- Located within APEC #1, #2, and #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, PHC, PAHs parameters
BH4-SS4	2.25 – 3.00 m	- Located within APEC #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, and PHC parameters
BH5-SS1	0.00 – 0.75	- Located within APEC #1, and #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, PHC, PAHs parameters
BH6-SS5	3.00 – 3.75 m	- Located within APEC #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs and PHC parameters
MW1	-	- Located within APEC #3 and as close as possible to APEC #4 - Sampled on May 10, 2022 by Rubicon - No petroleum odours or sheen present - VOC headspace reading using field instruments (<5 ppm) - Groundwater sample analysed for BTEX, PHC and VOCs
MW2	-	- Located within APEC #1, #2 and #3 - Sampled on May 10, 2022 by Rubicon - No petroleum odours or sheen present - VOC headspace reading using field instruments (<5 ppm) - Groundwater sample analysed for BTEX, PHC and VOCs
MW3	-	- Located within APEC #3 - Sampled on May 10, 2022 by Rubicon - No petroleum odours or sheen present - VOC headspace reading using field instruments (<5 ppm) - Groundwater sample analysed for BTEX, PHC and VOCs



Trip Blanks	-	• Trip blanks submitted for both soil and groundwater
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Refer to Figure 7 – Site Investigation for an illustration of the borehole and groundwater monitoring well locations.

The RSC property was assessed using the Table 1 Standards for residential land use, potable groundwater, coarse textured soil from the Ministry of Environment (MOE) document “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*” (April 15, 2011), referred to as MOE Table 1 Site Condition Standards.

Soil analysis completed during the Phase Two ESA indicated that soil met the MECP Table 1 Standards for all parameters tested which included potential contaminants of concern; Petroleum Hydrocarbons (PHC F₁-F₄), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Volatile Organic Compounds (VOC's), Polycyclic Aromatic Hydrocarbons (PAH's) and Metals and pH.

Groundwater analysis completed during the Phase Two ESA indicated that groundwater met the MECP Table 1 Standards for all parameters tested which included potential contaminants of concern; Petroleum Hydrocarbons (PHC F₁-F₄), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOC's), Polycyclic Aromatic Hydrocarbons (PAH's), and Metals.

Refer to Figure 5 – Site Investigation for an illustration of the borehole and groundwater monitoring well locations.

Chemical analyses were conducted by ALS Environmental Laboratories of Waterloo, Ontario. ALS Environmental Laboratories is a member of the Canadian Association for Laboratory Accreditation Inc. (CALA) and meets the requirements of Section 47 of O.Reg. 153/04 certifying that the analytical laboratory be accredited in accordance with the International Standard ISO/IEC 17025 and with standards developed by the Standards Council of Canada.

The Phase Two Conceptual Site Model includes the following figures / diagrams:

FIGURES / DRAWINGS	DESCRIPTION
Figure 1	Site Location
Figure 2	RSC Study Area
Figure 3	RSC Site Plan
Figure 4	RSC Site Plan – Contributing PCAs
Figure 5	RSC Site Plan – Non-Contributing PCAs
Figure 6	RSC Site Plan – APECS
Figure 7	RSC Site Investigation
Figure 8	Ground Water Flow Direction
Figure 9	Cross Section A-A' Layout
Figure 10	Cross Section A-A'

6.12 Effects of Any Subsurface Structures and Utilities

There are two buildings on the RSC property, one (1) single storey automotive repair facility located towards the west end of the property, and a one-storey building used as a dealership located towards the east side of the subject property along with one (1) fast food shack. Bell, hydro utilities are serviced above ground with municipal water, storm sewer, and natural gas serviced below ground. Based on the depth to groundwater recorded on the RSC property (ranging between 1.08 m – 1.34 m below grade level) in May 2022 and the evaluation of buried utilities for the property (estimated to range between 0.61 m – 2.33 m below grade), there is a potential for interaction between known buried utilities in or under the Phase Two property and the water table. Although there is a potential for interaction between known buried utilities and the water table resulting in the presence of potential distribution through season changes and pathways, it is the opinion of Rubicon that this interaction represents a low risk due to the fact that no contaminants were present in the subsurface soil and groundwater at concentrations greater than the applicable site condition.



6.13 Stratigraphy

Based on a site condition encountered during the field observations and particle size analysis completed for the RSC property the coarse textured soil was used in determining the applicable site condition standards. Due to the consistency of the underlying sub-surface soils encountered in all boreholes advanced on the RSC property, one (1) soil sample was submitted for particle size analysis.

Particle size analysis completed by ALS Environmental Laboratories determined the soils to be coarse textured; MUST PSA % >75 µm – 94.7. Refer to Appendix 3 - Laboratory Certificates of Analysis

The sites are located in a physiographic region known as the Sand Plain (Physiography of Southern Ontario, Chapman and Putnam, 1984). The terrain of the subject property is relatively flat, with a slight decline to the south.

“Quaternary Geology of Ontario, Southern Sheet” Map 2556, shows the sites to be within an area known as Glaciolacustrine deposits, defined by: sand, gravelly sand and gravel; near shore and beach deposits.

“Bedrock Geology of Ontario, Southern Sheet” Map 2544, shows that the bedrock in the area of the site is comprised of Ordovician: Middle Ordovician, defined by: Limestone, dolostone, shale, arkose and sandstone of the Ottawa Group; Simcoe Group and Shadow Lake Formation.

The mapping available as Sediment Thickness of the Greater Toronto & Oak Ridges Moraine Areas, southern Ontario, Natural Resources Canada, Ontario Ministry of Northern Development and Mines, and MOE, indicated that bedrock in the general area of the subject property is approximately 100 m below grade.

Based on elevation points marked on a current survey of the subject property, the subject property ranges from 234.275 – 236.081 m asl.

No other aquifer was investigated on the RSC property, as no known releases, potentially migrating contaminants, or potentially contaminating activities were identified that could potentially result in an impact beyond the shallow sub-surface groundwater table.

6.14 Hydrogeological Characteristics

Table 9: Hydrogeological Characteristics (May 2022)

MW ID (date constructed)	SUSPECTED CONSTRUCTION (mbgl)	SURFACE ELEVATION (masl)*	GW Depth (September 2022) m	GW ELEVATION m
MW1 (April 22, 2022)	Screen: 3.00 Riser: 0.52 Total Measured Depth: 3.52	234.869	1.08	233.789
MW2 (April 22, 2022)	Screen: 3.00 Riser: 0.43 Total Measured Depth: 3.43	235.603	1.34	234.263
MW3 (April 22, 2022)	Screen: 3.00 Riser: 0.60 Total Measured Depth: 3.60	235.214	1.20	234.014

*Surface elevations referenced from elevations points on Site Plan.

Hydraulic Gradient = $h_a - h_b / d$
 Hydraulic Gradient = $234.263 \text{ m} - 233.78 \text{ m} / 88.5 \text{ m}$
 Hydraulic Gradient = 0.0055
 Refer to Figure 8.

The groundwater flow direction was calculated at the time of this investigation to be in the southeast direction, using the method of triangulation. Refer to the groundwater measurements Figure 8 for an illustration of the groundwater flow contours. It appears that the general groundwater flow direction is towards an unnamed body of water located in Bear Creek Eco Park, which is approximately 1.35 km southeast. Although the majority of all properties within the Phase II study area are serviced with municipal water supply by the City of Barrie, there does exist some domestic and commercial potable wells located in the study area. As a result of applying Table 1 SCS, it is not required to notify the City of Barrie of our intended use of Table 1 SCS. No contaminants of concern were identified in groundwater at concentrations greater than the applicable site condition.



6.15 Approximate Depth to Bedrock

Bedrock was not encountered during the current Phase Two ESA at depths not exceeding 3.75 mbgl. The mapping available as Sediment Thickness of the Greater Toronto & Oak Ridges Moraine Areas, southern Ontario, Natural Resources Canada, Ontario Ministry of Northern Development and Mines, and MOE, indicated that bedrock in the general area of the subject property is approximately 30 - 40 m below grade.

6.16 Approximate Depth to Water Table

As part of the Phase Two ESA, the measured depth to groundwater onsite was recorded between 1.08 m to 1.34 m below ground surface (bgs). The relative elevations range between 233.789-234.263 m asl.

6.17 Any respect which section 41 or 43.1 applies to the property

Section 41: Site condition standards, environmentally sensitive areas of the regulation, does apply to the Phase Two property due to the following conditions;

- (a) the property is,
 - (i) within an area of natural significance,
 - (ii) includes or is adjacent to an area of natural significance or part of such an area, or
 - (iii) includes land that is within 30 metres of an area of natural significance or part of such an area;

(b) the soil at the property does **not** have a pH value as follows:

- (i) for surface soil, less than 5 or greater than 9,
- (ii) for sub-surface soil, less than 5 or greater than 11; or

The surface pH value ranged from 7.25 - 7.54 and the subsurface pH value ranged from 7.32 – 7.47.

Section 43.1: Site condition standards, shallow soil property or water body of the regulation does not apply to the Phase Two property for the following conditions;

- (a) the property is **not** a shallow soil property; or
- (b) the property does **not** include all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body. O. Reg. 511/09, s. 21.
- (c) In this section,

"shallow soil property" means a property of which 1/3 or more of the area consists of soil equal to or less than 2 metres in depth beneath the soil surface, excluding any non-soil surface treatment such as asphalt, concrete or aggregate;

"soil" means, for the purposes of the definition of shallow soil property, unconsolidated naturally occurring mineral particles and other naturally occurring material resulting from the natural breakdown of rock or organic matter by physical, chemical or biological processes that are smaller than 2 millimetres in size or that pass the US #10 sieve and includes a mixture of soil and rock if less than 50 per cent by mass of the mixture is rock. O. Reg. 511/09, s. 21.

6.18 Imported Soil

Fill material of unknown quality was identified on the RSC property. This area was investigated and found to consist of sandy soils with some gravel at depths ranging from 0.1 m to 0.40 mbgl. No contaminants were present at concentrations greater than the applicable site condition standard.

6.19 Proposed Building and/or Structures

Rubicon Environmental (2008) Inc. was informed by the authorized individual that 642 Dunlop Street West is proposed to be a multi-unit commercial/residential development. The proposed development plans are as followed: One (1) 7071.35 m² condo building with a maximum height of 13.95 m high is proposed to be constructed. There will be commercial retail units on the ground floor and seventy-two (72) residential units in total. The proposed development consists of residential and commercial land use.

6.20 Contaminants Present at Concentrations Greater than the Applicable Site Condition Standard

No contaminants were present at concentrations greater than the applicable site condition standard.



7.0 CONCLUSIONS

Rubicon Environmental (2008) Inc. (Rubicon) was retained by Mr. Manjit Banwait on behalf of 2507517 Ontario Inc. to undertake a Phase II Environmental Site Assessment (ESA) at the commercial property located at 642 Dunlop Street West, Barrie, Ontario. (hereby referred to as the 'subject property or RSC property'). The environmental assessment was completed to ascertain and fully explore surficial and subsurface soil and groundwater conditions in the vicinity of the APECs identified in a Phase One ESA completed by Rubicon. The investigation was completed in accordance with O. Reg 153/04 (as amended 2011, 2019) for the purpose of filing a record of site condition with the MECP (Ministry of the Environment Conservation and Parks), in order to meet the requirements for the proposed Residential / Commercial Land Use.

The subject property was assessed using the Table 1: Full Depth Background Site Condition Standards for Residential Land Use, Potable Groundwater Condition, Coarse Textured Soil from the Ministry of Environment Conservation and Parks (MECP) document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (April 15, 2011), referred to as MECP Table 1 Site Condition Standards.

Based on the findings of Rubicon's Phase One ESA, four (4) Areas of Potential Environmental Concern were identified on the subject property. The APEC's identified on site included the following:

APEC #1 includes the perimeter of an onsite building being utilized as an automotive repair facility.

APEC #2 is located just west of the onsite auto repair building and is associated with two (2) x 200 L above ground storage tanks (AST) used for waste oil.

APEC #3 is located across the subject property and is associated with a layer of suspected imported fill.

APEC #4 is located along the western property boundary of the subject property and is associated with an offsite retail petroleum outlet (gas station) and car wash.

The five (5) contaminants of potential concern (COPC) were identified at the Site with respect to the four (4) areas of potential environmental concern: Petroleum Hydrocarbons (PHC F1-F4), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Volatile Organic Compounds (VOC's), Metals and Polycyclic Aromatic Hydro compounds (PAHs) identified on the RSC property. These contaminants of potential concern were identified using the Method Groups as outlined in the, Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011.

The Phase II ESA drilling investigation was conducted on April 22, 2022. In total, six (6) boreholes were advanced on-site to a maximum depth 3.75 m below grade level (mbgl), to ascertain the surficial and subsurface soil conditions, in the vicinity of the APECS identified in the previous Phase One ESA. The soil samples collected as part of the field screening methods were examined using both visual and olfactory senses. Field-testing was also conducted using an RKI Eagle calibrated against hexane gas. Three (3) of the boreholes were developed as groundwater monitoring wells and were sampled. A total of six (6) verification soil samples, one (1) duplicate sample and one (1) trip blank were submitted for laboratory analysis.

The laboratory analytical results for all the soil samples analyzed showed that each of the locations and depths of samples submitted were below the applicable site conditions standards. None of the potential contaminants of concerns which included Petroleum Hydrocarbons (PHC F1-F4), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Volatile Organic Compounds (VOC's), Metals and Polycyclic Aromatic Hydro compounds (PAHs) were present at concentrations greater than the applicable site condition standard, at any of the sampling locations.

On May 10, 2022, with the use of peristaltic pump, all three (3) groundwater monitoring wells onsite (MW1, MW2, and MW3) were sampled. None of the potential contaminants of concerns which included Petroleum Hydrocarbons (PHC F1-F4), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOC's) were present at concentrations greater than the applicable site condition standard, at any of the sampling locations.

Based on the findings of the Phase II ESA, the areas investigated on the subject property meets the applicable and / or proposed Table 1: Full Depth Background Site Condition Standards for Residential Land Use, Potable Groundwater Condition, Coarse Textured Soil from the Ministry of Environment Conservation and Parks (MECP) document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (April 15, 2011), referred to as MECP Table 1 Site Condition Standards.



As a result of the findings of the Phase II ESA, it is the opinion of Rubicon Environmental (2008) Inc. that there are no known environmental conditions within the areas investigated on the subject property to warrant further environmental investigation at this time.

Respectfully submitted,

RUBICON ENVIRONMENTAL (2008) INC.



Paul D. Rew, P.Eng., QP
Project Manager



8.0 REFERENCES

Google Maps URL: <http://maps.google.ca/maps>

<http://www.atlas.nrcan.gc.ca/site/english/toporama/index.html#>

Ministry of Northern Development and Mines *"Bedrock Geology of Ontario, Southern Sheet, Map 2544"*

Ministry of Northern Development and Mines, *"Quaternary Geology of Ontario – Southern Sheet. 1991. Map 2204"*

Ontario Ministry of the Environment, Ontario Regulation 153/04, as amended by Ontario Regulation 511/09.



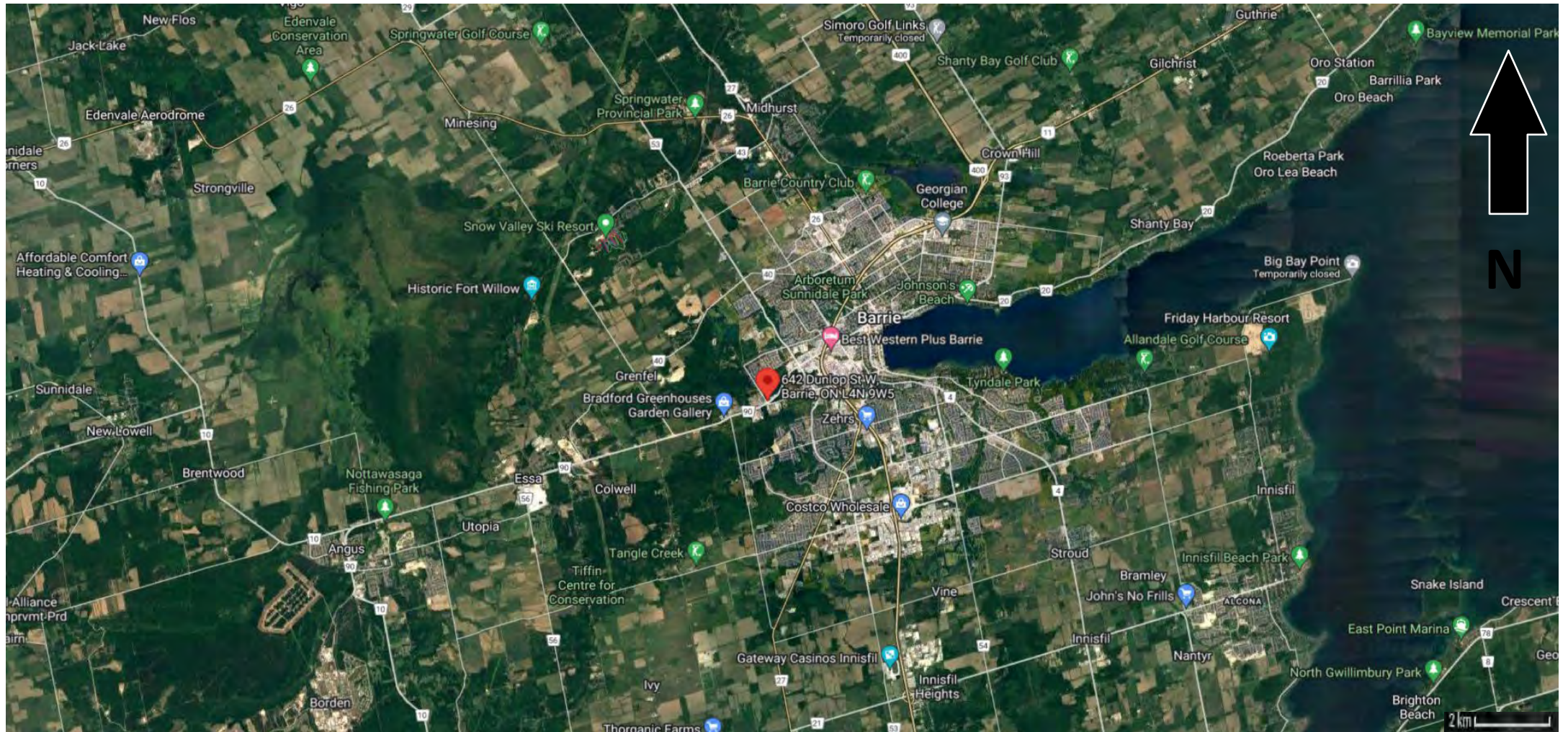
9.0 LIMITATIONS

1. This assessment was conducted in accordance with generally accepted engineering standards. It is possible that materials other than those described in this report are present at the site. The client acknowledges that no assessment can necessarily identify the existence of all contaminants, potential contaminants or environmental conditions;
2. This report was prepared for the sole and exclusive use of Mr. Manjit Banwait on behalf of 2507517 Ontario Inc. Rubicon Environmental (2008) Inc. accepts no responsibility or liability for any loss, damage, expense, fine or any other claim of any nature or type, including any liability or potential liability arising from its own negligence, for any use of this report or reliance on it, in whole or in part, by anyone other than 2472197 Ontario Inc.
3. There is no representation, warranty or condition, express or implied, by Rubicon Environmental (2008) Inc. or its officers, directors, employees or agents that this assessment has identified all contaminants, potential contaminants or environmental conditions at the site or that the site is free from contamination, potential contaminants or environmental conditions other than those noted in this report;
4. This assessment has been completed from information and documentation described in this report as well as the results of limited chemical analysis of soil samples collected from accessible locations on the date(s) specified. We have assumed that any such information and documentation is accurate and complete. We can accept no responsibility or liability for any errors, deficiencies or inaccuracies in this report arising from errors or omissions in the information and documentation provided by others;
5. This assessment was based on information and the results of investigation(s) obtained on the date(s) specified. Rubicon Environmental (2008) Inc. accepts no responsibility or liability for any changes or potential changes in the condition of the site subsequent to the date of our investigation(s);
6. The conditions between sampling locations have been inferred, to the best of our ability, based on the conditions observed at sampling locations. Conditions between and beyond sampling locations may vary. This assessment pertains, only, to the site specifically described in this report and not to any adjacent or other property;
7. This assessment does not include, nor is it intended to include, any opinion regarding the suitability of any structure on the site for any particular function, the integrity of the on-site buildings or the geotechnical conditions on the site, with the exception of how they may identify with environmental concerns. Inspections of buildings do not include compliance with building, gas, electrical or boiler codes, or any other federal, provincial or municipal codes not associated with environmental concerns. Should concerns regarding any parameters other than environmental concerns arise as a result of our investigation(s), they should be addressed by appropriately qualified professionals; and,
8. This report is not to be reproduced or released to any other party, in whole or in part, without the express written consent of Rubicon Environmental (2008) Inc.



FIGURES





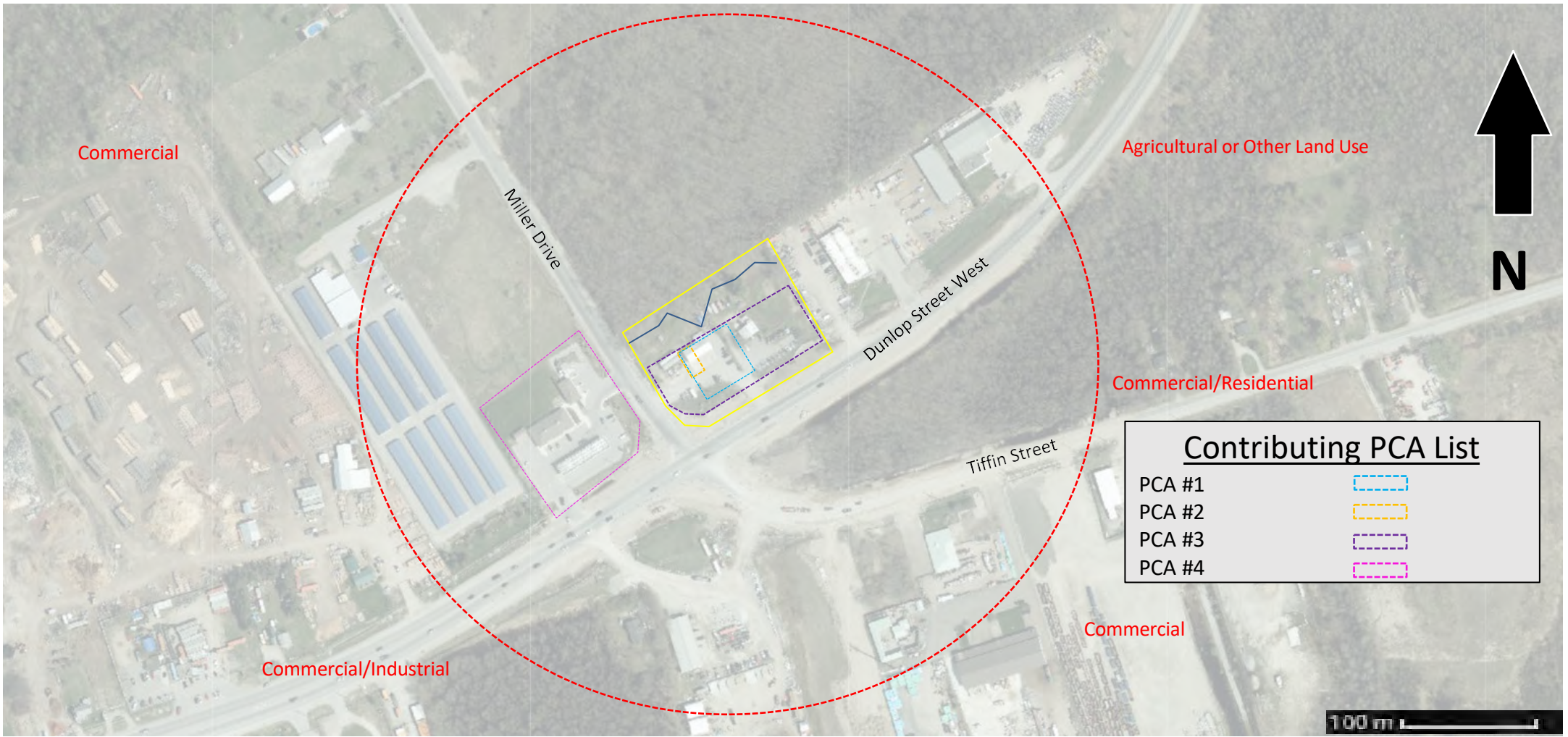
R64018.2	NAME	DATE	 Rubicon Environmental (2008) Inc.	Figure 1: Site Location	Legend
DRAWN BY:	AA	March 2023			
CHECKED BY:	PDR	March 2023			
642 Dunlop Street West, Barrie ON					



R64018.2	NAME	DATE		Figure 2: RSC Study Area	Legend	
DRAWN BY:	AA	March 2023			Phase One and Phase Two, RSC Subject Property	
CHECKED BY:	PDR	March 2023			RSC Phase One Study Area (<0.250km)	
642 Dunlop Street West, Barrie ON					Wetland Boundary Staked by LSRCA on June 27, 2022	



R64018.2	NAME	DATE	 Rubicon Environmental (2008) Inc.	Figure 3: RSC Site Plan	Legend Phase One and Phase Two, RSC Subject Property  Wetland Boundary Staked by LSRCA on June 27, 2022 
DRAWN BY:	AA	March 2023			
CHECKED BY:	PDR	March 2023			
642 Dunlop Street West, Barrie ON					



R64018.2	NAME	DATE
DRAWN BY:	AA	March 2023
CHECKED BY:	PDR	March 2023
642 Dunlop Street West, Barrie ON		



Figure 4:
RSC Site
Plan –
Contributing
PCAs

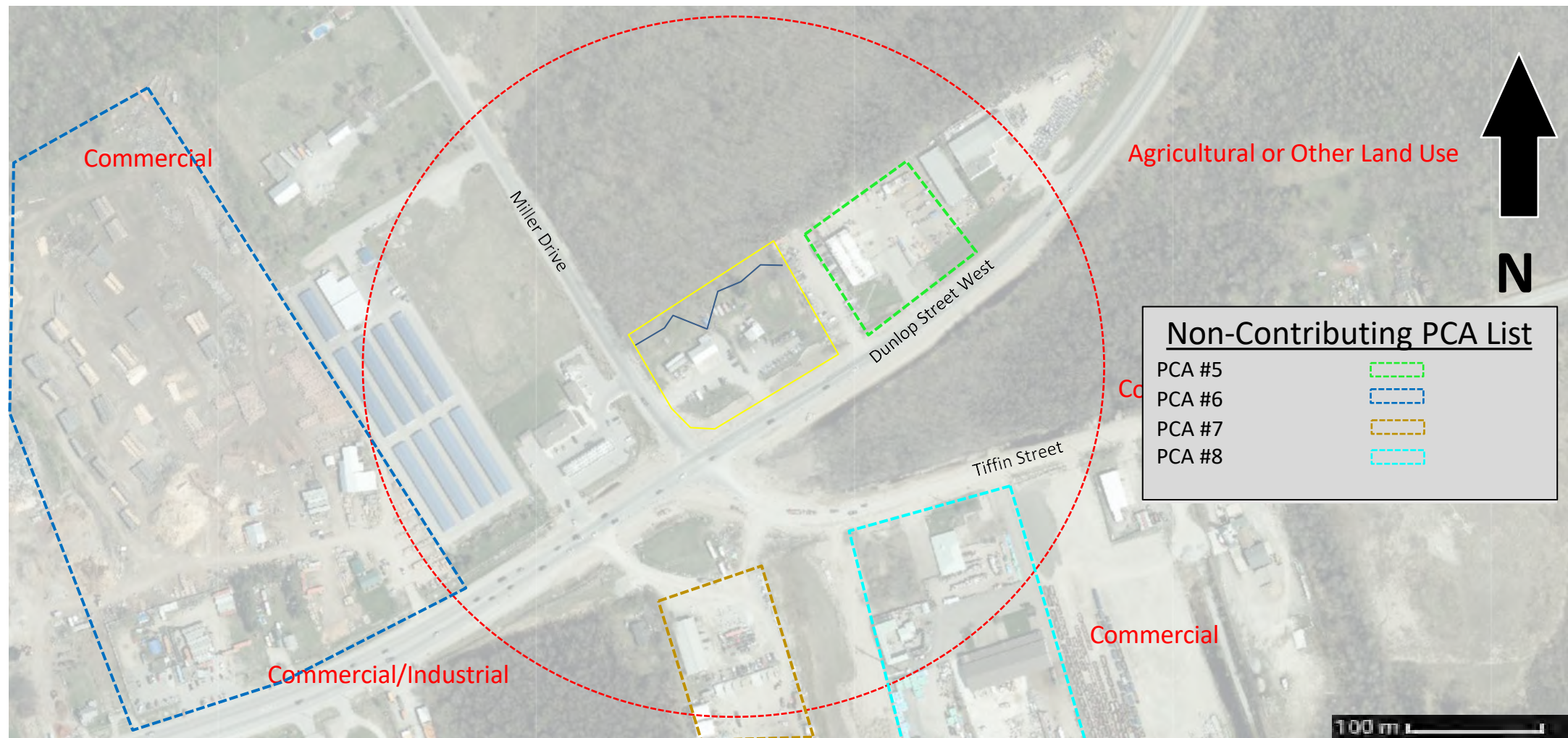
Legend

Phase One and Phase Two, RSC
Subject Property



RSC Phase One Study Area
(<0.250km)
Wetland Boundary





R64018.2	NAME	DATE
DRAWN BY:	AA	March 2023
CHECKED BY:	PDR	March 2023
642 Dunlop Street West, Barrie ON		



Figure 5:
RSC Site
Plan – Non-
Contributing
PCAs

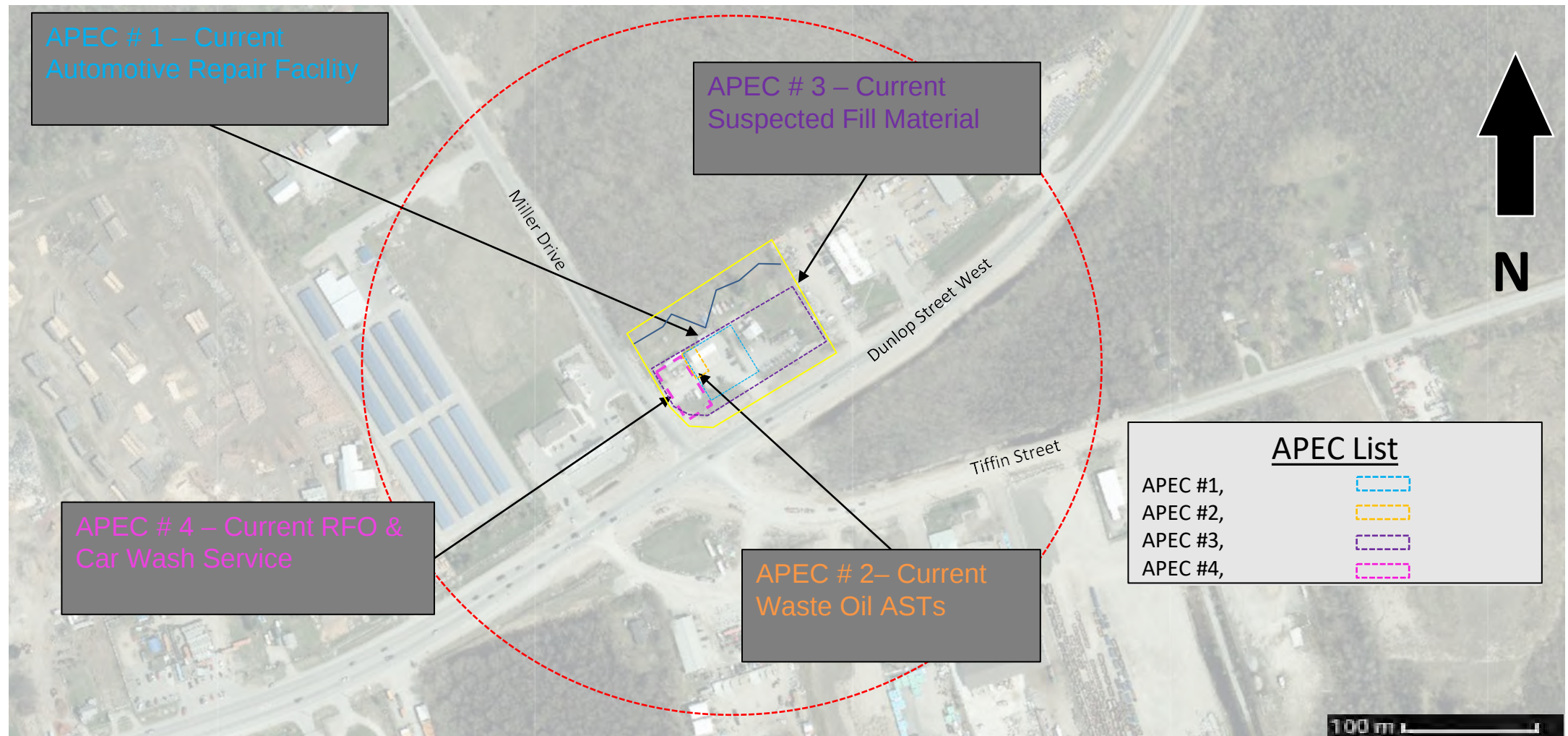
Legend

Phase One and Phase Two, RSC
Subject Property



RSC Phase One Study Area
($<0.250\text{km}$)
Wetland Boundary





R64018.2	NAME	DATE
DRAWN BY:	AA	March 2023
CHECKED BY:	PDR	March 2023
642 Dunlop Street West, Barrie ON		



Figure 6:
RSC Site
Plan - APECs

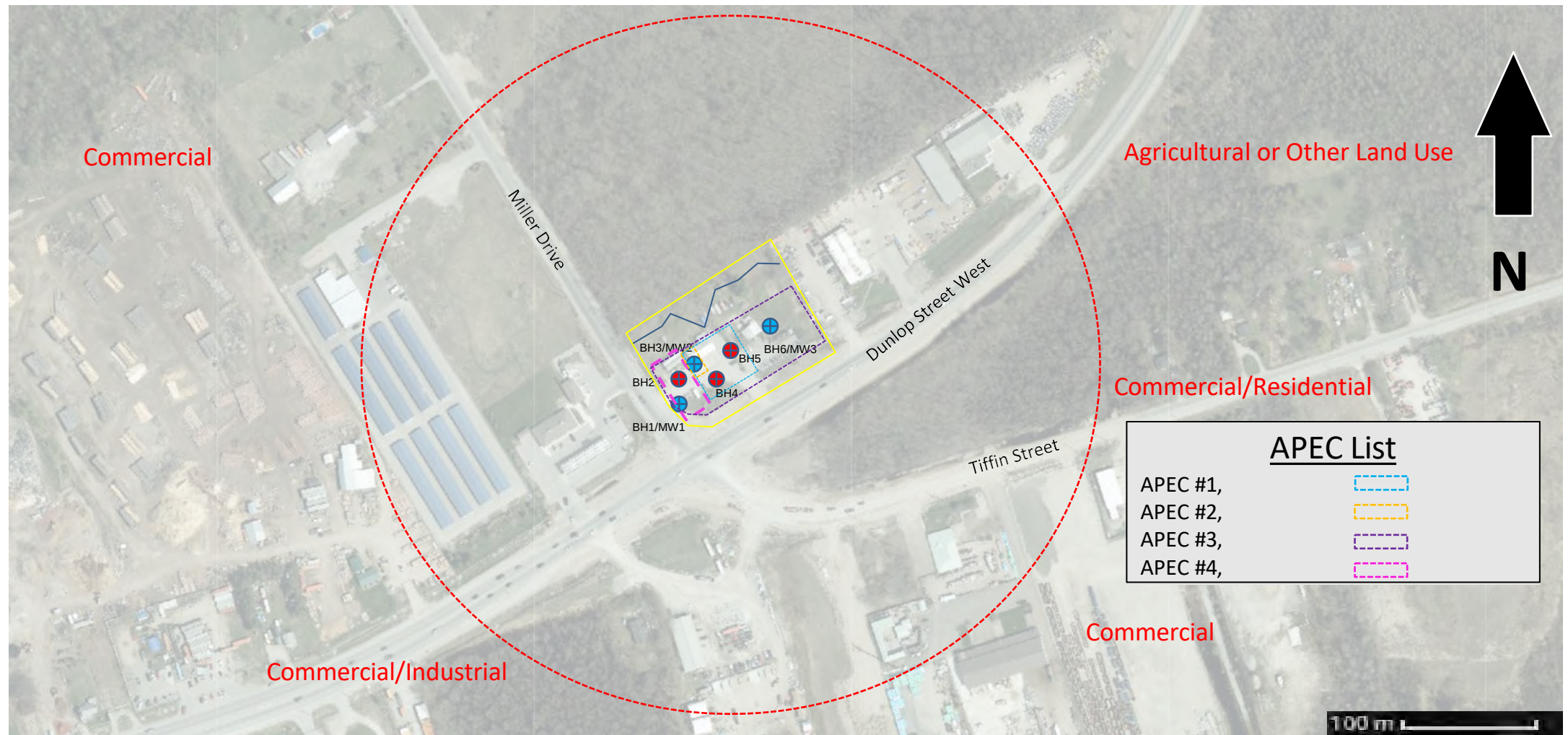
Legend

Phase One and Phase Two, RSC
Subject Property



RSC Phase One Study Area
(<0.250km)
Wetland Boundary





R64018.2	NAME	DATE
DRAWN BY:	AA	March 2023
CHECKED BY:	PDR	March 2023
642 Dunlop Street West, Barrie ON		



Figure 7:
RSC Site
Investigation

Legend

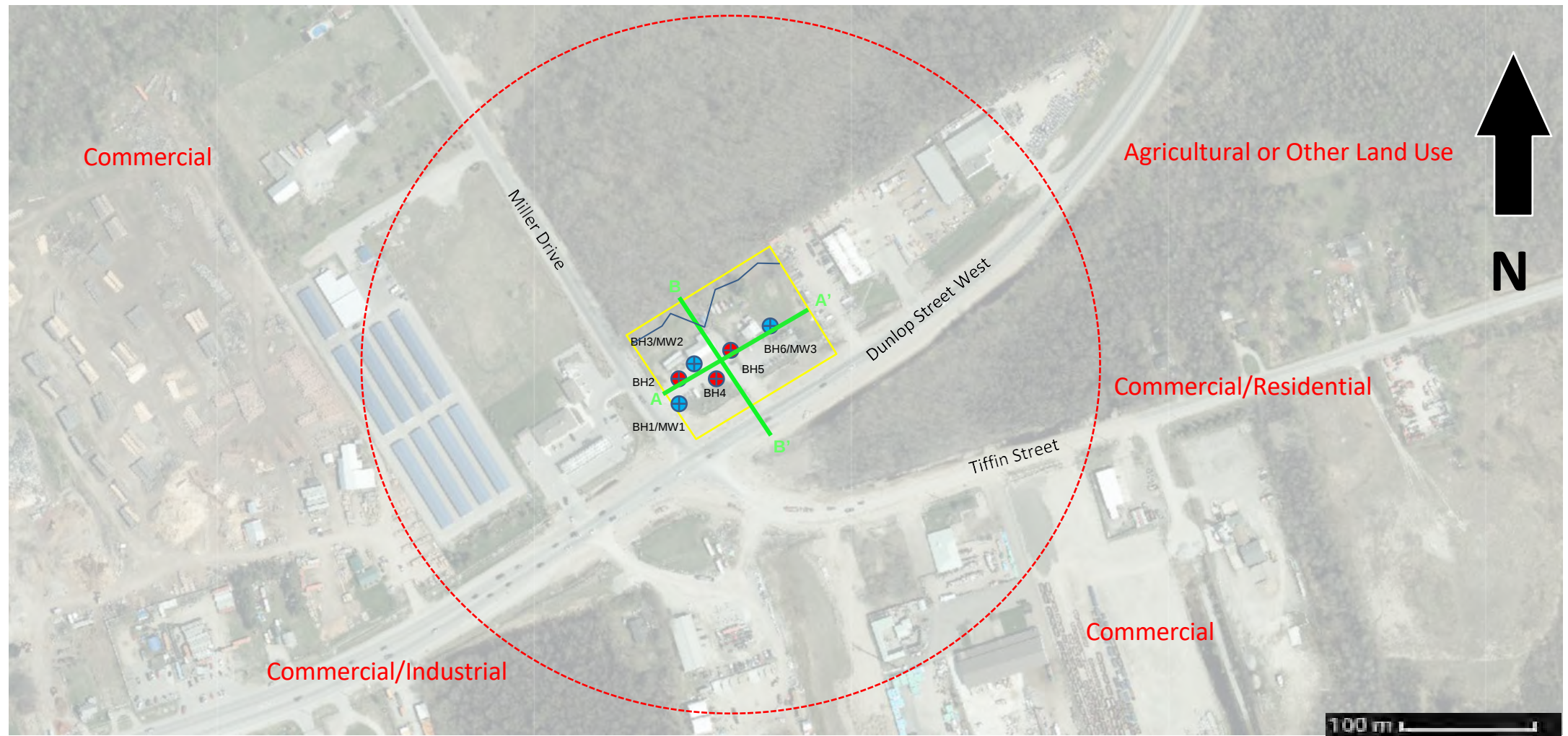
Phase One and Phase Two, RSC
Subject Property



RSC Phase One Study Area
(<0.250km)

Wetland Boundary





R64018.2	NAME	DATE
DRAWN BY:	AA	March 2023
CHECKED BY:	PDR	March 2023
642 Dunlop Street West, Barrie ON		



Figure 9:
Cross
Sections A-
A' Layout

Legend

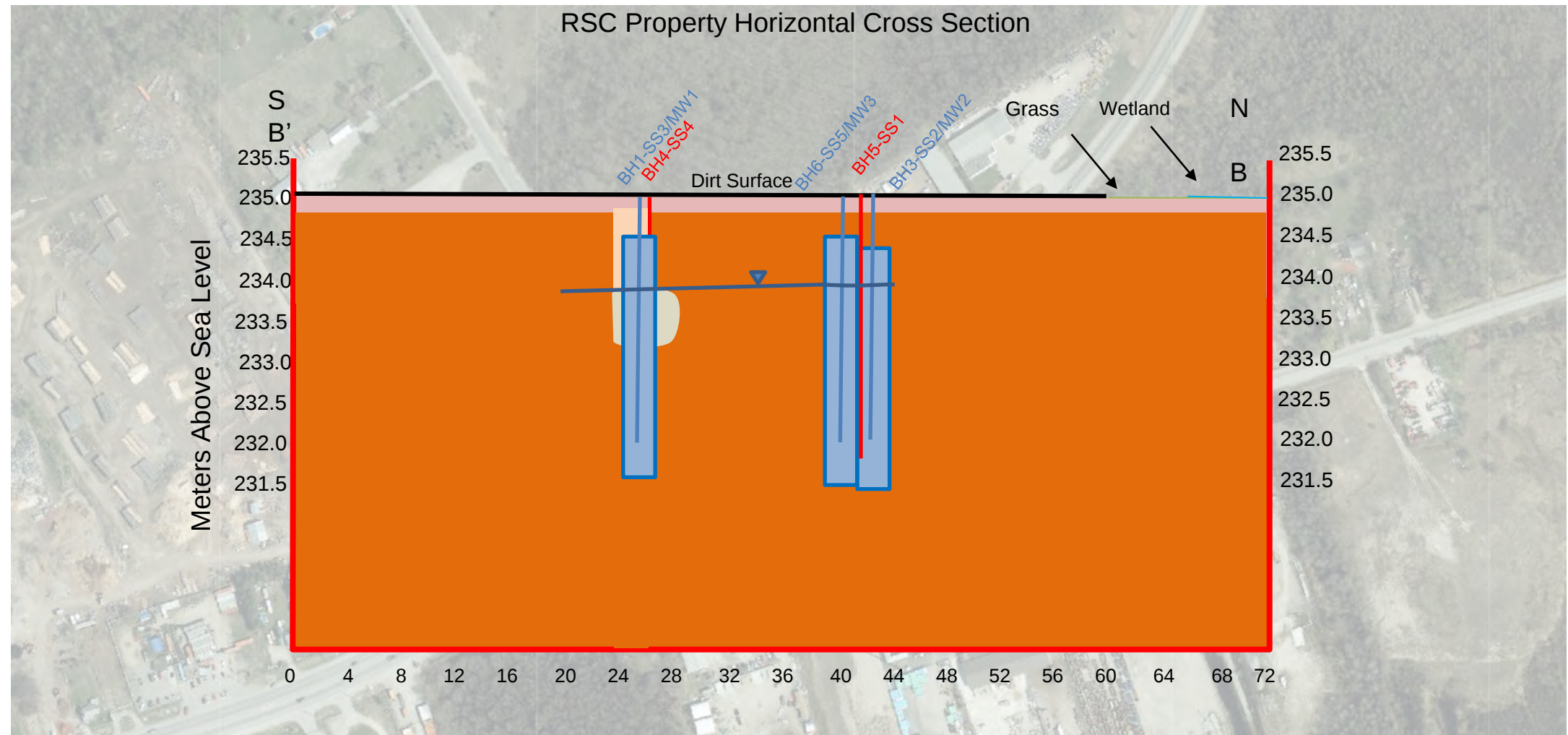
Phase One and Phase Two
RSC Subject Property



RSC Phase One Study Area
<0.250km)

Wetland Boundary





R64018.2	NAME	DATE	 Rubicon Environmental (2008) Inc.	Figure 11: Cross Section B – B'	Legend: Topsoil / Asphalt  Sandy Silt  Gravel Fill  Silty Sand  Silty Clay  Water Table 	Borehole Monitoring well  Casing  Screen
DRAWN BY:	AA	March 2023				
CHECKED BY:	PDR	March 2023				
642 Dunlop Street West, Barrie ON						

TABLES



TABLE 1: BOREHOLE, SOIL & GROUNDWATER SAMPLE NOTES

SAMPLE ID	SAMPLE DEPTH	COMMENTS
BH1-SS3	1.50 – 2.25	- Located within APEC #3, as close as possible to APEC #4. - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, BTEX, Metals, VOCs, PHC, PAHs parameters and sieve
BH2-SS4	2.25 – 3.00 m	- Located within APEC #2 and #3. - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, BTEX, Metals, VOCs, and PHC parameters
BH3-SS2	0.75 – 1.50	- Located within APEC #1, #2, and #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, PHC, PAHs parameters
BH3-SS2-DUP	0.75 – 1.50	- Located within APEC #1, #2, and #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, PHC, PAHs parameters
BH4-SS4	2.25 – 3.00 m	- Located within APEC #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, and PHC parameters
BH5-SS1	0.00 – 0.75	- Located within APEC #1, and #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs, PHC, PAHs parameters
BH6-SS5	3.00 – 3.75 m	- Located within APEC #3 - Sampled on April 22, 2022 - No petroleum odours or soil staining present - VOC reading using field instruments (<5 ppm) - Soil sample analysed for pH, Metals, VOCs and PHC parameters
MW1	-	- Located within APEC #3 and as close as possible to APEC #4 - Sampled on May 10, 2022 by Rubicon - No petroleum odours or sheen present - VOC headspace reading using field instruments (<5 ppm) - Groundwater sample analysed for VOCs, BTEX, PHC
MW2	-	- Located within APEC #1, #2 and #3 - Sampled on May 10, 2022 by Rubicon - No petroleum odours or sheen present - VOC headspace reading using field instruments (<5 ppm) - Groundwater sample analysed for VOCs, BTEX, PHC
MW3	-	- Located within APEC #3 - Sampled on May 10, 2022 by Rubicon - No petroleum odours or sheen present - VOC headspace reading using field instruments (<5 ppm) - Groundwater sample analysed for VOCs, BTEX, PHC



Trip Blanks	-	Trip blanks submitted for both soil and groundwater
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TABLE 2: SOIL CHEMICAL ANALYSES – VOCs (including BTEX) / PHC / Sieve

Parameter		BH1-SS3	BH2-SS4	BH3-SS2	BH3-SS2 DUPLICATE	BH4-SS4	BH5-SS1	BH6-SS5
Date of Collection	2011 MECP Table 1 Residential Coarse	22-April-2022	22-April-2022	22-April-2022	22-April-2022	22-April-2022	22-April-2022	22-April-2022
Date Reported		26-April-2022	26-April-2022	26-April-2022	26-April-2022	26-April-2022	26-April-2022	26-April-2022
Sampling Depth (mbgl)		1.50 – 2.25	2.25 – 3.00	0.75 – 1.50	0.75 – 1.50	2.25 – 3.00	0.75 – 1.50	3.00 – 3.75
Analytical report reference number		WT2202876-001	WT2202876-002	WT2202876-003	WT2202876-004	WT2202876-005	WT2202876-006	WT2202876-007
Acetone	0.072 (U)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 (U)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Bromodichloromethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon tetrachloride	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dibromoethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	0.05 (U)	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045
1,2-Dichloropropane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,3-Dichloropropene	0.05 (U)	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
1,3-Dichloropropene (cis & trans)	0.05 (U)	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Ethylbenzene	0.05 (U)	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
n-Hexane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MTBE	0.05 (U)	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Styrene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.2 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1-Trichloroethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.05 (U)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Trichlorofluoromethane	0.25 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl chloride	0.02 (U)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (Total)	0.05 (U)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
F1 (C6-C10)	25 (U)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10 (U)	<10	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	240 (U)	<50	<50	<50	<50	<50	56	<50
F4 (C34-C50)	120 (U)	<50	<50	<50	<50	<50	90	<50

All values in ug/g – ppm – parts per million MDL – method detection limit. D- Duplicate Sample *MOE O. Reg. – Table 1 – Full Depth, Background Site Condition Standard in a potable groundwater condition, Residential Property Use and Coarse textured soil criteria applied. **Orange** – MDL exceeds applicable SCS **Red** – Measured Conc. exceeds applicable SCS



TABLE 3: SOIL CHEMICAL ANALYSES – Metals

Parameter	2011 MECP Table 1 Res Coarse	BH1-SS3	BH2-SS4	BH3-SS2	BH3-SS2 DUPLICATE	BH4-SS4	BH5-SS1	BH6-SS5
Date of Collection	2011 MECP Table 1 Res Coarse	22-April-2022	22-April-2022	22-April-2022	22-April-2022	22-April-2022	22-April-2022	22-April-2022
Date Reported		26-April-2022	26-April-2022	26-April-2022	26-April-2022	26-April-2022	26-April-2022	26-April-2022
Sampling Depth (mbgl)		1.50 – 2.25	2.25 – 3.00	0.75 – 1.50	0.75 – 1.50	2.25 – 3.00	0.75 – 1.50	3.00 – 3.75
Analytical report reference number		WT2202876-001	WT2202876-002	WT2202876-003	WT2202876-004	WT2202876-005	WT2202876-006	WT2202876-007
Antimony (Sb)	1.3 (U)	<0.10	<0.10	0.36	0.37	<0.10	<0.10	<0.10
Arsenic (As)	18 (U)	0.57	0.57	1.19	1.16	0.62	1.20	0.46
Barium (Ba)	220 (U)	10.3	9.54	42.7	36.9	8.38	47.5	12.2
Beryllium (Be)	2.5 (U)	<0.10	<0.10	0.21	0.19	<0.10	0.18	<0.10
Boron (B)	36 (U)	<5.0	<5.0	5.1	<5.0	<5.0	5.5	<5.0
Cadmium (Cd)	1.2 (U)	<0.020	<0.020	0.206	0.189	<0.020	0.173	0.041
Chromium (Cr)	70 (U)	4.82	5.11	12.9	12.2	3.95	12.7	6.66
Cobalt (Co)	21 (U)	1.28	1.57	3.27	3.04	1.33	2.47	2.15
Copper (Cu)	92 (U)	1.92	2.42	8.40	8.42	2.32	7.15	2.55
Lead (Pb)	120 (U)	1.16	1.39	64.0	87.5	0.89	9.87	1.69
Molybdenum (Mo)	2 (U)	0.11	<0.10	0.38	0.33	<0.10	0.50	0.10
Nickel (Ni)	82 (U)	2.44	2.71	6.41	6.01	2.61	5.04	3.52
Selenium (Se)	1.5 (U)	<0.20	<0.20	0.21	<0.20	<0.20	0.63	<0.20
Silver (Ag)	0.5 (U)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Thallium (Tl)	1 (U)	<0.050	<0.050	0.056	0.051	<0.050	<0.050	<0.050
Uranium (U)	2.5(U)	0.215	0.202	0.396	0.333	0.162	1.45	0.257
Vanadium (V)	86 (U)	9.30	13.6	26.4	24.0	7.15	28.4	10.6
Zinc (Zn)	290 (U)	6.2	8.1	39.8	43.3	5.7	22.8	9.8

All values in ug/g – ppm – parts per million MDL – method detection limit. D- Duplicate Sample *MOE O. Reg. – Table 1 – Full Depth, Background Site Condition Standard in a potable groundwater condition, Residential Property Use and Coarse textured soil criteria applied. **Orange** – MDL exceeds applicable SCS. **Red** – Measured Conc. exceeds applicable SCS

TABLE 4: SOIL CHEMICAL ANALYSIS – PAHS

Parameter	2011 MECP Table 1 Residential Coarse	BH1-SS3	BH2-SS4	BH3-SS2	BH3-SS2 DUPLICATE	BH4-SS4	BH5-SS1	BH6-SS5
Date of Collection	2011 MECP Table 1 Residential Coarse	22-April-2022	22-April-2022	22-April-2022	22-April-2022	22-April-2022	22-April-2022	22-April-2022
Date Reported		26-April-2022	26-April-2022	26-April-2022	26-April-2022	26-April-2022	26-April-2022	26-April-2022
Sampling Depth (mbgl)		1.50 – 2.25	2.25 – 3.00	0.75 – 1.50	0.75 – 1.50	2.25 – 3.00	0.75 – 1.50	3.00 – 3.75
Analytical report reference number		WT2202876-001	WT2202876-002	WT2202876-003	WT2202876-004	WT2202876-005	WT2202876-006	WT2202876-007
Acenaphthene	0.072 (U)	<0.050		<0.050	<0.050		<0.050	
Acenaphthylene	0.093 (U)	<0.050		<0.050	<0.050		<0.050	
Anthracene	0.16 (U)	<0.050		<0.050	<0.050		<0.050	
Benzo(a)anthracene	0.36 (U)	<0.050		<0.050	<0.050		<0.050	
Benzo(a)pyrene	0.3 (U)	<0.050		<0.050	<0.050		<0.050	
Benzo(b)fluoranthene	0.47 (U)	<0.050		<0.050	<0.050		<0.050	
Benzo(g,h,i)perylene	0.68 (U)	<0.050		<0.050	<0.050		<0.050	
Benzo(k)fluoranthene	0.48 (U)	<0.050		<0.050	<0.050		<0.050	
Chrysene	2.8 (U)	<0.050		<0.050	<0.050		<0.050	
Dibenzo(ah)anthracene	0.1 (U)	<0.050		<0.050	<0.050		<0.050	
Fluoranthene	0.56 (U)	<0.050		<0.050	<0.050		<0.050	
Fluorene	0.12 (U)	<0.050		<0.050	<0.050		<0.050	
Indeno(1,2,3-cd)pyrene	0.23 (U)	<0.050		<0.050	<0.050		<0.050	
1+2-Methylnaphthalenes	0.59 (U)	<0.050		<0.050	<0.050		<0.050	
1-Methylnaphthalene	0.59 (U)	<0.030		<0.030	<0.030		<0.030	
2-Methylnaphthalene	0.59 (U)	<0.030		<0.030	<0.030		<0.030	
Naphthalene	0.09 (U)	<0.010		<0.010	<0.010		<0.010	
Phenanthrene	0.69 (U)	<0.050		<0.050	<0.050		<0.050	
Pyrene	1 (U)	<0.050		<0.050	<0.050		<0.050	

All values in ug/g – ppm – parts per million MDL – method detection limit. D- Duplicate Sample *MOE O. Reg. – Table 1 – Full Depth, Background Site Condition Standard in a potable groundwater condition, residential Property Use and coarse textured soil criteria applied. **Orange** – MDL exceeds applicable SCS. **Red** – Measured Conc. exceeds applicable SCS



TABLE 5: GROUNDWATER CHEMICAL ANALYSES – VOC's (including BTEX), PHC

Parameter	2011 MECP Table 1 Residential Coarse	MW1	MW2	MW2-DUP	MW3	TRIP BLANK
Date of Collection		05-May-2022	05-May-2022	05-May-2022	05-May-2022	05-May-2022
Date Reported		12-May-2022	12-May-2022	12-May-2022	12-May-2022	12-May-2022
Sampling Depth (mbgl)						
Analytical report reference number		WT2203769-001	WT2203769-002	WT2203769-003	WT2203769-004	WT2203769-005
Acetone	2700 (U)	<20	<20	<20	<20	<20
Benzene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	2 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Bromomethane	0.89 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride	0.2 (U)	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Dibromochloromethane	2 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroform	2 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dibromoethane	0.5 (U)	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	590 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,2-Dichloroethylene	1.6 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	1.6 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	5 (U)	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,3-Dichloropropene	0.5 (U)	<0.30	<0.30	<0.30	<0.30	<0.30
trans-1,3-Dichloropropene	0.5 (U)	<0.30	<0.30	<0.30	<0.30	<0.30
1,3-Dichloropropene (cis & trans)	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
n-Hexane	5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Ethyl Ketone	400 (U)	<20	<20	<20	<20	<20
Methyl Isobutyl Ketone	640 (U)	<20	<20	<20	<20	<20
MTBE	15 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	1.1 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	0.8 (U)	<0.50	0.52	<0.50	<0.50	<0.50
1,1,1-Trichloroethane	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Trichlorofluoromethane	150 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl chloride	0.5 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
o-Xylene		<0.30	<0.30	<0.30	<0.30	<0.30
m+p-Xylenes		<0.40	<0.40	<0.40	<0.40	<0.40
Xylenes (Total)	72 (U)	<0.50	<0.50	<0.50	<0.50	<0.50
F1 (C6-C10)	420 (U)	<25	<25	<25	<25	<25
F2 (C10-C16)	150 (U)	<100	<100	<100	<100	
F3 (C16-C34)	500 (U)	<250	<250	<250	<250	
F4 (C34-C50)	500 (U)	<250	<250	<250	<250	

All values in ug/g – ppm – parts per million MDL – method detection limit. D- Duplicate Sample *MOE O. Reg. – Table 1 – Full Depth, Background Site Condition Standard in a potable groundwater condition, Residential Property Use and coarse textured soil criteria applied. **Orange** – MDL exceeds applicable SCS **Red** – Measured Conc. exceeds applicable SCS



Table 6: Groundwater Monitoring Well Construction Details

Monitoring Well ID	Construction Details	Elevation (m asl.) at Well Location
MW1	-Installed April 22, 2022 -Developed using 1.25", Schedule 40 PVC pipe with slotted screen in the suspected region of the groundwater table. Silica sand was positioned around the screen with a bentonite seal located above the filter pack to grade to prevent surface water from entering the monitoring well and a flush mount cap. -Riser: 0.52 m, Screen: 3.00 m Total Depth: 3.52 m -Well constructed as per O.Reg. 903, and O.Reg. 153/04 criteria.	234.869
MW2	-Installed April 22, 2022 -Developed using 1.25", Schedule 40 PVC pipe with slotted screen in the suspected region of the groundwater table. Silica sand was positioned around the screen with a bentonite seal located above the filter pack to grade to prevent surface water from entering the monitoring well and a flush mount cap. -Riser: 0.43 m, Screen: 3.00 m Total Depth: 3.43 m -Well constructed as per O.Reg. 903, and O.Reg. 153/04 criteria.	235.603
MW3	-Installed April 22, 2022 -Developed using 1.25", Schedule 40 PVC pipe with slotted screen in the suspected region of the groundwater table. Silica sand was positioned around the screen with a bentonite seal located above the filter pack to grade to prevent surface water from entering the monitoring well and a flush mount cap. -Riser: 0.60 m, Screen: 3.00 m Total Depth: 3.60 m -Well constructed as per O.Reg. 903, and O.Reg. 153/04 criteria.	235.214

Table 7: Monitoring Well and Groundwater Elevations

MW ID (date constructed)	CONSTRUCTION (mbgl)	SURFACE ELEVATION (masl)*	GW Depth (May 2022) m	GW ELEVATION m	VOC Vapour Readings	Observations
MW1 (April 22, 2022)	Screen: 3.00 Riser: 0.52 Total Measured Depth: 3.52	234.869	1.08	233.789	<5ppm	No sheen, odour, or free phase product
MW2 (April 22, 2022)	Screen: 3.00 Riser: 0.43 Total Measured Depth: 3.43	235.603	1.34	234.263	<5ppm	No sheen, odour, or free phase product
MW3 (April 22, 2022)	Screen: 3.00 Riser: 0.60 Total Measured Depth: 3.60	235.214	1.20	234.014	<5ppm	No sheen, odour, or free phase product



APPENDIX 1 FIELD SAMPLING & ANALYSIS PLAN



BOREHOLE	Sampling Detail	Rationale	Chemical Parameters
BH1-SS3	-Advance borehole and develop into groundwater monitoring well to a maximum depth of 3.52 m on the subject property (BH1-SS3/MW1) -Obtain the necessary field screening samples. -Submit one (1) representative soil subsurficial and groundwater sample	-Location of BH1—SS3/MW1 will be within APEC #3 and in close vicinity to Apec #4 -The data collected during this sampling plan shall determine the quality of the subsurface soil and groundwater conditions within APEC(s) identified on the Phase Two property. -data will be compared to Table 1 SCS - Residential	-BTEX -PHC (F₁-F₄) -VOCs -Metals -PAH -pH -Sieve
BH2-SS4	-Advance borehole to a maximum depth of 3.75 m on the subject property (BH2-SS4). -Obtain the necessary field screening samples. -Submit one (1) representative soil, subsurface sample.	-Location of RBH102 will be within APEC #2 and 3 -The data collected during this sampling plan shall determine the quality of the subsurface soil within APEC(s) identified on the Phase Two property. -data will be compared to Table 1 SCS - Residential	-BTEX -PHC (F₁-F₄) -VOCs -Metal -pH
BH3-SS2	-Advance borehole and develop into groundwater monitoring well to a maximum depth of 3.43 m on the subject property. -Obtain the necessary field screening samples. -Submit one (1) representative soil surficial, one (1) duplicate soil sample and one (1) groundwater sample	-Location of BH3-SS2 will be within APEC #1,2 and 3 -The data collected during this sampling plan shall determine the quality of the surficial soil and groundwater conditions within APEC(s) identified on the Phase Two property. -data will be compared to Table 1 SCS - Residential	-BTEX -PHC (F₁-F₄) -VOCs -pH -PAH -Metals
BH4-SS4	-Advance borehole to a maximum depth of 3.75 m on the subject property. -Obtain the necessary field screening samples. -Submit one (1) representative soil subsurficial sample.	-Location of BH4-SS4 will be within APEC #3 -The data collected during this sampling plan shall determine the quality of the subsurface soil conditions within APEC(s) identified on the Phase Two property. -data will be compared to Table 1 SCS - Residential	-BTEX -PHC (F₁-F₄) -VOCs -Metal -pH
BH5-SS1	-Advance borehole to a maximum depth of 3.75 m on the subject property (BH5-SS1). -Obtain the necessary field screening samples. -Submit one (1) representative soil subsurficial sample.	-Location of BH5-SS1 will be within APEC #1 and 3. -The data collected during this sampling plan shall determine the quality of the surficial soil within APEC(s) identified on the Phase Two property. -data will be compared to Table 1 SCS - Residential	-BTEX -PHC (F₁-F₄) -VOCs -pH -PAH -Metals
BH6-SS5	-Advance borehole and develop into groundwater monitoring well to a maximum depth of 3.60 m on the subject property. -Obtain the necessary field screening samples. -Submit one (1) representative soil subsurficial and one (1) groundwater sample	-Location of BH6-SS5 will be within APEC #3. -The data collected during this sampling plan shall determine the quality of the subsurface soil within APEC(s) identified on the Phase Two property. -data will be compared to Table 1 SCS - Residential	-BTEX -PHC (F₁-F₄) -VOCs -Metal -pH
Duplicate + Trip blank	Obtain adequate duplicate soil and groundwater sample and trip blanks	-Part of quality assurance and control	



APPENDIX 2 BOREHOLE LOGS





LOG OF BH1-SS3/MW1

PROJECT NUMBER R64018.2			DRILL RIG LST1A Tractor Mounted Drill Rig			SURFACE ELEVATION CENTROID		
PROJECT NAME PII			DRILLING METHOD Hollow Stem Auger, Split Sp			LOGGED BY AA		
CLIENT 2507517 Ontario Inc.			TOTAL DEPTH 3.52			CHECKED BY Paul Rew		
ADDRESS 642 Dunlop Street West, Barrie			DIAMETER 2.5 inch spoon, 5 inch auger					
DRILLING DATE April 22, 2022								

COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
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COMMENTS

Depth (m)	PID	Samples	Sample Type	Analysis	Water	Well Installation	Material Description	Graphic Log	Moisture	Additional Observations	Depth
0.2	<5 ppm	SS1	Soil				- Asphalt				0.2
0.4							- Silty Sand - Low Moisture - No odour/stainage - Dark Brown				0.4
0.6											0.6
0.8		SS2	Soil								0.8
1.0											1.0
1.2	<5 ppm						- Silty Sand with Trace Gravel - Medium Moisture - No odour/stainage - Grey/Brown				1.2
1.4											1.4
1.6		SS3	Soil	PHCs VOCs BTEX PAHs Metals Sieve pH							1.6
1.8							- Silty Sand - High Moisture - No odour/stainage - Brown				1.8
2.0											2.0
2.2	<5 ppm										2.2
2.4		SS4	Soil								2.4
2.6											2.6
2.8											2.8
3.0		SS5	Soil								3.0
3.2	<5 ppm										3.2
3.4											3.4
3.6							Total depth 3.52 m				3.6

Disclaimer This bore log is intended for environmental not geotechnical purposes.



LOG OF BH2-SS4

PROJECT NUMBER R64018.2	DRILL RIG LST1A Tractor Mounted Drill Rig	SURFACE ELEVATION CENTROID
PROJECT NAME PII	DRILLING METHOD Hollow Stem Auger, Split Sp	LOGGED BY AA
CLIENT 2507517 Ontario Inc.	TOTAL DEPTH 3.75	CHECKED BY Paul Rew
ADDRESS 642 Dunlop Street West, Barrie	DIAMETER 2.5 inch spoon, 5 inch auger	
DRILLING DATE April 22, 2022		

COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
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COMMENTS

Depth (m)	PID	Samples	Sample Type	Analysis	Water	Well Installation	Material Description	Graphic Log	Moisture	Additional Observations	Depth
0.2	<5 ppm	SS1	Soil				- Topsoil				0.2
0.4							- Silty Sand - Low Moisture - No odour/stainage - Dark Brown				0.4
0.6											0.6
0.8	<5 ppm	SS2	Soil								0.8
1.0											1.0
1.2											1.2
1.4	<5 ppm						- Silty Sand - Medium/High Moisture - No odour/stainage - Brown				1.4
1.6		SS3	Soil								1.6
1.8											1.8
2.0	<5 ppm										2.0
2.2											2.2
2.4		SS4	Soil	PHCs VOCs BTEX Metals Sieve pH							2.4
2.6	<5 ppm										2.6
2.8											2.8
3.0		SS5	Soil								3.0
3.2	<5 ppm										3.2
3.4											3.4
3.6											3.6
3.8							Total depth 3.75 m				3.8

Disclaimer This bore log is intended for environmental not geotechnical purposes.

Page 1 of 1



LOG OF BH3-SS2/MW2

PROJECT NUMBER R64018.2			PROJECT NAME PII		
CLIENT 2507517 Ontario Inc.			DRILL RIG LST1A Tractor Mounted Drill Rig		
ADDRESS 642 Dunlop Street West, Barrie			DRILLING METHOD Hollow Stem Auger, Split Spc		
DRILLING DATE April 22, 2022			SURFACE ELEVATION CENTROID		
			LOGGED BY AA		
			TOTAL DEPTH 3.75		
			CHECKED BY Paul Rew		
			DIAMETER 2.5 inch spoon, 5 inch auger		

COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
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COMMENTS

Depth (m)	PID	Samples	Sample Type	Analysis	Water	Well Installation	Material Description	Graphic Log	Moisture	Additional Observations	Depth				
0.2	<5 ppm	SS1	Soil	PHCs VOCs BTEX PAHs Metals pH			- Topsoil				0.2				
0.4							- Silty Sand - Low Moisture - No odour/stainage - Dark Brown				0.4				
0.6											0.6				
0.8		SS2	Soil								0.8				
1											1				
1.2	<5 ppm														1.2
1.4															1.4
1.6		SS3	Soil				- Silty Sand - Medium/High Moisture - No odour/stainage - Brown				1.6				
1.8												1.8			
2												2			
2.2	<5 ppm														2.2
2.4		SS4	Soil										2.4		
2.6													2.6		
2.8													2.8		
3														3	
3.2	<5 ppm	SS5	Soil												3.2
3.4														3.4	
							Total depth 3.43 m								

Disclaimer This bore log is intended for environmental not geotechnical purposes.



LOG OF BH4-SS4

PROJECT NUMBER R64018.2		DRILL RIG LST1A Tractor Mounted Drill Rig		SURFACE ELEVATION CENTROID	
PROJECT NAME PII		DRILLING METHOD Hollow Stem Auger, Split Sp		LOGGED BY AA	
CLIENT 2507517 Ontario Inc.		TOTAL DEPTH 3.75		CHECKED BY Paul Rew	
ADDRESS 642 Dunlop Street West, Barrie		DIAMETER 2.5 inch spoon, 5 inch auger			
DRILLING DATE April 22, 2022					

COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
COMMENTS		

Depth (m)	PID	Samples	Sample Type	Analysis	Water	Well Installation	Material Description	Graphic Log	Moisture	Additional Observations	Depth
0.2	<5 ppm	SS1	Soil				- Asphalt				0.2
0.4							- Silty Sand				0.4
0.6							- Low Moisture				0.6
0.8	<5 ppm	SS2	Soil				- No odour/stainage				0.8
1.0							- Dark Brown				1.0
1.2											1.2
1.4	<5 ppm						- Silty Sand				1.4
1.6							- Medium/High Moisture				1.6
1.8							- No odour/stainage				1.8
2.0	<5 ppm	SS3	Soil				- Brown				2.0
2.2							- Silty Sand with Trace Gravel				2.2
2.4							- Low/Moisture				2.4
2.6	<5 ppm			PHCs VOCs BTEX Metals pH			- No odour/stainage				2.6
2.8							- Brown/Grey				2.8
3.0											3.0
3.2	<5 ppm	SS4	Soil				- Silty Sand				3.2
3.4							- Medium/High Moisture				3.4
3.6							- No odour/stainage				3.6
3.8							- Brown				3.8
							Total depth 3.75 m				



LOG OF BH5-SS1

PROJECT NUMBER R64018.2			DRILL RIG LST1A Tractor Mounted Drill Rig			SURFACE ELEVATION CENTROID		
PROJECT NAME PII			DRILLING METHOD Hollow Stem Auger, Split Sp			LOGGED BY AA		
CLIENT 2507517 Ontario Inc.			TOTAL DEPTH 3.75			CHECKED BY Paul Rew		
ADDRESS 642 Dunlop Street West, Barrie			DIAMETER 2.5 inch spoon, 5 inch auger					
DRILLING DATE April 22, 2022								

COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
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COMMENTS

Depth (m)	PID	Samples	Sample Type	Analysis	Water	Well Installation	Material Description	Graphic Log	Moisture	Additional Observations	Depth
0.2	<5 ppm	SS1	Soil	PHCs VOCs BTEX Metals Sieve PAHs			- Asphalt				0.2
0.4							- Silty Sand - Low Moisture - No odour/stainage - Dark Brown				0.4
0.6											0.6
0.8		SS2	Soil								0.8
1.0											1.0
1.2	<5 ppm						- Silty Sand - Medium/High Moisture - No odour/stainage - Brown				1.2
1.4											1.4
1.6		SS3	Soil				- Silty Sand with Trace Gravel - Low/Moisture - No odour/stainage - Brown/Grey				1.6
1.8	<5 ppm										1.8
2.0											2.0
2.2		SS4	Soil				- Silty Sand - Medium/High Moisture - No odour/stainage - Brown				2.2
2.4											2.4
2.6	<5 ppm										2.6
2.8											2.8
3.0		SS5	Soil								3.0
3.2											3.2
3.4	<5 ppm										3.4
3.6											3.6
3.8							Total depth 3.75 m				3.8

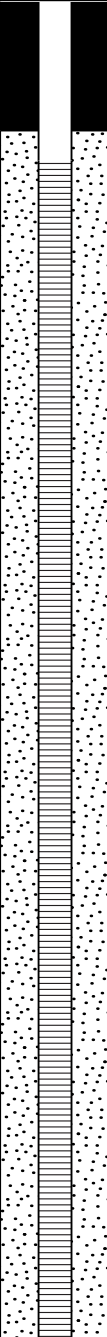
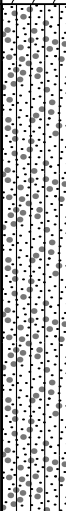
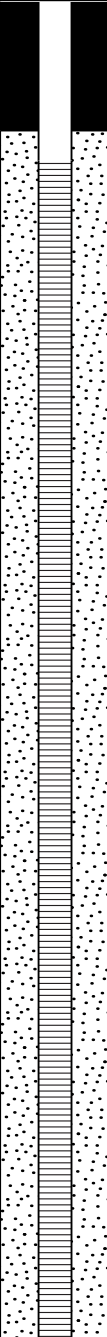
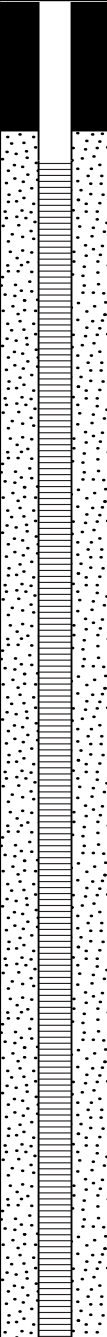
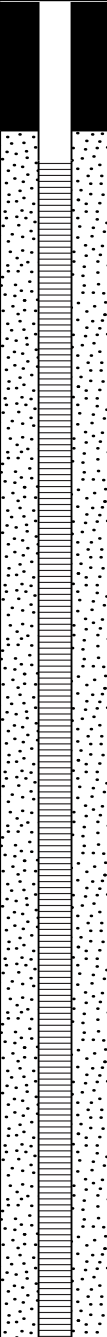
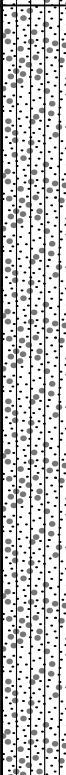
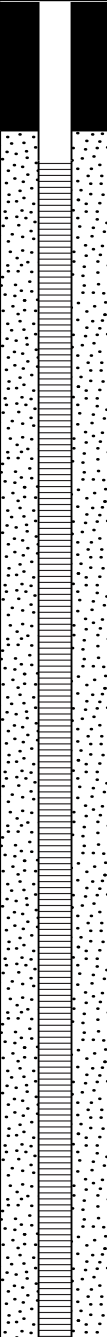
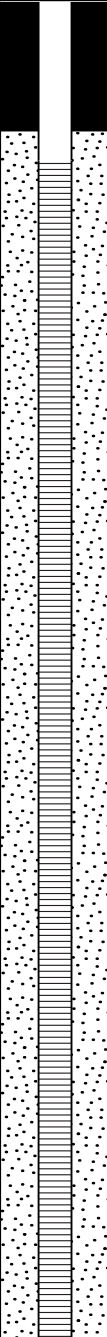
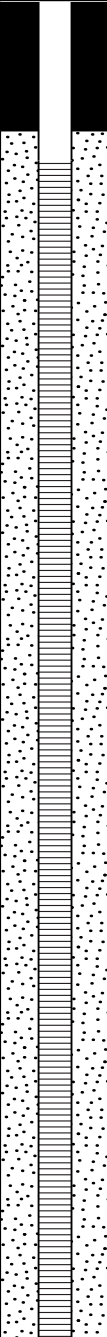
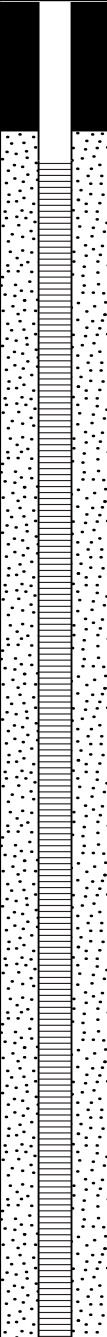
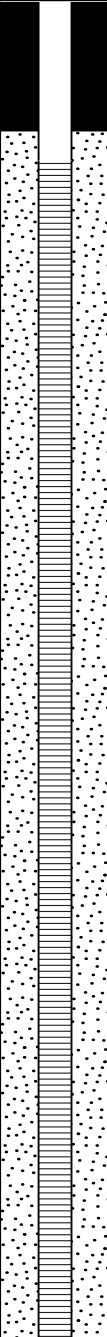


LOG OF BH6-SS5/MW3

PROJECT NUMBER R64018.2			DRILL RIG LST1A Traylor Mounted Drill Rig			SURFACE ELEVATION CENTROID		
PROJECT NAME PII			DRILLING METHOD Hollow Stem Auger, Split Sp			LOGGED BY AA		
CLIENT 2507517 Ontario Inc.			TOTAL DEPTH 3.6			CHECKED BY Paul Rew		
ADDRESS 642 Dunlop Street West, Barrie			DIAMETER 2.5 inch spoon, 5 inch auger					
DRILLING DATE April 22, 2022								

COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
-------------------	--------------------	------------------------------------

COMMENTS

Depth (m)	PID	Samples	Sample Type	Analysis	Water	Well Installation	Material Description	Graphic Log	Moisture	Additional Observations	Depth
0.2	<5 ppm	SS1	Soil				- Topsoil				0.2
0.4							- Silty Sand - Low Moisture - No odour/stainage - Dark Brown				0.4
0.6	<5 ppm										0.6
0.8		SS2	Soil								0.8
1	<5 ppm										1
1.2											1.2
1.4	<5 ppm										1.4
1.6		SS3	Soil				- Silty Sand - Medium/High Moisture - No odour/stainage - Brown				1.6
1.8	<5 ppm										1.8
2											2
2.2	<5 ppm										2.2
2.4		SS4	Soil								2.4
2.6	<5 ppm										2.6
2.8											2.8
3	<5 ppm			PHCs VOCs BTEX Metals pH							3
3.2		SS5	Soil								3.2
3.4	<5 ppm										3.4
3.6											3.6
							Total depth 3.6 m				

Disclaimer This bore log is intended for environmental not geotechnical purposes.

APPENDIX 3 LABORATORY CERTIFICATES OF ANALYSES





CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **WT2202876**

Client : **Rubicon Environmental Inc.**

Contact : **Paul Rew**

Address : **60 Toronto St
Flesherton ON Canada N0C 1E0**

Telephone : **519 924 0003**

Project : **R64018**

PO : **----**

C-O-C number : **20-955483**

Sampler : **----**

Site : **----**

Quote number : **SOA**

No. of samples received : **8**

No. of samples analysed : **8**

Page : **1 of 10**

Laboratory : **Waterloo - Environmental**

Account Manager : **Gayle Braun**

Address : **60 Northland Road, Unit 1
Waterloo, Ontario Canada N2V 2B8**

Telephone : **+1 519 886 6910**

Date Samples Received : **25-Apr-2022 16:20**

Date Analysis Commenced : **26-Apr-2022**

Issue Date : **05-May-2022 10:52**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Centralized Prep, Waterloo, Ontario
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Metals, Waterloo, Ontario
Sarah Birch	Team Leader - Volatiles	Organics, Waterloo, Ontario



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
mg/kg	milligrams per kilogram
pH units	pH units

>: greater than.

<: less than.

Red shading is applied where the result is greater than the Guideline Upper Limit or the result is lower than the Guideline Lower Limit.

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

[illegible]

Analytical Results Evaluation

[illegible]



Analytical Results Evaluation

			Client sample ID	BH1-SS3	BH2-SS4	BH3-SS2	BH3-SS2 DUPLICATE	BH4-SS4	BH5-SS1	BH6-SS5
Matrix: Soil/Solid			Sampling date/time	22-Apr-2022 10:00	22-Apr-2022 10:30	22-Apr-2022 11:00	22-Apr-2022 11:00	22-Apr-2022 12:30	22-Apr-2022 13:00	22-Apr-2022 14:00
Sub-Matrix				Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Analyte	CAS Number	Unit		WT2202876-001	WT2202876-002	WT2202876-003	WT2202876-004	WT2202876-005	WT2202876-006	WT2202876-007
Volatile Organic Compounds										
tetrachloroethane, 1,1,1,2-	630-20-6	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethane, 1,1,2,2-	79-34-5	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethylene	127-18-4	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
toluene	108-88-3	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,1-	71-55-6	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,2-	79-00-5	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethylene	79-01-6	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
trichlorofluoromethane	75-69-4	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
vinyl chloride	75-01-4	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
xylene, m+p-	179601-23-1	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
xylene, o-	95-47-6	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
xylenes, total	1330-20-7	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
BTEX, total	----	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	%		81.8	87.7	87.9	82.0	85.2	81.8	89.5
difluorobenzene, 1,4-	540-36-3	%		87.9	96.9	97.8	89.8	94.3	91.3	97.4
Hydrocarbons										
F1 (C6-C10)	----	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	----	mg/kg		<10	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	----	mg/kg		<50	<50	<50	<50	<50	56	<50
F4 (C34-C50)	----	mg/kg		<50	<50	<50	<50	<50	90	<50
F1-BTEX	----	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
hydrocarbons, total (C6-C50)	----	mg/kg		<80	<80	<80	<80	<80	146	<80
chromatogram to baseline at nC50	n/a	-		YES	YES	YES	YES	YES	YES	YES
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	%		78.6	70.0	88.4	89.3	86.5	85.0	86.2
dichlorotoluene, 3,4-	97-75-0	%		81.2	77.1	93.6	76.0	84.1	83.7	72.8
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----



Analytical Results Evaluation

			Client sample ID	BH1-SS3	BH2-SS4	BH3-SS2	BH3-SS2 DUPLICATE	BH4-SS4	BH5-SS1	BH6-SS5
Matrix: Soil/Solid			Sampling date/time	22-Apr-2022 10:00	22-Apr-2022 10:30	22-Apr-2022 11:00	22-Apr-2022 11:00	22-Apr-2022 12:30	22-Apr-2022 13:00	22-Apr-2022 14:00
			Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Analyte	CAS Number	Unit		WT2202876-001	WT2202876-002	WT2202876-003	WT2202876-004	WT2202876-005	WT2202876-006	WT2202876-007
Polycyclic Aromatic Hydrocarbons										
acenaphthylene	208-96-8	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
anthracene	120-12-7	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
benz(a)anthracene	56-55-3	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
benzo(a)pyrene	50-32-8	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
benzo(b+j)fluoranthene	n/a	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
benzo(g,h,i)perylene	191-24-2	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
benzo(k)fluoranthene	207-08-9	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
chrysene	218-01-9	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
dibenz(a,h)anthracene	53-70-3	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
fluoranthene	206-44-0	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
fluorene	86-73-7	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
methylnaphthalene, 1-	90-12-0	mg/kg		<0.030	----	<0.030	<0.030	----	<0.030	----
methylnaphthalene, 1+2-	----	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
methylnaphthalene, 2-	91-57-6	mg/kg		<0.030	----	<0.030	<0.030	----	<0.030	----
naphthalene	91-20-3	mg/kg		<0.010	----	<0.010	<0.010	----	<0.010	----
phenanthrene	85-01-8	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
pyrene	129-00-0	mg/kg		<0.050	----	<0.050	<0.050	----	<0.050	----
Polycyclic Aromatic Hydrocarbons Surrogates										
fluorobiphenyl, 2-	321-60-8	%		84.3	----	82.4	87.6	----	80.1	----
terphenyl-d14, p-	1718-51-0	%		80.3	----	78.7	84.2	----	78.0	----



Analytical Results Evaluation

Matrix: Soil/Solid			Client sample ID	TRIP BLANK	----	----	----	----	----	----
			Sampling date/time	22-Apr-2022	----	----	----	----	----	----
			Sub-Matrix	Soil/Solid	----	----	----	----	----	----
Analyte	CAS Number	Unit	WT2202876-008	-----	-----	-----	-----	-----	-----	-----
Physical Tests										
moisture	----	%	<0.25	----	----	----	----	----	----	----
Volatile Organic Compounds										
benzene	71-43-2	mg/kg	<0.0050	----	----	----	----	----	----	----
ethylbenzene	100-41-4	mg/kg	<0.015	----	----	----	----	----	----	----
toluene	108-88-3	mg/kg	<0.050	----	----	----	----	----	----	----
xylene, m+p-	179601-23-1	mg/kg	<0.030	----	----	----	----	----	----	----
xylene, o-	95-47-6	mg/kg	<0.030	----	----	----	----	----	----	----
xylenes, total	1330-20-7	mg/kg	<0.050	----	----	----	----	----	----	----
BTEX, total	----	mg/kg	<0.10	----	----	----	----	----	----	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	%	104	----	----	----	----	----	----	----
difluorobenzene, 1,4-	540-36-3	%	108	----	----	----	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	mg/kg	<5.0	----	----	----	----	----	----	----
F1-BTEX	----	mg/kg	<5.0	----	----	----	----	----	----	----
Hydrocarbons Surrogates										
dichlorotoluene, 3,4-	97-75-0	%	100	----	----	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

No Breaches Found



Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T3-ICC-C	ON153/04 T3-ICC-F					
Physical Tests									
moisture	----	%							
pH (1:2 soil:CaCl2-aq)	----	pH units							
Particle Size									
finer (<0.075mm)	----	%							
sand (>0.075mm)	----	%							
texture class	----	-							
Metals									
antimony	7440-36-0	mg/kg	40 mg/kg	50 mg/kg					
arsenic	7440-38-2	mg/kg	18 mg/kg	18 mg/kg					
barium	7440-39-3	mg/kg	670 mg/kg	670 mg/kg					
beryllium	7440-41-7	mg/kg	8 mg/kg	10 mg/kg					
boron	7440-42-8	mg/kg	120 mg/kg	120 mg/kg					
cadmium	7440-43-9	mg/kg	1.9 mg/kg	1.9 mg/kg					
chromium	7440-47-3	mg/kg	160 mg/kg	160 mg/kg					
cobalt	7440-48-4	mg/kg	80 mg/kg	100 mg/kg					
copper	7440-50-8	mg/kg	230 mg/kg	300 mg/kg					
lead	7439-92-1	mg/kg	120 mg/kg	120 mg/kg					
molybdenum	7439-98-7	mg/kg	40 mg/kg	40 mg/kg					
nickel	7440-02-0	mg/kg	270 mg/kg	340 mg/kg					
selenium	7782-49-2	mg/kg	5.5 mg/kg	5.5 mg/kg					
silver	7440-22-4	mg/kg	40 mg/kg	50 mg/kg					
thallium	7440-28-0	mg/kg	3.3 mg/kg	3.3 mg/kg					
uranium	7440-61-1	mg/kg	33 mg/kg	33 mg/kg					
vanadium	7440-62-2	mg/kg	86 mg/kg	86 mg/kg					
zinc	7440-66-6	mg/kg	340 mg/kg	340 mg/kg					
Volatile Organic Compounds									
acetone	67-64-1	mg/kg	16 mg/kg	28 mg/kg					
benzene	71-43-2	mg/kg	0.32 mg/kg	0.4 mg/kg					
bromodichloromethane	75-27-4	mg/kg	18 mg/kg	18 mg/kg					
bromoform	75-25-2	mg/kg	0.61 mg/kg	1.7 mg/kg					
bromomethane	74-83-9	mg/kg	0.05 mg/kg	0.05 mg/kg					
BTEX, total	----	mg/kg							
carbon tetrachloride	56-23-5	mg/kg	0.21 mg/kg	1.5 mg/kg					
chlorobenzene	108-90-7	mg/kg	2.4 mg/kg	2.7 mg/kg					
chloroform	67-66-3	mg/kg	0.47 mg/kg	0.18 mg/kg					
dibromochloromethane	124-48-1	mg/kg	13 mg/kg	13 mg/kg					
dibromoethane, 1,2-	106-93-4	mg/kg	0.05 mg/kg	0.05 mg/kg					



Analyte	CAS Number	Unit	ON153/04 T3-ICC-C	ON153/04 T3-ICC-F					
Volatile Organic Compounds - Continued									
dichlorobenzene, 1,2-	95-50-1	mg/kg	6.8 mg/kg	8.5 mg/kg					
dichlorobenzene, 1,3-	541-73-1	mg/kg	9.6 mg/kg	12 mg/kg					
dichlorobenzene, 1,4-	106-46-7	mg/kg	0.2 mg/kg	0.84 mg/kg					
dichlorodifluoromethane	75-71-8	mg/kg	16 mg/kg	25 mg/kg					
dichloroethane, 1,1-	75-34-3	mg/kg	17 mg/kg	21 mg/kg					
dichloroethane, 1,2-	107-06-2	mg/kg	0.05 mg/kg	0.05 mg/kg					
dichloroethylene, 1,1-	75-35-4	mg/kg	0.064 mg/kg	0.48 mg/kg					
dichloroethylene, cis-1,2-	156-59-2	mg/kg	55 mg/kg	37 mg/kg					
dichloroethylene, trans-1,2-	156-60-5	mg/kg	1.3 mg/kg	9.3 mg/kg					
dichloromethane	75-09-2	mg/kg	1.6 mg/kg	2 mg/kg					
dichloropropane, 1,2-	78-87-5	mg/kg	0.16 mg/kg	0.68 mg/kg					
dichloropropylene, cis+trans-1,3-	542-75-6	mg/kg	0.18 mg/kg	0.21 mg/kg					
dichloropropylene, cis-1,3-	10061-01-5	mg/kg							
dichloropropylene, trans-1,3-	10061-02-6	mg/kg							
ethylbenzene	100-41-4	mg/kg	9.5 mg/kg	19 mg/kg					
hexane, n-	110-54-3	mg/kg	46 mg/kg	88 mg/kg					
methyl ethyl ketone [MEK]	78-93-3	mg/kg	70 mg/kg	88 mg/kg					
methyl isobutyl ketone [MIBK]	108-10-1	mg/kg	31 mg/kg	210 mg/kg					
methyl-tert-butyl ether [MTBE]	1634-04-4	mg/kg	11 mg/kg	3.2 mg/kg					
styrene	100-42-5	mg/kg	34 mg/kg	43 mg/kg					
tetrachloroethane, 1,1,1,2-	630-20-6	mg/kg	0.087 mg/kg	0.11 mg/kg					
tetrachloroethane, 1,1,1,2,2-	79-34-5	mg/kg	0.05 mg/kg	0.094 mg/kg					
tetrachloroethylene	127-18-4	mg/kg	4.5 mg/kg	21 mg/kg					
toluene	108-88-3	mg/kg	68 mg/kg	78 mg/kg					
trichloroethane, 1,1,1-	71-55-6	mg/kg	6.1 mg/kg	12 mg/kg					
trichloroethane, 1,1,2-	79-00-5	mg/kg	0.05 mg/kg	0.11 mg/kg					
trichloroethylene	79-01-6	mg/kg	0.91 mg/kg	0.61 mg/kg					
trichlorofluoromethane	75-69-4	mg/kg	4 mg/kg	5.8 mg/kg					
vinyl chloride	75-01-4	mg/kg	0.032 mg/kg	0.25 mg/kg					
xylene, m+p-	179601-23-1	mg/kg							
xylene, o-	95-47-6	mg/kg							
xylenes, total	1330-20-7	mg/kg	26 mg/kg	30 mg/kg					
Hydrocarbons									
chromatogram to baseline at nC50	n/a	-							
F1 (C6-C10)	----	mg/kg	55 mg/kg	65 mg/kg					
F1-BTEX	----	mg/kg	55 mg/kg	65 mg/kg					
F2 (C10-C16)	----	mg/kg	230 mg/kg	250 mg/kg					
F3 (C16-C34)	----	mg/kg	1700 mg/kg	2500 mg/kg					
F4 (C34-C50)	----	mg/kg	3300 mg/kg	6600 mg/kg					



Analyte	CAS Number	Unit	ON153/04 T3-ICC-C	ON153/04 T3-ICC-F					
Hydrocarbons - Continued									
hydrocarbons, total (C6-C50)	----	mg/kg							
Polycyclic Aromatic Hydrocarbons									
acenaphthene	83-32-9	mg/kg	96 mg/kg	96 mg/kg					
acenaphthylene	208-96-8	mg/kg	0.15 mg/kg	0.17 mg/kg					
anthracene	120-12-7	mg/kg	0.67 mg/kg	0.74 mg/kg					
benz(a)anthracene	56-55-3	mg/kg	0.96 mg/kg	0.96 mg/kg					
benzo(a)pyrene	50-32-8	mg/kg	0.3 mg/kg	0.3 mg/kg					
benzo(b+j)fluoranthene	n/a	mg/kg	0.96 mg/kg	0.96 mg/kg					
benzo(g,h,i)perylene	191-24-2	mg/kg	9.6 mg/kg	9.6 mg/kg					
benzo(k)fluoranthene	207-08-9	mg/kg	0.96 mg/kg	0.96 mg/kg					
chrysene	218-01-9	mg/kg	9.6 mg/kg	9.6 mg/kg					
dibenz(a,h)anthracene	53-70-3	mg/kg	0.1 mg/kg	0.1 mg/kg					
fluoranthene	206-44-0	mg/kg	9.6 mg/kg	9.6 mg/kg					
fluorene	86-73-7	mg/kg	62 mg/kg	69 mg/kg					
indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	0.76 mg/kg	0.95 mg/kg					
methylnaphthalene, 1+2-	----	mg/kg	76 mg/kg	85 mg/kg					
methylnaphthalene, 1-	90-12-0	mg/kg	76 mg/kg	85 mg/kg					
methylnaphthalene, 2-	91-57-6	mg/kg	76 mg/kg	85 mg/kg					
naphthalene	91-20-3	mg/kg	9.6 mg/kg	28 mg/kg					
phenanthrene	85-01-8	mg/kg	12 mg/kg	16 mg/kg					
pyrene	129-00-0	mg/kg	96 mg/kg	96 mg/kg					

Please refer to the General Comments section for an explanation of any qualifiers detected.

Key:

ON153/04

Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)

T3-ICC-C

T3-Soil-Ind/Com/Commu. Property Use (Coarse)

T3-ICC-F

T3-Soil-Ind/Com/Commu. Property Use (Fine)

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: WT2203769	Page	: 1 of 8
Amendment	: 3		
Client	: Rubicon Environmental Inc.	Laboratory	: Waterloo - Environmental
Contact	: Paul Rew	Account Manager	: Gayle Braun
Address	: 60 Toronto St Flesherton ON Canada N0C 1E0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 924 0003	Telephone	: +1 519 886 6910
Project	: R64018	Date Samples Received	: 12-May-2022 10:03
PO	: ----	Date Analysis Commenced	: 12-May-2022
C-O-C number	: 20-951180	Issue Date	: 03-Feb-2023 14:28
Sampler	: CLIENT		
Site	: ----		
Quote number	: SOA		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<u>Signatories</u>	<u>Position</u>	<u>Laboratory Department</u>
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Organics, Waterloo, Ontario



No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units
µg/L	micrograms per litre

>: greater than.

<: less than.

Red shading is applied where the result is greater than the Guideline Upper Limit or the result is lower than the Guideline Lower Limit.

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Workorder Comments

Amendment (28/12/2022): This report has been amended and re-released as per client request



Qualifiers

Qualifier	Description
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.
SUR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.



Analytical Results Evaluation

Matrix: Water

			Client sample ID	MW1	MW2	MW2- DUP	MW3	TRIP BLANK	----	----
			Sampling date/time	10-May-2022 12:00	10-May-2022 12:30	10-May-2022 12:30	10-May-2022 13:00	10-May-2022	----	----
			Sub-Matrix	Water	Water	Water	Water	Water	----	----
Analyte	CAS Number	Unit		WT2203769-001	WT2203769-002	WT2203769-003	WT2203769-004	WT2203769-005	-----	-----
Volatile Organic Compounds										
Acetone	67-64-1	µg/L		<20	<20 ^{OWP}	<20 ^{OWP}	<20 ^{OWP}	<20	----	----
Benzene	71-43-2	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Bromodichloromethane	75-27-4	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Bromoform	75-25-2	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Bromomethane	74-83-9	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Carbon tetrachloride	56-23-5	µg/L		<0.20	<0.20 ^{OWP}	<0.20 ^{OWP}	<0.20 ^{OWP}	<0.20	----	----
Chlorobenzene	108-90-7	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Chloroform	67-66-3	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dibromochloromethane	124-48-1	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dibromoethane, 1,2-	106-93-4	µg/L		<0.20	<0.20 ^{OWP}	<0.20 ^{OWP}	<0.20 ^{OWP}	<0.20	----	----
Dichlorobenzene, 1,2-	95-50-1	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichlorobenzene, 1,3-	541-73-1	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichlorobenzene, 1,4-	106-46-7	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichlorodifluoromethane	75-71-8	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichloroethane, 1,1-	75-34-3	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichloroethane, 1,2-	107-06-2	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichloroethylene, 1,1-	75-35-4	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichloroethylene, cis-1,2-	156-59-2	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichloroethylene, trans-1,2-	156-60-5	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichloromethane	75-09-2	µg/L		<1.0	<1.0 ^{OWP}	<1.0 ^{OWP}	<1.0 ^{OWP}	<1.0	----	----
Dichloropropane, 1,2-	78-87-5	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichloropropylene, cis+trans-1,3-	542-75-6	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Dichloropropylene, cis-1,3-	10061-01-5	µg/L		<0.30	<0.30 ^{OWP}	<0.30 ^{OWP}	<0.30 ^{OWP}	<0.30	----	----
Dichloropropylene, trans-1,3-	10061-02-6	µg/L		<0.30	<0.30 ^{OWP}	<0.30 ^{OWP}	<0.30 ^{OWP}	<0.30	----	----
Ethylbenzene	100-41-4	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Hexane, n-	110-54-3	µg/L		<0.50	0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Methyl ethyl ketone [MEK]	78-93-3	µg/L		<20	<20 ^{OWP}	<20 ^{OWP}	<20 ^{OWP}	<20	----	----
Methyl isobutyl ketone [MIBK]	108-10-1	µg/L		<20	<20 ^{OWP}	<20 ^{OWP}	<20 ^{OWP}	<20	----	----



Analytical Results Evaluation

			Client sample ID	MW1	MW2	MW2- DUP	MW3	TRIP BLANK	----	----
Matrix: Water			Sampling date/time	10-May-2022 12:00	10-May-2022 12:30	10-May-2022 12:30	10-May-2022 13:00	10-May-2022	----	----
			Sub-Matrix	Water	Water	Water	Water	Water	----	----
Analyte	CAS Number	Unit		WT2203769-001	WT2203769-002	WT2203769-003	WT2203769-004	WT2203769-005	-----	-----
Volatile Organic Compounds										
Methyl-tert-butyl ether [MTBE]	1634-04-4	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Styrene	100-42-5	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Tetrachloroethylene	127-18-4	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Toluene	108-88-3	µg/L		<0.50	0.52 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Trichloroethane, 1,1,1-	71-55-6	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Trichloroethane, 1,1,2-	79-00-5	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Trichloroethylene	79-01-6	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Trichlorofluoromethane	75-69-4	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Vinyl chloride	75-01-4	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
Xylene, m+p-	179601-23-1	µg/L		<0.40	<0.40 ^{OWP}	<0.40 ^{OWP}	<0.40 ^{OWP}	<0.40	----	----
Xylene, o-	95-47-6	µg/L		<0.30	<0.30 ^{OWP}	<0.30 ^{OWP}	<0.30 ^{OWP}	<0.30	----	----
Xylenes, total	1330-20-7	µg/L		<0.50	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50 ^{OWP}	<0.50	----	----
BTEX, total	----	µg/L		<1.0	<1.0 ^{OWP}	<1.0 ^{OWP}	<1.0 ^{OWP}	<1.0	----	----
Hydrocarbons										
F1 (C6-C10)	----	µg/L		<25	<25 ^{OWP}	<25 ^{OWP}	<25 ^{OWP}	<25	----	----
F2 (C10-C16)	----	µg/L		<100	<100	<100	<100	----	----	----
F3 (C16-C34)	----	µg/L		<250	<250	<250	<250	----	----	----
F4 (C34-C50)	----	µg/L		<250	<250	<250	<250	----	----	----
F1-BTEX	----	µg/L		<25	<25	<25	<25	<25	----	----
Hydrocarbons, total (C6-C50)	----	µg/L		<370	<370	<370	<370	----	----	----
Chromatogram to baseline at nC50	n/a	-		YES	YES	YES	YES	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	%		98.7	50.3 ^{SUR-ND}	92.3	85.6	----	----	----
Dichlorotoluene, 3,4-	95-75-0	%		75.2	77.3 ^{OWP}	74.5 ^{OWP}	86.1 ^{OWP}	101	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	%		87.1	87.9 ^{OWP}	86.5 ^{OWP}	79.0 ^{OWP}	77.8	----	----
Difluorobenzene, 1,4-	540-36-3	%		101	102 ^{OWP}	101 ^{OWP}	99.6 ^{OWP}	99.0	----	----



Please refer to the General Comments section for an explanation of any qualifiers detected.



Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All					
Volatile Organic Compounds									
Acetone	67-64-1	µg/L	2700 µg/L	2700 µg/L					
Benzene	71-43-2	µg/L	5 µg/L	5 µg/L					
Bromodichloromethane	75-27-4	µg/L	16 µg/L	16 µg/L					
Bromoform	75-25-2	µg/L	25 µg/L	25 µg/L					
Bromomethane	74-83-9	µg/L	0.89 µg/L	0.89 µg/L					
BTEX, total	----	µg/L							
Carbon tetrachloride	56-23-5	µg/L	0.79 µg/L	5 µg/L					
Chlorobenzene	108-90-7	µg/L	30 µg/L	30 µg/L					
Chloroform	67-66-3	µg/L	2.4 µg/L	22 µg/L					
Dibromochloromethane	124-48-1	µg/L	25 µg/L	25 µg/L					
Dibromoethane, 1,2-	106-93-4	µg/L	0.2 µg/L	0.2 µg/L					
Dichlorobenzene, 1,2-	95-50-1	µg/L	3 µg/L	3 µg/L					
Dichlorobenzene, 1,3-	541-73-1	µg/L	59 µg/L	59 µg/L					
Dichlorobenzene, 1,4-	106-46-7	µg/L	1 µg/L	1 µg/L					
Dichlorodifluoromethane	75-71-8	µg/L	590 µg/L	590 µg/L					
Dichloroethane, 1,1-	75-34-3	µg/L	5 µg/L	5 µg/L					
Dichloroethane, 1,2-	107-06-2	µg/L	1.6 µg/L	5 µg/L					
Dichloroethylene, 1,1-	75-35-4	µg/L	1.6 µg/L	14 µg/L					
Dichloroethylene, cis-1,2-	156-59-2	µg/L	1.6 µg/L	17 µg/L					
Dichloroethylene, trans-1,2-	156-60-5	µg/L	1.6 µg/L	17 µg/L					
Dichloromethane	75-09-2	µg/L	50 µg/L	50 µg/L					
Dichloropropane, 1,2-	78-87-5	µg/L	5 µg/L	5 µg/L					
Dichloropropylene, cis+trans-1,3-	542-75-6	µg/L	0.5 µg/L	0.5 µg/L					
Dichloropropylene, cis-1,3-	10061-01-5	µg/L							
Dichloropropylene, trans-1,3-	10061-02-6	µg/L							
Ethylbenzene	100-41-4	µg/L	2.4 µg/L	2.4 µg/L					
Hexane, n-	110-54-3	µg/L	51 µg/L	520 µg/L					
Methyl ethyl ketone [MEK]	78-93-3	µg/L	1800 µg/L	1800 µg/L					
Methyl isobutyl ketone [MIBK]	108-10-1	µg/L	640 µg/L	640 µg/L					
Methyl-tert-butyl ether [MTBE]	1634-04-4	µg/L	15 µg/L	15 µg/L					
Styrene	100-42-5	µg/L	5.4 µg/L	5.4 µg/L					
Tetrachloroethane, 1,1,1,2-	630-20-6	µg/L	1.1 µg/L	1.1 µg/L					
Tetrachloroethane, 1,1,2,2-	79-34-5	µg/L	1 µg/L	1 µg/L					
Tetrachloroethylene	127-18-4	µg/L	1.6 µg/L	17 µg/L					
Toluene	108-88-3	µg/L	24 µg/L	24 µg/L					
Trichloroethane, 1,1,1-	71-55-6	µg/L	200 µg/L	200 µg/L					
Trichloroethane, 1,1,2-	79-00-5	µg/L	4.7 µg/L	5 µg/L					



Analyte	CAS Number	Unit	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All					
Volatile Organic Compounds - Continued									
Trichloroethylene	79-01-6	µg/L	1.6 µg/L	5 µg/L					
Trichlorofluoromethane	75-69-4	µg/L	150 µg/L	150 µg/L					
Vinyl chloride	75-01-4	µg/L	0.5 µg/L	1.7 µg/L					
Xylene, m+p-	179601-23-1	µg/L							
Xylene, o-	95-47-6	µg/L							
Xylenes, total	1330-20-7	µg/L	300 µg/L	300 µg/L					
Hydrocarbons									
Chromatogram to baseline at nC50	n/a	-							
F1 (C6-C10)	----	µg/L	750 µg/L	750 µg/L					
F1-BTEX	----	µg/L	750 µg/L	750 µg/L					
F2 (C10-C16)	----	µg/L	150 µg/L	150 µg/L					
F3 (C16-C34)	----	µg/L	500 µg/L	500 µg/L					
F4 (C34-C50)	----	µg/L	500 µg/L	500 µg/L					
Hydrocarbons, total (C6-C50)	----	µg/L							

Please refer to the General Comments section for an explanation of any qualifiers detected.

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-GW-C-All	153 T2-Ground Water (Coarse Soil)-All Types of Property Use
T2-GW-F-All	153 T2-Ground Water (Fine Soil)-All Types of Property Use

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: WT2203769	Page	: 1 of 7
Amendment	: 3		
Client	: Rubicon Environmental Inc.	Laboratory	: Waterloo - Environmental
Contact	: Paul Rew	Account Manager	: Gayle Braun
Address	: 60 Toronto St Flesherton ON Canada N0C 1E0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 924 0003	Telephone	: +1 519 886 6910
Project	: R64018	Date Samples Received	: 12-May-2022 10:03
PO	: ----	Issue Date	: 03-Feb-2023 14:28
C-O-C number	: 20-951180		
Sampler	: CLIENT		
Site	: ----		
Quote number	: SOA		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Test sample Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Regular Sample Surrogates

Sub-Matrix: Water

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Hydrocarbons Surrogates	WT2203769-002	MW2	Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	50.3 %	60.0-140 %	Recovery less than lower data quality objective



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW1	E581.F1-L	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW2	E581.F1-L	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW2- DUP	E581.F1-L	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW3	E581.F1-L	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) TRIP BLANK	E581.F1-L	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	3 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW2	E601.SG	10-May-2022	19-May-2022	14 days	8 days	✓	19-May-2022	40 days	1 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW2- DUP	E601.SG	10-May-2022	19-May-2022	14 days	8 days	✓	19-May-2022	40 days	1 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW3	E601.SG	10-May-2022	19-May-2022	14 days	8 days	✓	19-May-2022	40 days	1 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW1	E601.SG	10-May-2022	19-May-2022	14 days	9 days	✓	19-May-2022	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW1	E611D	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	2 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW2	E611D	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	2 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW2- DUP	E611D	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	2 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW3	E611D	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	2 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) TRIP BLANK	E611D	10-May-2022	12-May-2022	----	----		12-May-2022	14 days	3 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	486298	1	10	10.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	486297	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	486298	1	10	10.0	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	492687	1	15	6.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	486297	1	18	5.5	5.0	✓
Method Blanks (MB)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	486298	1	10	10.0	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	492687	1	15	6.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	486297	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	486298	1	10	10.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	486297	1	18	5.5	5.0	✓



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4).
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580 Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
SUM F1 to F4 where F2-F4 is SG treated	EC581SG Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fraction F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50), where F2-F4 have been treated with silica gel. F4G-sg is not used within this calculation due to overlap with other fractions.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Waterloo - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
VOCs Preparation for Headspace Analysis	EP581 Waterloo - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Waterloo - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order : **WT2203769**

Page : 1 of 10

Amendment : **3**

Client : Rubicon Environmental Inc.

Contact : Paul Rew

Address : 60 Toronto St
Flesherton ON Canada N0C 1E0

Telephone :

Project : R64018

PO : ----

C-O-C number : 20-951180

Sampler : CLIENT 519 924 0003

Site : ----

Quote number : SOA

No. of samples received : 5

No. of samples analysed : 5

Laboratory : Waterloo - Environmental

Account Manager : Gayle Braun

Address : 60 Northland Road, Unit 1
Waterloo, Ontario Canada N2V 2B8

Telephone : +1 519 886 6910

Date Samples Received : 12-May-2022 10:03

Date Analysis Commenced : 12-May-2022

Issue Date : 03-Feb-2023 14:28

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo Organics, Waterloo, Ontario



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Volatile Organic Compounds (QC Lot: 486297)											
WT2203769-001	MW1	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Volatile Organic Compounds (QC Lot: 486297) - continued											
WT2203769-001	MW1	Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 486298)											
WT2203769-001	MW1	F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	<25	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 486297)						
Acetone	67-64-1	E611D	20	µg/L	<20	----
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	----
Bromoform	75-25-2	E611D	0.5	µg/L	<0.50	----
Bromomethane	74-83-9	E611D	0.5	µg/L	<0.50	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	<0.20	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	<0.50	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	<0.20	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	<0.50	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	<0.30	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 486297) - continued						
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 486298)						
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	----
Hydrocarbons (QCLot: 492687)						
F2 (C10-C16)	----	E601.SG	100	µg/L	<100	----
F3 (C16-C34)	----	E601.SG	250	µg/L	<250	----
F4 (C34-C50)	----	E601.SG	250	µg/L	<250	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 486297)									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	96.9	70.0	130	----
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	94.4	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	96.3	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	86.6	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	90.7	70.0	130	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	93.9	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	98.5	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	98.0	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	88.7	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	92.8	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	100	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	82.7	70.0	130	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	96.1	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	91.7	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	107	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	97.9	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	102	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	95.3	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	89.9	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	87.8	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	98.1	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	87.2	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	95.4	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	87.1	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	96.1	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	83.5	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	90.0	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	98.1	70.0	130	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 486297) - continued									
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	96.3	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	95.3	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	98.6	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	92.8	70.0	130	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	83.1	70.0	130	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	96.6	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	97.4	70.0	130	----
Hydrocarbons (QCLot: 486298)									
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	101	80.0	120	----
Hydrocarbons (QCLot: 492687)									
F2 (C10-C16)	----	E601.SG	100	µg/L	5018 µg/L	98.1	70.0	130	----
F3 (C16-C34)	----	E601.SG	250	µg/L	6312 µg/L	112	70.0	130	----
F4 (C34-C50)	----	E601.SG	250	µg/L	6087 µg/L	76.4	70.0	130	----



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	
Volatile Organic Compounds (QCLot: 486297)										
WT2203769-001	MW1	Acetone	67-64-1	E611D	100 µg/L	100 µg/L	99.8	60.0	140	----
		Benzene	71-43-2	E611D	92.2 µg/L	100 µg/L	92.2	60.0	140	----
		Bromodichloromethane	75-27-4	E611D	94.8 µg/L	100 µg/L	94.8	60.0	140	----
		Bromoform	75-25-2	E611D	87.1 µg/L	100 µg/L	87.1	60.0	140	----
		Bromomethane	74-83-9	E611D	88.8 µg/L	100 µg/L	88.8	60.0	140	----
		Carbon tetrachloride	56-23-5	E611D	90.6 µg/L	100 µg/L	90.6	60.0	140	----
		Chlorobenzene	108-90-7	E611D	95.1 µg/L	100 µg/L	95.1	60.0	140	----
		Chloroform	67-66-3	E611D	96.3 µg/L	100 µg/L	96.3	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	87.5 µg/L	100 µg/L	87.5	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	92.8 µg/L	100 µg/L	92.8	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	97.6 µg/L	100 µg/L	97.6	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	93.9 µg/L	100 µg/L	93.9	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	81.8 µg/L	100 µg/L	81.8	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	96.6 µg/L	100 µg/L	96.6	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	88.9 µg/L	100 µg/L	88.9	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	93.1 µg/L	100 µg/L	93.1	60.0	140	----
		Dichloromethane	75-09-2	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	94.1 µg/L	100 µg/L	94.1	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	84.7 µg/L	100 µg/L	84.7	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	82.0 µg/L	100 µg/L	82.0	60.0	140	----
		Ethylbenzene	100-41-4	E611D	93.4 µg/L	100 µg/L	93.4	60.0	140	----
		Hexane, n-	110-54-3	E611D	85.1 µg/L	100 µg/L	85.1	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	98 µg/L	100 µg/L	98.6	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	91 µg/L	100 µg/L	90.8	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	93.0 µg/L	100 µg/L	93.0	60.0	140	----
		Styrene	100-42-5	E611D	79.2 µg/L	100 µg/L	79.2	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	97.8 µg/L	100 µg/L	97.8	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	97.3 µg/L	100 µg/L	97.3	60.0	140	----

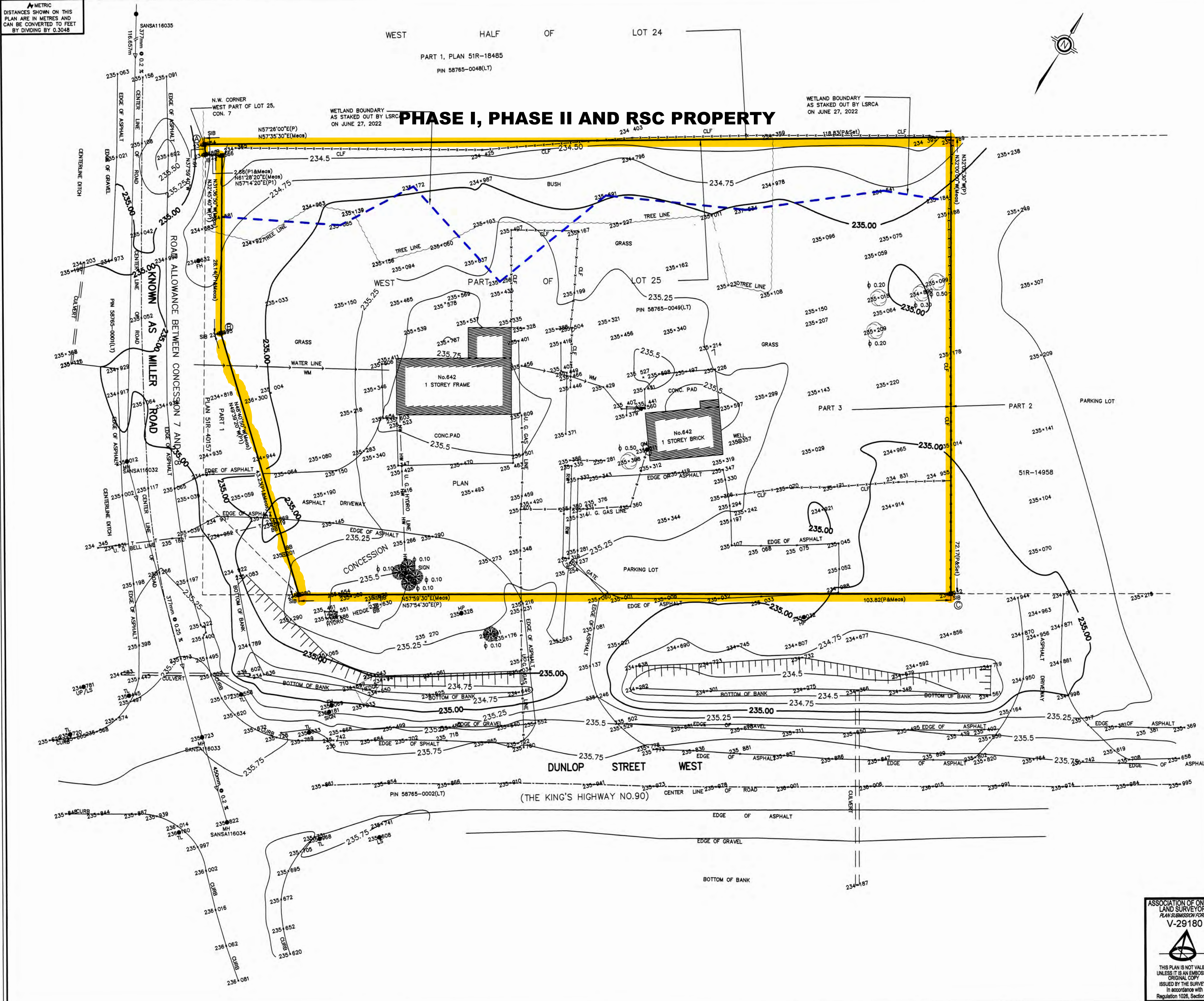


Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 486297) - continued										
WT2203769-001	MW1	Tetrachloroethylene	127-18-4	E611D	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		Toluene	108-88-3	E611D	94.4 µg/L	100 µg/L	94.4	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	93.5 µg/L	100 µg/L	93.5	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	95.0 µg/L	100 µg/L	95.0	60.0	140	----
		Trichloroethylene	79-01-6	E611D	94.7 µg/L	100 µg/L	94.7	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	91.1 µg/L	100 µg/L	91.1	60.0	140	----
		Vinyl chloride	75-01-4	E611D	81.4 µg/L	100 µg/L	81.4	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	184 µg/L	200 µg/L	92.0	60.0	140	----
		Xylene, o-	95-47-6	E611D	93.3 µg/L	100 µg/L	93.3	60.0	140	----
Hydrocarbons (QCLot: 486298)										
WT2203769-001	MW1	F1 (C6-C10)	----	E581.F1-L	1760 µg/L	2000 µg/L	88.2	60.0	140	----

APPENDIX 4 RSC PROPERTY SURVEY



METRIC
DISTANCES SHOWN ON THIS
PLAN ARE IN METRES AND
CAN BE CONVERTED TO FEET
BY DIVIDING BY 0.3048



TOPOGRAPHICAL SURVEY OF
**PART OF LOT 25
CONCESSION 7
CITY OF BARRIE**
(GEOGRAPHIC TOWNSHIP OF VESPRE)
SCALE 1 : 300
0 1 2 3 4 5 10 15 Metres
© OMARI MWINYI SURVEYING LTD., 2016.

- LEGEND
- DENOTES MONUMENTS FOUND
 - DENOTES MONUMENTS PLANTED
 - IB DENOTES IRON BAR
 - SIB DENOTES STANDARD IRON BAR
 - HP DENOTES HYDROPOLE
 - MH DENOTES MAHOLE
 - LS DENOTES LIGHT STANDARD
 - DENOTES CONIFEROUS TREE
 - TL DENOTES TRAFFIC LIGHT
 - FH DENOTES FIRE HYDRANT
 - BB DENOTES BELL BOX
 - DENOTES DIAMETER
 - DENOTES DECIDUOUS TREE
 - RW DENOTES RETAINING WALL
 - DENOTES UNDER GROUND HYDRO
 - DENOTES GAS LINE
 - CLF DENOTES CHAIN LINK FENCE
 - GM DENOTES GAS METER
 - P DENOTES PLAN 51R-14958
 - P1 DENOTES PLAN 51R-40157
 - WM DENOTES WATER MAIN

ELEVATIONS:
ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE DERIVED FROM BENCH MARK
No. 8607, STEEL ROD WITH BRASS CAP BENCH ON NORTH SIDE OF HWY 90, 1.7KM
WEST OF BRIDGE CARRYING HWY 90(DUNLOP ST) OVER HWY 400 IN THE CITY OF
BARRIE, 170.7M WEST OF HYDRO HIGH TENSION LINE AND 30.6M NORTH OF
CENTERLINE OF HWY 90. BENCH MARK IS SET 27CM SOUTH OF NORTH
RIGHT-OF-WAY FENCE AND IS MARKED BY A MARKER POST SET 40CM SOUTH OF
BENCH MARK, HAVING AN ELEVATION OF 235.76M.

BEARINGS:
NOTE:
BEARINGS ARE MTM GRID, DERIVED FROM SIMULTANEOUS GPS OBSERVATIONS FROM A
B AND C BASED ON THE ONTARIO COORDINATE SYSTEM (UTM) CENTRAL MERIDIAN
81°00'W LONGITUDE, ZONE 17 NAD83(CSRS)
DISTANCES SHOWN ON THIS PLAN ARE ADJUSTED GROUND LEVEL DISTANCES AND CAN BE
USED TO COMPUTE GRID COORDINATES BY MULTIPLYING THE DISTANCES BY A COMBINED
SCALE FACTOR OF 0.99969

OBSERVED REFERENCE POINTS (ORP) DERIVED FROM GPS OBSERVATIONS USING PRECISE
POINT POSITIONING (PPP) SERVICE, UTM ZONE 17, NAD83 (CSRS)
COORDINATES TO URBAN ACCURACY PER SEC. 14 (2) OF O.REG. 216/10

POINT No.	NORTHINGS	EASTINGS
ORP A	4913380.280	600990.816
ORP B	493356.637	601009.309
ORP C	4913385.160	601129.291

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR
BOUNDARIES SHOWN ON THIS PLAN.

SANITARY MANHOLE INVERTS

MANHOLE #	RIM ELEVATION	EAST INVERT	WEST INVERT	PIPE DIAMETER
SANSA116032	235.012	230.055	230.085	WEST 375mm EAST 375mm
SANSA116033	235.723	229.791	229.946	WEST 375mm EAST 450mm
SANSA116034	235.822	229.733	229.763	WEST 450mm EAST 450mm
SANSA116035	235.210	230.51	230.52	WEST 375mm EAST 375mm

SURVEYOR'S CERTIFICATE:
I CERTIFY THAT:
THE SURVEYORS ACT AND THE LAND TITLES ACT, AND THE REGULATIONS MADE
UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 11TH DAY OF JULY, 2022.
JULY 20, 2022
DATE
OMARI B. MWINYI
ONTARIO LAND SURVEYOR

ASSOCIATION OF ONTARIO
LAND SURVEYORS
PLAN SUBMISSION FORM
V-29180
THIS PLAN IS NOT VALID
UNLESS IT IS AN EMBOSSED
ORIGINAL COPY
ISSUED BY THE SURVEYOR
In accordance with
Regulation 1026, Section 28(3).

OMARI MWINYI SURVEYING LTD



1905 PINEGROVE AVENUE
PICKERING ON, L1V 6T1
Ph. (905) 831 5485
Fax: (905) 492 5485

PROJECT		PROJECT No.	
642 DUNLOP ST W		16-095-T	
DRAFTSPERSON	CALCULATIONS	CHECKED BY	
OM	C:\OMSL\16-095\16-095	O.M.	