Phase Two Environmental Site Assessment

951 Gladstone Avenue and 145 Loretta Avenue North
Ottawa, Ontario

Prepared for:

TIP Gladstone Limited Partnership by its General Partner TIP Gladstone GP Inc. c/o CLV Group Developments Inc
200-485 Bank Street
Ottawa, ON K2P 1Z2

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1.0 EXECUTIVE SUMMARY

Pinchin Ltd. (Pinchin) was retained through an Authorization to Proceed, Limitation of Liability and Terms of Engagement signed by TIP Gladstone Limited Partnership by its General Partner TIP Gladstone GP Inc. c/o CLV Group Developments Inc (Client) to conduct a Phase Two Environmental Site Assessment (ESA) of the property located at 951 Gladstone Avenue and 145 Loretta Avenue North in Ottawa, Ontario (hereafter referred to as the Phase Two Property or Site).

The Phase Two Property is approximately 1.1 hectares (2.6 acre) in size and is located on the northeast corner of the intersection of Gladstone Avenue and Loretta Avenue North in Ottawa, Ontario. The Phase Two Property is occupied by a multi-level commercial building (951 Gladstone Avenue) (Site Building A) and a three-storey commercial building equipped with one level of underground parking (145 Loretta Avenue North) (Site Building B). The Site Buildings are currently utilized for multi-tenant commercial purposes.

The Phase Two ESA was conducted at the request of the Client in relation to the future redevelopment of the Phase Two Property from commercial to mixed residential/commercial land use. A Record of Site Condition (RSC) submittal to the Ontario Ministry of Environment, Conservation and Parks (MECP) is a mandatory requirement when a land use changes to a more sensitive land use and as such, to support the RSC submission, the Phase Two ESA was conducted in accordance with the Province of Ontario's *Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Act*, which was last amended by Ontario Regulation 274/20 on July 1, 2020 (O. Reg. 153/04).

The objectives of this Phase Two ESA were to assess the soil and groundwater quality in relation to 17 areas of potential environmental concern (APECs) and related potentially contaminating activities (PCAs) and contaminants of potential concern (COPCs) identified in an Update Phase One ESA completed by Pinchin in accordance with O. Reg. 153/04. The identified APECs, PCAs and COPCs are summarized in Table 1. The Phase Two ESA was completed by Pinchin between April 2021 and November 2021 and consisted of the following:

- Initial investigation of the APECs.
- Lateral and vertical delineation of soil and groundwater impacts identified during the initial APECs investigation.
- Additional sampling and data gathering to support the completion of a Risk Assessment (RA).

The Phase Two ESA was completed at the Site by Pinchin consisted of the advancement of 27 boreholes, 17 of which were completed as groundwater monitoring wells.

Select "worst case" soil samples collected during the borehole drilling program were submitted for laboratory analysis of volatile organic compounds (VOCs), petroleum hydrocarbons (PHCs) fractions 1 through 4 (F1-F4), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), metals and/or inorganic parameters. Groundwater samples collected from the newly installed and one previously installed monitoring well were submitted for laboratory analysis of VOCs, PHCs, PAHs and metals and/or inorganic parameters.

Based on Site-specific information, the soil and groundwater quality was assessed based on the Ontario Ministry of the Environment, Conservation and Parks *Table 3 Standards* for residential/parkland/ institutional land use and coarse-textured soil.

The reported concentrations of PHCs (F1-F4), VOCs, PAHs, PCBs and/or metals/inorganic parameters in the soil samples submitted for analysis met the *Table 3 Standards*, with the following exceptions:

- Soil samples submitted for analysis from boreholes across the Phase Two Property (BH2017-1, BH2017-5, BH2017-7, BH2017-11, BH2017-13, BH2-20, BH3-20, BH4-20, BH101, BH102, BH104, BH105, BH107, BH108, BH110, BH111, BH112, BH113, BH115, BH122, BH124 and BH126) by Pinchin and others had concentrations of one or more PHC (F1-F4), VOC, PAHs, and/or metals/inorganic parameters exceeding their respective *Table 3 Standards.* The reported concentrations in the soil samples submitted for analysis of PHC (F1-F4), VOC, PAHs, PCBs and/or metals/inorganic from the remaining boreholes satisfied their respective *Table 3 Standards.*

The reported concentrations in the groundwater samples submitted for analysis of PHCs (F1-F4), VOCs, PAHs and metals and/or inorganic parameters satisfied their respective *Table 3 Standards,* with the following exceptions:

- Groundwater samples submitted for analysis from newly installed and previously installed monitoring wells across the Phase Two Property (BH2017-2, BH2017-5, BH2017-9, BH1-20, BH2-20, BH4-20, BHMW3, BHMW108, BHMW110, BHMW115, BHMW116, BHMW119, BHMW120, BHMW122 and BHMW124) by Pinchin and others had concentrations of one or more PHC (F1-F4), VOCs and chloride exceeding their respective *Table 3 Standards*. The reported concentrations in the soil samples submitted for analysis of PHC (F1-F4), VOC, PAHs, PCBs and/or metals/inorganic from the remaining boreholes satisfied their respective *Table 3 Standards.*

With respect to the identified soil and groundwater parameter exceedances summarized above, all soil and groundwater impacts have been delineated both laterally and vertically on-Site. It is Pinchin's opinion that the majority of the soil impacts will be removed during Site redevelopment, and the remaining soil and groundwater impacts will be addressed through a Tier 3 Risk Assessment before an RSC can be filed by the Qualified Person for the Phase Two Property.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

2.0 INTRODUCTION

A Phase Two ESA is defined as an "assessment of property conducted in accordance with the regulations by or under the supervision of a QP to determine the location and concentration of one or more contaminants in the land or water on, in or under the property". Under O. Reg. 153/04, the purpose of a Phase Two ESA is as follows:

- To determine the location and concentration of contaminants in the land or water on, in or under the Phase Two Property;
- To obtain information about environmental conditions in the land or water on, in or under the Phase Two Property necessary to undertake a Risk Assessment, in accordance with O. Reg. 153/04, with respect to one or more contaminants of concern; and
- To determine if applicable Site Condition Standards and standards specified in a Risk Assessment for contaminants on, in or under the Phase Two Property were met as of the certification date by developing an understanding of the geological and hydrogeological conditions at the Phase Two Property and conducting one or more rounds of field sampling for all contaminants associated with any APEC identified in the Phase Two ESA sampling and analysis plan (SAP) and for any such contaminants identified during subsequent Phase Two ESA activities and analyses of environmental conditions at the Phase Two Property.

This Phase Two ESA was conducted at the request of the Client in relation to the future redevelopment of the Phase Two Property from commercial to mixed commercial/residential land use. An RSC submittal to the MECP is a mandatory requirement when a land use changes to a more sensitive land use and as such, to support the RSC submission, the Phase Two ESA was conducted in accordance with O. Reg. 153/04.

The overall objectives of this Phase Two ESA were to assess the soil and groundwater quality in relation to APECs and related COPCs identified in a Phase One ESA Update completed by Pinchin, the findings of which were summarized in the report entitled "*Phase One Environmental Site Assessment Update,* *949, 949A, 949B, 951, 951A, 953, 955A, 955B, 957A, 957C and 971 Gladstone Avenue and 145 and 155 Loretta Avenue North, Ottawa, Ontario*", completed by Pinchin for the Client and dated September 8, 2021. The property assessed by the Pinchin Phase One ESA Update is referred to herein as the Phase One Property. The Phase Two ESA was conducted on the whole Phase One Property, and the Phase One Property and Phase Two Property have the same boundaries.

2.1 Site Description

This Phase Two ESA was completed for the property located at the municipal addresses of 949, 949A, 949B, 951, 951A, 953, 955A, 955B, 957A, 957C and 971 Gladstone Avenue and 145 and 155 Loretta Avenue North, Ottawa, Ontario. The Phase Two Property is 2.6 acres (1.1 hectares) in size and is bounded by Loretta Avenue North to the west, commercial/light industrial properties and a railway line to the north, a railway line, parkland, and commercial land uses to the east and northeast and Gladstone Avenue and commercial and residential land use to the south. A Key Map showing the Phase Two Property location is provided on Figure 1 and a detailed plan of the Phase Two Property and surrounding lands is provided on Figure 2 (all Figures are provided within Section 9.0).

The Site Buildings are utilized for multi-tenant commercial purposes. At the time of this Phase One ESA Update, the Site Buildings were occupied by the following tenants and respective activities:

951 Gladstone Avenue (Site Building A):

Tenant	Activity
Jimmy Gobeil	Tattoo Parlour
Christopher R. Solar	Custom Furniture Designer
Enriched Bread Artists	Art Studio
Mark Alcorn and Marilee	Music Studio
534328 Ontario Inc.	Unknown (commercial operations)
Karina Bergmans	Art Studio
Atelier Ville Marie Ltd.	Furniture and Art Studio
Jean Guy Charbonneau	Furniture Studio
Vacant	Vacant
Patti Normand	Art Studio
Mobile Power Technologies	Automotive Parts Sales
Gladstone Clayworks Co-op	Art Studio
Heather Weinrich	Art Studio
Northern Art Glass Inc.	Art Studio

Tenant	Activity
Emma Kent	Art Studio
Defalco's Wine Cellar	Commercial Brewer and Winemaker
Flo Glassblowing	Commercial Art Studio

145 Loretta Avenue North (Site Building B):

Tenant	Activity
Vimy Brewing Company	Commercial Brewery
Digital Pre-Press Integration	Information Technology (IT) Company
2343430 Ontario Inc.	Crossfit Gym
Gemma Property Services	Property Management Company

A summary of the pertinent details of the Phase Two Property is provided in the following table:

Detail	Source/Reference	Information
Legal Description	DST 2017 Phase Two ESA Report	Site Building A: 951 Gladstone Avenue – Lots 1-3 (west side of Champagne Avenue), Block C, Plan 73, Lots 1-4 (east side of Loretta Avenue), Block C, Plan 73, & Part of Champagne Avenue, Plan 17, as in N620724. Site Building B: 145 Loretta Avenue North – Lots 5-8, Block C, Plan 73, east side of Loretta Avenue.
Municipal Address	Client	951 Gladstone Avenue and 145 Loretta Avenue North, Ottawa, ON
Parcel Identification Number (PIN)	DST 2017 Phase Two ESA Report	Site Building A: 04107-0276 (LT) Site Building B: 04107-0013 (LT)
Current Owner	Authorization to Proceed Form for Pinchin Proposal	TIP Gladstone Limited Partnership by its General Partner TIP Gladstone GP Inc. c/o CLV Group Developments Inc.
Owner Contact Information	Authorization to Proceed Form for Pinchin Proposal	Mr. Oz Drewniak CLV Group Developments Inc. 485 Bank Street, Suite 200 Ottawa, ON K2P 1Z2 oz.drewniak@clvgroup.com
Current Occupant	Client/Phase One ESA Site reconnaissance	The Phase Two Property has two site buildings occupied by various commercial tenants including but not limited to art and music studios, automotive parts sales, brewery, IT company and a gym.

Detail	Source/Reference	Information
Occupant Contact Information	Authorization to Proceed Form for Pinchin Proposal	Mr. Oz Drewniak c/o CLV Group Developments Inc. 485 Bank Street, Suite 200 Ottawa, ON K2P 1Z2 oz.drewniak@clvgroup.com
Client Contact Information	Authorization to Proceed Form for Pinchin Proposal	Mr. Oz Drewniak c/o CLV Group Developments Inc. 485 Bank Street, Suite 200 Ottawa, ON K2P 1Z2 oz.drewniak@clvgroup.com
Site Area	Pinchin Phase II conceptual Site model	1.10 hectares (2.60 acres)
Current Zoning	Client	Commercial/Residential
Centroid UTM Co-ordinate	Google Earth Pro	444,016 Easting
		5,028,058 Northing
		Zone 18 T

A legal survey showing the Phase Two Property is provided in Appendix A (all Appendices are provided in Section 10.0).

2.2 Property Ownership

The entirety of the Phase Two Property is currently owned by the Client (TIP Gladstone Limited Partnership by its General Partner TIP Gladstone GP Inc. c/o CLV Group Developments Inc.), located at 485 Bank Street, Suite 200, Ottawa, Ontario. Contact information for the Phase Two Property owner is provided in the preceding section.

Pinchin was retained by Mr. Oz Drewniak of the Client to conduct the Phase Two ESA of the Site. Contact information for Mr. Drewniak is provided in the preceding section.

2.3 Current and Proposed Future Uses

The Phase Two Property is presently utilized for commercial purposes and it is Pinchin's understanding that the Client intends to redevelop the Phase Two Property for mixed residential/commercial land use.

Given that the future land use is changing to a more sensitive land use, there is a mandatory requirement that an RSC be filed as per Section 168.3.1 of the Province of Ontario's *Environmental Protection Act.*

2.4 Applicable Site Condition Standards

The Phase Two Property is currently a commercial property located within the City of Ottawa and the proposed future land use is mixed use commercial/residential. It is Pinchin's understanding that drinking water for the Phase Two Property and surrounding properties within 250 metres of the Phase Two Property is supplied by the City of Ottawa, and there are no known drinking water supply wells within 250 metres of the Phase Two Property. Source water is obtained by the City of Ottawa municipal system.

Bedrock was not encountered at any of the boreholes completed at the Phase Two Property during the Phase Two ESA at depths of less than two meters below ground surface (mbgs) and, as such, the Phase Two Property is not a shallow soil property as defined in Section 43.1 of O. Reg. 153/04.

The Phase Two Property does not contain a water body, nor is it located within 30 metres of a water body and the use of standards for properties situated within 30 metres of a water body is not required.

Section 41 of O. Reg. 153/04 states that a property is classified as an "environmentally sensitive area" if the pH of the surface soil (less than or equal to 1.5 mbgs) is less than 5 or greater than 9, if the pH of the subsurface soil (greater than 1.5 mbgs) is less than 5 or greater than 11, or if the property is an area of natural significance or is adjacent to or contains land within 30 metres of an area of natural significance. A total of ten representative soil samples collected from the boreholes advanced at the Phase Two Property were submitted for pH analysis. The pH analytical results are summarized in Table 3. The pH values measured in the submitted soil samples were within the limits for non-sensitive sites. The Phase Two Property is also not an area of natural significance and it is not adjacent to, nor does it contain land within 30 metres of, an area of natural significance. As such, the Phase Two Property is not an environmentally sensitive area.

As discussed further in Section 6.4, based on the results of grain size analysis completed on representative soil samples collected during the Phase Two ESA and the observed stratigraphy at the borehole locations at the Phase Two Property, it is the QP's opinion that over two-thirds of the overburden at the Phase Two Property is coarse-textured as defined by O. Reg. 153/04. Therefore, the soil at the Phase Two Property has been considered coarse-textured for the purpose of establishing the applicable MECP Site Condition Standards.

Based on the above, the appropriate Site Condition Standards for the Phase Two Property are the Table 3 Standards for:

- Coarse-textured soils; and
- Residential land use.

As such, all analytical results have been compared to these *Table 3 Standards*.

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

The Phase Two Property is located in the central portion of the City of Ottawa at an elevation of approximately 64 metres above mean sea level (mamsl). The topography of the Phase Two Property is generally flat with little relief. The properties surrounding the Phase Two Property are at an equivalent grade with a gradual decrease in elevation towards the northwest. There are no drainage features (e.g., open ditches or swales) present on-Site. Surface water (e.g., storm runoff) is inferred to run overland and drain into the on-Site municipal storm sewer catch basins. A plan showing the Phase One Study Area is presented on Figure 3. The nearest surface water body to the Phase Two Property is the Ottawa River located approximately 1.0 kilometres (km) northwest of the Phase Two Property.

A review of the municipal plan for the City of Ottawa indicated that the Phase One Study Area is not located in whole or in part within a well head protection area or other designation identified by the City of Ottawa for the protection of groundwater.

Based on information provided by the Site Representative, the Phase One Property and all other properties within the Phase One Study Area are serviced by a municipal drinking water system.

The records review did not identify the presence of wells within the Phase One Property or within the Phase One Study Area that supply water for human consumption or for agricultural purposes.

3.2 Past Investigations

3.2.1 Summary of Previous Environmental Investigations by Others

Reports summarizing the following environmental investigations completed by others and by Pinchin and pertaining to the Phase Two Property were reviewed as part of the Pinchin Phase One ESA Update:

- Report entitled "*Phase One Environmental Site Assessment, 951 Gladstone Avenue & 145 Loretta Avenue North, Ottawa, Ontario"* prepared by DST Consulting Engineers Inc. (DST) and dated August 2017 (DST 2017 Phase One ESA Report);
- Report entitled "*Phase Two Environmental Site Assessment, 951 Gladstone Avenue & 145 Loretta Avenue North, Ottawa, Ontario"* prepared by DST and dated August 2017 (DST 2017 Phase Two ESA Report); and
- Report entitled "*Draft Supplemental Phase II Environmental Site Assessment, 951 Gladstone Avenue & 145 Loretta Avenue North, Ottawa, Ontario"* prepared by Paterson Group Inc. (Paterson) and dated October 2020 (Paterson 2020 Supplemental Phase II ESA Report).

A summary of the salient information identified in the above-referenced reports prepared by others is provided below.

DST 2017 Phase One ESA Summary

The 2017 DST Phase I ESA Summary presented the findings of a Phase I ESA completed by DST in general accordance with the *Ontario Regulation 153/04 Records of Site Condition – Part XV.1 of the Act* under the *Ontario Environmental Protection Act, R.S.O. 1990, chapter E.19* (O. Reg. 153/04), as amended, including a review of readily available historical records and reasonably ascertainable regulatory information, a Site reconnaissance, interviews, an evaluation of information and reporting. Based on Pinchin's review of the 2017 DST Phase I ESA Summary, the following salient information was noted:

- At the time of the Site reconnaissance, the Site was occupied by two multi-tenant commercial/light industrial buildings (Site buildings). The Site building associated with 145 Loretta Avenue North is a two-storey building with a single-level full basement located on the north portion of the Site and was constructed in approximately 1952;
- The Site building associated with 951 Gladstone Avenue consists of three separate sections built in stages located on the south portion of the Site; the north portion of this building consists of a two storey brick building with no basement, which was constructed in approximately 1924; the central portion consists of a single-storey concrete block building with no basement, which was constructed in approximately the early 1950s; and, the east portion consists of a three-storey with a single-level basement/parking garage, which was constructed in approximately 1924;
- Exterior areas of the Site consisted of asphalt-paved surface parking and driveway areas, concrete walkways, or landscaped areas;
- Five groundwater monitoring wells were observed within the asphalt paved area to the north of the Site building;
- According to a 1956 FIP, the north portion of the Site was occupied by Bell Telephone Co., and that a UST was located along the west elevation of this Site building;
- British American Bank Note Co. Limited, a printing facility, was located approximately 15m west of the Site according to a 1956 FIP;
- A steel AST with a capacity of approximately 2,000 L containing gasoline was located on the northeast portion of the Site;

- The 2017 DST Phase One ESA identified 13 areas of potential environmental concern (APECs), as follows:
  - Importation of Fill Materials of unknown quality;
  - On-Site Above-ground Storage Tank (AST) located on northeast portion of the Site;
  - Former on-Site Retail Fuel Outlet (RFO) located on southwest portion of the Site;
  - Former on-Site Underground Storage Tank (UST) located on west-central portion of the Site;
  - Former on-Site AST located on the southeast portion of the Site;
  - Former automotive service garage on central portion of Site;
  - Former printing facility on southeast portion of the Site;
  - Former rail spur on southeast portion of the Site;
  - Adjacent UST towards the north portion, located off-Site;
  - Rail tracks located off-Site towards the east portion of Site;
  - Ordnance Depot located off-Site towards the east portion of Site;
  - Private Fuel Outlet located off-Site of the southeast portion of Site; and
  - Printing Facility located off-Site of the west portion of Site.
- DST notes that based on APECs identified, further investigation in the form of a Phase Two ESA would be required before a Record of Site Condition may be submitted for the Phase One Property.

DST 2017 Phase Two ESA Summary

The DST 2017 Phase Two ESA Report was prepared in support of the filing of an RSC for the Site in accordance with the Province of Ontario's *Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Act* (O. Reg. 153/04).

The DST 2017 Phase Two ESA Report consisted of the advancement of 14 boreholes, 10 of which were completed with monitoring wells. The boreholes were advanced to depths ranging from 1.8 to 16.6 metres below ground surface (mbgs). Groundwater samples and select soil samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, xylenes (BTEX), petroleum hydrocarbons (PHCs) fractions F1 through F4 (F1-F4), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and metals. The results of the DST 2017 Phase Two ESA identified PHC, BTEX, VOC, PAH and/or metals impacts in soil and/or groundwater at the Phase One Property.

Paterson 2020 Supplemental Phase II ESA Summary

The Paterson 2020 Draft Supplemental Phase II ESA Report was prepared in support of the filing of an RSC for the Site in accordance with the Province of Ontario's *Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Act* (O. Reg. 153/04).

The Paterson 2020 Draft Supplemental Phase II ESA was conducted to assess the soil and groundwater quality in relation for the 13 APECs identified in the DST 2017 Phase One ESA. The Paterson 2020 Draft Supplemental Phase II ESA consisted of the advancement of five boreholes, all of which were completed with groundwater monitoring wells. The boreholes were advanced to depths ranging from 6.17 to 12.24 mbgs. Some staining and hydrocarbon odours were noted during the field program in soil samples collected from borehole BH-XX, advanced at the south end of the Site.

Select soil samples were submitted for laboratory analysis of BTEX, PHCs (F1-F4), VOCs, PAHs and metals. Groundwater samples were submitted for laboratory analysis of PHCs (F1-F4) and VOCs (including BTEX). The results of the Paterson 2020 Draft Supplemental Phase II ESA identified various metals and/or PAHs impacts in soils and PHC F1 and/or various VOCs impacts in groundwater.

3.2.2 Pinchin Phase One ESA Update Summary

From April 6, 2021, through September 8, 2021, Pinchin conducted a Phase One ESA Update in support of the future filing of an RSC for the Phase Two Property. The Phase One ESA consisted of a Site visit, interviews with Site personnel, records review, evaluation of information, and preparation of a written report which was completed under the supervision of a QP. A plan showing the Phase One Study Area is attached as Figure 3.

The Phase One ESA was completed recently (i.e., within one month of the start of the Phase Two ESA) and in accordance with the requirements of O. Reg. 153/04. Therefore, the information provided within the Phase One ESA Report is considered adequate such that it can be relied upon for the purpose of this Phase Two ESA and future filing of an RSC.

Based on information obtained during the Phase One ESA, a total of seventeen APECs and corresponding potentially contaminating activities (PCAs) and COPCs were identified that could potentially affect the environmental condition of the subsurface media on, in or under the Phase Two Property. The COPCs associated with each APEC were determined based on a review of the PCAs and substances associated with the related activities, and on several sources of information, including but not limited to, Pinchin's experience with environmental contamination and hazardous substances, common industry practices for analysis of such contaminants and point sources, literature reviews of COPCs and associated hazardous substances, and evaluations of contaminant mobility and susceptibility for migration in the subsurface.

Table 1 presents the APECs and their associated PCAs and COPCs. Identified on-Site and off-Site PCAs are summarized in Table 2 and their locations are shown on Figure 4 (on-Site PCAs) and Figure 5 (off-Site PCAs). APECs at the Phase Two Property are illustrated on Figure 6.

3.2.3 Use of Previous Analytical Data

The soil and groundwater data from the previous investigation are considered to be of adequate quality and can be relied upon in assessing soil and groundwater conditions at the Site. The reports including these data were reviewed, and no issues related to data quality were identified. Sampling procedures were acceptable and although quality assurance/quality control (QA/QC) samples were not collected, Pinchin's SOPs were followed during sample collection and no quality issues related to field sampling or laboratory methods were noted or anticipated. Furthermore, the soil and groundwater data within these reports were obtained within recent years and are considered representative of current Site conditions. The previous soil and groundwater analytical data is summarized in Tables 3 and 7.

4.0 SCOPE OF INVESTIGATION

4.1 Overview of Site Investigation

The scope of work for this Phase Two ESA was prepared to address the APECs identified at the Phase Two Property and consisted of the following:

- Prepared a health and safety plan and arranged for the completion of underground utility locates prior to the commencement of drilling activities;
- Developed a detailed SAP prior to the advancement of the boreholes and the installation of the monitoring wells. The SAP was outlined in the document entitled "*Sampling and Analysis Plan for Phase Two Environmental Site Assessment*", dated July 5, 2021, which is provided in Appendix B. Based on Pinchin's knowledge of the surrounding properties and known hydrogeological conditions, boreholes were advanced at the Phase Two Property to maximum depths ranging between approximately 1.52 and 20.7 mbgs;
- Retained Strata Drilling Group Inc. (Strata) to advance boreholes and complete monitoring well installations using a Geoprobe 7822DT™ and Geomachine GM100™ drill rig equipped with air-rotary hammer. Strata is licensed by the MECP in accordance with Ontario Regulation 903 (as amended) (O. Reg. 903) to undertake borehole drilling/well installation activities. Strata advanced 27 boreholes at the Phase Two Property to investigate the potential for soil contaminants associated with the APECs identified in the Phase One ESA. 17 of the advanced boreholes were instrumented with a monitoring well

in accordance with O. Reg. 903 for the purpose of monitoring hydrogeological conditions and groundwater quality on-Site;

- Collected soil samples at regular intervals within each borehole;
- Field screened soil samples for visual/olfactory evidence of impacts as well as for petroleum-derived vapours in soil headspace using a combustible gas indicator (CGI) calibrated to hexane and VOC-derived vapours in soil headspace using a photoionization detector (PID);
- Submitted a minimum of one "worst case" soil sample from each borehole for chemical analysis of one or more of the following PCOCs:
  - VOCS;
  - BTEX;
  - PHCs (F1-F4);
  - PAHs;
  - Metals; and/or
  - Inorganics.
- Developed each of the newly-installed monitoring wells and redeveloped seven previously-installed monitoring well prior to the collection of groundwater samples.
- Submitted one representative groundwater sample from each of the newly-installed monitoring wells and seven previously-installed monitoring well for the chemical analysis of one or more of the following PCOCs:
  - VOCS;
  - BTEX;
  - PHCs (F1-F4);
  - PAHs;
  - Metals; and/or
  - Inorganics.
- Submitted five duplicate soil samples and five duplicate groundwater samples for chemical analysis of the above-noted parameters for quality assurance/quality control (QA/QC) purposes;
- Submitted trip blanks for the groundwater sampling program for the chemical analysis of VOCs and PHC (F1) for QA/QC purposes;

- Submitted ten representative soil samples for the laboratory analysis of grain size and pH in order to confirm the appropriate MECP Site Condition Standards;
- Conducted groundwater monitoring at each of the newly-installed groundwater monitoring wells and previously-installed groundwater monitoring wells by measuring depth to groundwater from both top of casing and ground surface reference points, and assessing the presence/absence of non-aqueous phase liquid (NAPL), including light NAPL (LNAPL) and dense NAPL (DNAPL), using an oil/water interface probe;
- Submitted soil and groundwater samples for analysis for lateral and vertical delineation purposes;
- Retained an Ontario Land Surveyor (OLS) to survey the location and geodetic elevations of the boreholes and newly-installed monitoring wells as well as the previously-installed monitoring wells;
- Obtained UTM coordinates for the boreholes and newly-installed monitoring wells as well as the previously-installed monitoring wells using a portable Global Positioning System (GPS) device;
- Compared the soil and groundwater analytical results to the applicable criteria stipulated in the *Table 3 Standards*; and
- Prepared a report (this report) documenting the findings of the Phase Two ESA which meets the reporting requirements listed in *Schedule E* and *Table 1 – Mandatory Requirements for Phase Two Environmental Site Assessment Reports* of O. Reg. 153/04.

4.2 Media Investigated

The scope of work for this Phase Two ESA was prepared to address the APECs and corresponding media at the Phase Two Property as identified through completion of the Phase One ESA Update.

The media of concern for the Phase Two ESA were soil and groundwater. Pinchin included the assessment of groundwater as part of the Phase Two ESA to investigate groundwater quality in relation to the respective APECs as noted in Table 2. Note that due to the historical industrial land use at the Phase Two Property, the Phase Two Property is an enhanced investigation property requiring mandatory sampling and analysis of groundwater. Pinchin did not conduct sediment sampling as part of this Phase Two ESA as there are no surface water bodies and, therefore no sources of sediment, present on-Site.

For assessing the soil at the Phase Two Property for the presence of COPCs, a total of 27 boreholes were advanced at the Phase Two Property for the purpose of collecting soil samples. Select "worst case" samples collected from each of the boreholes were submitted for laboratory analysis of the COPCs. Additional soil samples were submitted for analysis for lateral and vertical delineation purposes.

For assessing the groundwater at the Phase Two Property for the presence of COPCs, groundwater monitoring wells were installed in seventeen boreholes completed at the Phase Two Property to permit the collection of groundwater samples. Groundwater samples collected from each of the newly installed monitoring wells (BHMW108, BHMW109, BHMW110, BHMW111, BHMW112, BHMW114, BHMW115, BHMW116, BHMW117, BHMW118, BHMW119, BHMW120, BHMW122, BHMW123, BHMW124, BHMW125 and BHMW127) as well as the previously installed monitoring wells, (BH2017-02, BH2017-05, BH2017-09, BH1-20, BH2-20, BH4-20, BHMW3) were submitted to the analytical laboratory for analysis of the COPCs. Additional groundwater samples were submitted for analysis for lateral and vertical delineation purposes.

4.3 Phase One Conceptual Site Model

A conceptual site model (CSM) has been created to provide a summary of the findings of the 2017 DST Phase One ESA and this Phase One ESA Update per the requirements outlined in O. Reg 153/04. The Phase One CSM is summarized in Figures 1 through 4 which illustrate the following features within the Phase One Study Area, where present:

- Existing buildings and structures;
- Water bodies located in whole or in part within the Phase One Study Area;
- Areas of natural significance located in whole or in part within the Phase One Study Area;
- Drinking water wells located at the Phase One Property;
- Land use of adjacent properties;
- Roads within the Phase One Study Area; and
- APECs at the Phase One Property.

The following provides a narrative summary of the Phase One CSM:

- The Phase One Property is an irregular triangular-shaped parcel of land approximately 2.6 acres (1.1 hectares) in size located at the northwest corner of the intersection of Loretta Avenue North and Gladstone Avenue in the City of Ottawa. The Phase One Property is improved with two multi-tenant commercial building structures with the following municipal addresses:
  - 951 Gladstone Avenue (Site Building A).
  - 145 Loretta Avenue North (Site Building B).
- The Phase One Property has been used for manufacturing and commercial purposes since its development in 1925.
- No water bodies were identified within the Phase One Study Area. The nearest water body is the Ottawa River, which is located approximately 1.0 km northwest of the Phase One Property.
- No areas of natural significance were identified within the Phase One Study Area.
- No drinking water wells were located on the Phase One Property.
- Gladstone Avenue and Loretta Avenue North are located adjacent to the south and west of the Phase One Property, respectively. A former railway line is located adjacent to the east of the Phase One Property and at the time of this Phase One ESA Update the railway line is under construction. The property located north adjacent to the Site is currently occupied by multi-tenant commercial/retail building. Historical records indicate that a UST was present at the property at an unknown date.
- A total of 17 APECs were identified within the Phase One Property, including five APECs originating from off-Site PCAs. All PCAs identified within the Phase One Study Area represent APECs at the Phase One Property.
- Underground utilities at the Phase One Property provide potable water, natural gas, electrical, telephone, cable and sewer services to the Site Buildings. The exact location of underground utilities servicing the Phase One Property are unknown. Based on previous environmental investigations completed at the Site, groundwater is anticipated at 4.88 mbgs, and the utility corridors are expected to be well above the water table and would not act as preferential pathways for contaminant distribution and transport in the event that shallow subsurface contaminants exist at the Phase One Property.

- The Ontario Geological Survey Quaternary Geology of Ontario map shows the Phase One Study Area as being underlain by Paleozoic bedrock. Bedrock is expected to consist limestone, dolostone, shale, arkose and sandstone from the Ottawa Group, Simcoe Group and Shadow Lake Formation at depths of approximately 6.4 to 9.0 mbgs. During previous on-Site environmental investigations, the soil stratigraphy was observed to consist of fill materials to a maximum depth of 4.3 mbgs, underlain by native clay and till to a depth of 9.0 mbgs.
- The Phase One Property is relatively flat with little relief. The area surrounding the Phase One Property slopes gradually to the north towards the Ottawa River. Local groundwater flow is inferred to be to the north, based on the topography of the area surrounding the Phase One Property and the location of the Ottawa River as well as information presented in previous environmental investigations. Regional groundwater flow is inferred to be to the north-northeast towards the Ottawa River.

There were no deviations from the Phase One ESA requirements specified in O. Reg. 153/04 or absence of information that have resulted in uncertainty that would affect the validity of the Phase One CSM.

4.4 Deviations from Sampling and Analysis Plan

No notable constraints and limitations with respect to the SAP were documented during the field activities, and as such Pinchin has conducted the Phase Two ESA in a manner generally consistent with the SAP provided in Appendix B.

4.5 Impediments

Pinchin had full access to the Phase Two Property throughout the completion of the Phase Two ESA.

The SAP was developed in consideration of drilling limitations which would exist if investigational activities were completed within the Site Building. As such, exterior borehole locations were selected in order to investigate soil and groundwater quality at the Phase Two Property.

5.0 INVESTIGATION METHOD

5.1 General

The Phase Two ESA field work was conducted in accordance with Pinchin's standard operating procedures (SOPs) as provided in the SAP, which have been developed in accordance with the procedures and protocols provided in the MECP document entitled "*Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*", dated December 1996, in the Association of

Professional Geoscientists of Ontario document entitled *"Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended)"*, dated April 2011, and in O. Reg. 153/04.

In addition, Pinchin's SOP for groundwater sampling using low-flow purging and sampling procedures follows the United States Environmental Protection Agency Region I document entitled *"Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells"* dated January 19, 2010 (Low Flow Sampling Protocol).

No deviations from Pinchin's SOPs occurred during the Phase Two ESA.

5.2 Drilling

Pinchin retained Strata to advance a total of 27 boreholes (BH101 through BH/MW127) at the Phase Two Property on April 26 through April 30, 2021, May 25, 2021, and October 6, 2021, to investigate the potential presence of COPCs associated with the APECs identified in the Phase One ESA. 17 of the advanced boreholes (BH/MW108 through BH/MW112, BH/MW1014 through BH/MW120, BH/MW122 through BH/MW125, and BH/MW127) were completed as monitoring wells in accordance with O. Reg. 903 for the purpose of monitoring hydrogeological conditions and groundwater quality on-Site. The boreholes were drilled to a maximum depth of 20.7 mbgs using a Geoprobe 7822DT™ and Geomachine GM100™ drill rig equipped with air-rotary hammer. Upon completion of the drilling and monitoring well installations, Strata completed and filed a Water Well Record with the MECP for the well cluster in accordance with O. Reg. 903.

The locations of the boreholes and monitoring wells are provided on Figure 7. Section 6.10.2 includes a table summarizing the boreholes and monitoring wells completed to investigate each of the APECs. A description of the subsurface stratigraphy encountered during the drilling program is documented in the borehole logs included in Appendix C. Well completion details and elevation data are provided in Table 4 and on the borehole logs provided in Appendix C.

Measures taken to minimize the potential for cross-contamination during the borehole drilling program included:

- The use of dedicated, disposable PVC soil sample liners for soil sample collection during direct-push drilling;
- The use of dedicated, pre-cleaned augers for each borehole location;
- The extraction of soil samples from the interior of the sampling device (where possible), rather than from areas in contact with the sampler walls;

- The cleaning of all non-dedicated drilling and soil sampling equipment (i.e., split-spoon sampler, auger flights, spatulas used for sample collection) before initial use and between sample and borehole locations; and
- The use of dedicated and disposable nitrile gloves for all soil sample handling.

Soil samples were collected at continuous intervals during direct-push drilling at a general frequency of one soil sample for every 0.75 metres drilled.

No excavating activities (e.g., test pitting) were completed as part of the Phase Two ESA.

5.3 Soil Sampling

Soil samples were collected in the boreholes at continuous 0.75 metre intervals using 5.2 centimetre (cm) outer diameter (OD) direct push soil samplers with dedicated single-use sample liners.

Discrete soil samples were collected from the dedicated sample liners by Pinchin personnel using a stainless-steel knife. Dedicated and disposable nitrile gloves were worn during the collection of each soil sample. A portion of each sample was placed in a resealable plastic bag for field screening and a portion was containerized in laboratory-supplied glass sampling jars. Following sample collection, the sample jars were placed into dedicated coolers with ice for storage pending transport to Bureau Veritas Laboratories (BV Labs) in Mississauga, Ontario. Formal chain of custody records were maintained between Pinchin and the staff at BV Labs.

Subsurface soil conditions were logged on-Site by Pinchin personnel at the time of borehole drilling. Based on the soil samples recovered during the borehole drilling program, the soil stratigraphy at the drilling locations generally consists of fill material comprised of sand and gravel, sandy silt with organic material and occasional asphalt, coal, brick, and glass debris or sand, to a maximum depth of approximately 5.33 mbgs, followed by silty clay till and silty clay with gravel that extended to the maximum soil investigation depth of 7.16 mbgs. Moist to wet soil conditions were generally observed between 3.05 and 7.16 mbgs.

No odours or staining were observed in the soil samples collected during the borehole drilling and test pitting program, with the exception of the following:

- Soil sample SS2 collected at borehole BH/MW101 at a depth of 1.22 to 1.68 mbgs which exhibited PHC-like odours;
- Soil sample SS7 collected at borehole BH/MW104 at a depth of 4.57 to 5.49 mbgs which exhibited PHC-like odours;

- Soil sample SS7 and SS8 collected at borehole BH/MW105 at a depth of 4.57 to 6.10 mbgs which exhibited PHC-like odours.
- Soil sample SS6 through SS10 collected at borehole BH/MW108 at a depth of 4.27 to 7.32 mbgs which exhibited PHC-like odours;
- Soil sample SS6 to SS8 collected at borehole BH/MW110 at a depth of 4.11 to 6.10 mbgs which exhibited PHC-like odours;
- Soil sample SS6 to SS9 collected at borehole BH/MW111 at a depth of 3.81 to 6.40 mbgs which exhibited PHC-like odours;
- Soil sample SS5 collected at borehole BH/MW113 at a depth of 4.42 to 5.33 mbgs which exhibited slight PHC-like odours;
- Soil sample SS7 collected at borehole BH/MW115 at a depth of 4.42 to 5.64 mbgs which exhibited PHC-like odours;
- Soil sample SS4 collected at borehole BH/MW116 at a depth of 2.29 to 2.90 mbgs which exhibited PHC-like odours; and
- Soil sample SS6 collected at borehole BH/MW122 at a depth of 4.27 to 4.57 mbgs which exhibited PHC-like odours.

A detailed description of the subsurface stratigraphy encountered during the borehole drilling is documented in the borehole and test pit logs included in Appendix C.

5.4 Field Screening Measurements

Soil samples were collected at each of the sampling intervals during the drilling activities and analyzed in the field for VOC-derived and petroleum-derived vapour concentrations in soil headspace with an RKI Eagle 2™ equipped with a PID and a CGI operated in methane elimination mode. The soil samples collected for field-screening purposes were placed in resealable plastic bags. The plastic bags were stored in a warm environment for a minimum of five minutes and agitated in order to release organic vapours within the soil pore space prior to analysis with the PID and CGI.

Based on a review of the operator's manual, the RKI Eagle 2™ PID has an accuracy/precision of up to 0.1 parts per million (ppm). The PID was calibrated prior to field use by the equipment supplier, Maxim Environmental and Safety Inc. (Maxim) according to Maxim's standard operating procedures. In addition, the PID calibration was tested at the beginning of each day of drilling activities (beginning on the second day of drilling) against a Maxim-provided isobutylene gas standard with a concentration of 100 ppm. The gas standard was stored in a gas cylinder and delivered to the PID via a regulator valve. An in-field recalibration of the PID was conducted (using the gas standard in accordance with the operator's manual instructions) if the calibration check indicated that the PID's calibration had drifted by more than +/- 10%.

Based on a review of the operator's manual, the RKI Eagle 2™ has an accuracy/precision of up to +/- 25 ppm, or +/- 5% of the reading (whichever is greater). The CGI was calibrated prior to field use by Maxim according to Maxim's standard operating procedures. In addition, the CGI calibration was tested at the beginning of each day of drilling activities (beginning on the second day of drilling) against a Maxim-provided hexane gas standard with a concentration of 1,650 ppm. The gas standard was stored in a gas cylinder and delivered to the CGI via a regulator valve. An in-field re-calibration of the CGI was conducted (using the gas standard in accordance with the operator's manual instructions) if the calibration check indicated that the CGI's calibration had drifted by more than +/- 10%.

In general, the soil samples with the highest measured vapour concentrations (i.e., "worst case") from a given borehole were submitted for laboratory analysis. Sample depth and visual and olfactory observations of potential contaminants were also used in conjunction with the vapour concentrations in making the final selection of "worst case" soil samples for laboratory analysis.

5.5 Groundwater Monitoring Well Installation

Following soil sampling, Strata installed a groundwater monitoring well in boreholes BHMW108, BHMW109, BHMW110, BHMW111, BHMW112, BHMW114, BHMW115, BHMW116, BHMW117, BHMW118, BHMW119, BHMW120, BHMW122, BHMW123, BHMW124, BHMW125, and BHMW127 under the full-time monitoring of a Pinchin field representative. To accommodate the well installations, each borehole was overdrilled using 21 cm (8.25-inch) diameter hollow stem augers to a maximum depth of 20.72 mbgs using the Geoprobe 7822DT™ drill rig.

The monitoring wells were constructed with 51-millimetre (2-inch) inner diameter (ID) flush-threaded schedule 40 polyvinyl chloride (PVC) risers followed by a 3.1 metre length of No. 10 slot PVC screen. Each well screen was sealed at the bottom using a threaded cap and each riser was sealed at the top with a lockable J-plug cap. Silica sand was placed around and above the screened interval to form a filter pack around the well screen. A layer of bentonite was placed above the silica sand and was extended to just below the ground surface. A Schedule 40 PVC outer casing, approximately 15 cm in length, was installed in each well around the top of the riser and into the top of the bentonite seal. A bentonite seal was then placed between the riser and outer casing. A protective flush-mount cover was installed at the ground surface over each riser pipe and outer casing and cemented in place.

All monitoring wells were installed in accordance with O. Reg. 903. The monitoring well construction details are provided in Table 4 and on the borehole logs in Appendix C. Upon completion of the monitoring well installations, Strata completed and filed a Water Well Record with the MECP for the well cluster.

No additional soil sampling or groundwater sampling was completed during the well installations.

The monitoring wells were developed prior to each groundwater sampling event in accordance with Pinchin's SOP for well development by removing a minimum of three to a maximum of seven standing water column volumes using dedicated inertial pumps comprised of Waterra polyethylene tubing and foot valves. The well development activities were completed a minimum of 24 hours prior to the groundwater sampling activities.

Measures taken to minimize the potential for cross-contamination during well installation and well development included the following:

- The use of dedicated, pre-cleaned augers for over-drilling each borehole location;
- The use of dedicated and disposable nitrile gloves for handling well materials during well installation and during well development;
- The use of dedicated inertial pumps for each well; and
- The cleaning of the submersible pump and associated wiring between monitoring well locations by rinsing with a solution of Alconox™ detergent and distilled water. Distilled water was also utilized to flush the interior of the pump between monitoring well locations.

5.6 Groundwater Field Measurements of Water Quality Parameters

Water quality parameters were measured during the low-flow purging and sampling procedure completed on April 21, April 22, June 9, June 15, and October 12, 2021 at monitoring wells BHMW108, BHMW109, BHMW110, BHMW111, BHMW112, BHMW114, BHMW115, BHMW116, BHMW117, BHMW118, BHMW119, BHMW120, BHMW122, BHMW123, BHMW124, BHMW125, and BHMW127.

Measurements of the water quality parameters oxidation-reduction potential, dissolved oxygen, temperature, specific conductance, pH and turbidity were made during purging using a flow-through cell and a YSI-556™ water quality meter (YSI Water Quality Meter). The YSI Water Quality Meter was calibrated prior to use by the equipment supplier (Maxim) in accordance with the manufacturer's specifications.

Field-measured parameters were recorded from the YSI Water Quality Meter at regular intervals in order to determine stabilized groundwater geochemical conditions and hence representative groundwater sampling conditions, in general accordance with the criteria stipulated in the Low Flow Sampling Protocol.

It should be noted that representative groundwater sampling conditions were determined by Pinchin personnel utilizing the field parameter stabilization criteria noted within the Low Flow Sampling Protocol as well as additional factors including total purge time and purge volume.

5.7 Groundwater Sampling

All monitoring wells installed by Pinchin as part of the Phase Two ESA and seven existing monitoring wells were sampled. The monitoring wells were sampled a minimum of 24 hours after the completion of well development activities (see Section 5.5). All monitoring wells were sampled in accordance with the Low Flow Sampling Protocol as described below.

Well purging was completed using a Geotech™ submersible bladder pump and Geotech™ controller powered by a 12-Volt battery. Compressed air was delivered to the bladder pump unit via 47-millimetre (3/16-inch) ID polyethylene tubing. Groundwater was returned to the surface from the bladder pump via dedicated 0.64-cm (1/4-inch) ID polyethylene tubing. A YSI Water Quality Meter connected to a flow-through cell was used to monitor water quality parameters during groundwater purging to assess whether water quality parameter stabilization was achieved prior to sample collection. The flow rate of the bladder pump was adjusted to minimize drawdown of the water table and the introduction of sediment into the samples.

Once field parameter stabilization was achieved, groundwater samples were collected at each well using the bladder pump and dedicated polyethylene tubing by pumping groundwater directly into new laboratory-supplied sample bottles at a pumping rate of less than 0.5 litres per minute.

Groundwater samples for metals analyses were field-filtered prior to preservation using dedicated 0.45 micron in-line filters. As appropriate, laboratory sample bottles were pre-filled by BV Labs with preservatives intended to preserve the collected groundwater samples prior to analysis.

Following sample collection, the sample bottles were placed into dedicated coolers with ice for storage pending transport to BV Labs. Formal chain of custody records were maintained between Pinchin and the staff at BV Labs.

5.8 Sediment Sampling

Sediment sampling was not completed as part of this Phase Two ESA.

5.9 Analytical Testing

All collected soil and groundwater samples were delivered to BV Labs for analysis. BV Labs is an independent laboratory accredited by the Canadian Association for Laboratory Accreditation. Formal chain of custody records of the sample submissions were maintained between Pinchin and the staff at BV

Labs. BV Labs conducted the laboratory analysis in accordance with the MECP document entitled *"Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act"* dated March 9, 2004 and revised on July 1, 2011 (*Analytical Protocol).*

5.10 Residue Management Procedures

Soil cuttings generated by the borehole drilling program were containerized in 205-L drums and 20-L pails that are stored on the Phase Two Property. Excess water produced during well purging activities was containerized in 20-L clean, sealed plastic pails that are stored on the Phase Two Property. Excess fluids produced during equipment cleaning were placed within the pails of purge water.

Pinchin notes that at the time of writing, the drums of excess soil cuttings, purge water and equipment cleaning fluids have not been removed from the Phase Two Property. Pinchin will assist the Client in arranging for disposal of these materials by MECP-approved waste haulers at MECP-approved waste management facilities.

During the drilling and groundwater sampling activities, no evidence of NAPL or significant staining was observed in the subsurface. As such, the limited volumes of wash water utilized to clean the sampling equipment were discharged to the ground surface at the Phase Two Property.

5.11 Elevation Surveying

On June 29, 2021, Annis, O'Sullivan, Vollebekk Ltd. (AOV), an OLS, surveyed the horizontal positioning and the vertical elevation of each of the on-Site monitoring wells and borehole locations relative to the elevation of City of Ottawa control point 2016-0355, having a published elevation of 58.649 mamsl, which was tied into a local benchmark on site located at the top of the spindle on the fire hydrant at the southwest corner of the property. The local site benchmark was established to have an elevation of 65.35 mamsl. The location of the benchmark utilized to complete the survey is shown on Figure 7.

A summary of the well elevation survey data is provided in Table 4. A survey of the Phase Two Property showing the locations and elevations of each monitoring well and borehole, as provided by AOV, is included in Appendix A.

The UTM coordinates of each monitoring well and borehole were determined by Pinchin using a hand-held GPS device (i.e., Garmin eTrex LEGEND HCx).

A summary of the well elevation survey data is provided in Table 4. The UTM coordinates for each monitoring well and borehole are provided on the borehole logs in Appendix C.

5.12 Quality Assurance and Quality Control Measures

The QA/QC protocols that were followed during borehole drilling and soil and groundwater sampling so that representative samples were obtained are described in the following subsections.

5.12.1 Sample Containers, Preservation, Labelling, Handling and Custody of Samples

Soil and groundwater samples were containerized within laboratory-prepared sample containers in accordance with the *Analytical Protocol*.

The following soil sample containers and preservatives were used:

- VOCs and PHCs F1: 40 millilitre (mL) glass vials with septum-lids, pre-charged with methanol preservative.
- PHCs F2-F4, PAHs, metals, inorganics, pH and grain size: 120 or 250 mL unpreserved clear glass wide-mouth jars with a Teflon™–lined lid.

The following groundwater sample containers and preservatives were used:

- VOCs and PHCs F1: 40 mL clear glass vials with septum-lids, pre-charged with sodium bisulphate preservative.
- PHCs F2-F4: 250 mL amber glass bottles with Teflon™–lined lids, pre-charged with sodium bisulphate preservative.
- PAHs: 250 mL unpreserved amber glass bottles with Teflon™–lined lids.
- Inorganics: 500 mL unpreserved high density polyethylene (HDPE) bottles.
- Metals (excluding hexavalent chromium and mercury): 125 mL acid-rinsed HDPE bottles, pre-charged with nitric acid preservative.
- Hexavalent chromium: 125 mL acid-rinsed HDPE bottles, pre-charged with ammonium sulphate/ammonium hydroxide preservative.
- Mercury: 125 mL clear glass bottles with Teflon™–lined lids, pre-charged with hydrochloric acid preservative.

Groundwater samples submitted for metals analyses were field-filtered using dedicated 0.45 micron filters.

Trip blank water samples for VOC parameter analysis were provided by BV Labs in 40 mL clear glass vials filled with VOC-free water.

Each soil, groundwater and QA/QC sample was labelled with a unique sample identifier along with the company name, sampling date, Pinchin project number and analysis required.

Each sample was placed in a cooler on ice immediately upon collection and prior to submission to BV Labs for analysis. Formal chain of custody records of the sample submissions were maintained between Pinchin and the staff at BV Labs.

5.12.2 Equipment Cleaning Procedures

Dedicated, single-use PVC sample liners were used for each soil sample collected, which precluded the need for drilling equipment cleaning during soil sample collection. Equipment utilized in soil sample collection and handling (i.e., spatulas used to remove soil from the sample liners) was cleaned with a solution of Alconox™ detergent and potable water followed by a distilled water rinse prior to initial use and between samples.

During auger drilling, the split-spoon samplers used to collect soil samples were cleaned before initial use and between samples using an Alconox™/potable water mixture followed by a distilled water rinse. The augers used to drill the boreholes were pre-cleaned by Strata prior to arrival at the Site.

During groundwater sampling activities, the bladder pump used for purging and sampling was cleaned before initial use and between well locations by flushing with a solution of Alconox™ detergent and potable water followed by flushing with distilled water. New bladders were also installed in the pump before initial use and between well locations. During groundwater monitoring activities, the oil/water interface probe used to measure water levels and the YSI Water Quality Meter used for groundwater field parameter measurements were cleaned with a solution of Alconox™ detergent and potable water followed by a distilled water rinse prior to initial use and between well locations.

5.12.3 Field Quality Control Measures

A total of five field duplicate soil samples were collected by Pinchin during the Phase Two ESA for analysis of one or more of the COPCs. The frequency of field duplicate soil sample analysis complied with the requirement that one field duplicate soil sample is analyzed for every ten regular soil samples submitted for analysis of the COPCs. The soil sample field duplicate pairings and corresponding analytical schedules are summarized as follows:

- Soil sample “BH107 SS3” and its corresponding field duplicate “DUP-1” were submitted for laboratory analysis of BTEX and PHCs, PAHs and metals.
- Soil sample “BHMW110 SS7” and its corresponding field duplicate “DUP-2” were submitted for laboratory analysis of VOCs, PHCs and PAHs.
- Soil sample “BHMW118 SS2” and its corresponding field duplicate “DUP-3” were submitted for laboratory analysis of VOCs, BTEX and PHCs, PAHs and metals.

- Soil sample “BHMW121 SS1” and its corresponding field duplicate “DUP101” were submitted for laboratory analysis of PHCs, PAHs and PCBs.
- Soil sample “BHMW124 SS1” and its corresponding field duplicate “DUP102” were submitted for laboratory analysis of inorganics.

A total of five field duplicate groundwater samples were collected by Pinchin during the Phase Two ESA for analysis of the COPCs. The frequency of field duplicate groundwater sample analysis complied with the requirement that one field duplicate groundwater sample is analyzed for every ten regular groundwater samples submitted for analysis of the COPCs. The groundwater sample field duplicate pairings and corresponding analytical schedules are summarized as follows:

- Groundwater sample “BH4-20” and its corresponding field duplicate “DUP” were submitted for laboratory analysis of VOCs during the 2020 Paterson Phase Two ESA.
- Groundwater sample “BHMW3” and its corresponding field duplicate “DUP-1” were submitted for laboratory analysis of VOCs, PHCs and PAHs.
- Groundwater sample “BHMW120” and its corresponding field duplicate “GWDUP-1” were submitted for laboratory analysis of VOCs, PHCs and PAHs.
- Groundwater sample “BHMW124” and its corresponding field duplicate “GWDUP-2” were submitted for laboratory analysis of VOCs, PHCs, chloride, sodium, PAHs, metals and inorganics.
- Groundwater sample “BH2017-05” and its corresponding field duplicate “BHMW-D” were submitted for laboratory analysis of VOCs, PHCs, sodium, metals and inorganics during the 2017 DST Phase Two ESA.

Four laboratory-prepared trip blanks were analyzed for VOC parameters to comply with the requirement that one trip blank is analyzed for each submission of groundwater samples for VOC parameter analysis.

The calibrations of the RKI Eagle™ CGI used for field screening and the YSI Water Quality Meter used for water quality parameter measurements were checked by the equipment supplier prior to use in the field by Pinchin.

Calibration checks were completed in accordance with the equipment manufacturers’ specifications and/or Pinchin’s SOPs. As described in Section 5.4, calibration checks and recalibration (if required) were completed daily for the RKI Eagle™ CGI during the drilling program.

5.12.4 QA/QC Sampling Program Deviations

There were no deviations from the QA/QC sampling program outlined in the SAP.

6.0 REVIEW AND EVALUATION

6.1 Geology

Based on the soil samples recovered during the borehole drilling program completed as part of the Phase Two ESA, the soil stratigraphy at the drilling locations below the grassed, gravel, concrete or asphalt surfaces generally consists of fill material comprised of sand and gravel underlain by silty clay till to a maximum depth of approximately 7.62 mbgs where a limestone/shale bedrock formation was encountered at varying depths across the Site. Maximum borehole depth was 20.73 mbgs at BHMW111 advanced approximately 14.33 m into the limestone/shale bedrock encountered at the Phase Two Property. The water table is located within the silty clay till unit at a depth of approximately 1.5 to 3 mbgs and this uppermost water bearing unit represents an overburden aquifer. The overburden aquifer is followed by limestone bedrock/shale.

The following table provides a summary of the primary geologic units observed during borehole drilling at the Phase Two Property:

Geologic Unit	Estimated Thickness (metres)	Top Elevation (mamsl)	Bottom Elevation (mamsl)	Properties
Asphalt	0 - 0.05	61.83 – 67.27 (Ground surface)	61.78 – 67.27	Dry.
Granular Fill	0.7 – 5.3	61.78 – 67.27	56.48 – 66.57	Brown sand and gravel fill, damp.
Overburden Aquifer (Silty Clay Till)	1.0 – 5.8	56.48 – 66.57	50.68 – 65.57	Silty clay, saturated below 3.5 to 5.5 mbgs (water table). Calculated horizontal hydraulic gradient of 0.031 m/m and downward vertical gradient of 0.392 m/m.
Bedrock Aquifer (Limestone/ Shale)	> 14.3	50.68 – 65.57	< 51.27	Limestone/shale bedrock, saturated. Calculated horizontal hydraulic gradient of 0.006 m/m.

The Ontario Geological Survey Quaternary Geology of Ontario map shows the Phase Two Study Area as being underlain by Paleozoic bedrock. Bedrock is expected to consist of limestone, dolostone, shale, arkose and sandstone from the Ottawa Group, Simcoe Group and Shadow Lake Formation at depths of approximately 6.4 to 9.0 mbgs. During previous on-Site environmental investigations, the soil stratigraphy was observed to consist of fill materials to a maximum depth of 4.3 mbgs, underlain by native clay and till to a depth of 9.0 mbgs.

Cross-sections summarizing the subsurface geological conditions have been provided as Figures 8A to 8C.

The APECs investigated by the Phase Two ESA related to PHCs (APEC-1 through APEC-13, APEC-15 and APEC-17). Impacts on groundwater quality, if any, from PHCs contaminants in these APECs would be expected in the shallow groundwater zone and, as such, the water table groundwater quality within the overburden aquifer was assessed during the Phase Two ESA.

Groundwater impacts were identified in the overburden aquifer at the Phase Two Property. Monitoring wells were installed within the bedrock aquifer for the purpose of vertically delineating the groundwater impacts in the overburden aquifer. Groundwater impacts were also identified within the bedrock aquifer wells. Based on the nature of the contaminants at the deeper location (low concentration near the Table 3 Standard), the additional environmental risk of deeper vertical drilling, plus the lack of downgradient receptors off-site for assessment, it is Pinchin's opinion that the non-standard delineation rules apply (Schedule E, Section 7.1) given that the added value of additional vertical delineation data will be meaningful during the risk assessment. Therefore, it is the QP_{ESA}'s opinion that further delineation would not provide any meaningful information regarding the distribution and extent of COCs at the Phase Two Property.

6.2 Groundwater Elevations and Flow Direction

The wells screens in each well installed within the shallow overburden aquifer by Pinchin were of a consistent length (i.e., 3.05 metres) and were installed at depth intervals intended to investigate groundwater quality in the shallow groundwater zone. Well screens installed within the bedrock deeper confined aquifer were of a consistent length (i.e., 3.05 meters), with the exception of monitoring well BHMW119, which had a screen length of 1.5 meters.

Given that PHCs were a COPC for groundwater at the Phase Two Property within the shallow groundwater zone of the overburden aquifer at the Phase Two Property, the well screens were installed to intercept the water table. The monitoring wells installed by others (i.e., BH2017-10, BHMW3, BH1-20, BH2-20, BH3-20, BH4-20, and BH5-20) also had wells screens of consistent length (i.e., 3.05 metres), and were screened within the shallow groundwater zone within the overburden aquifer at the Phase Two Property. These well screens in these wells also intersected the water table.

The following summarizes the findings of a groundwater monitoring event completed during the 2017 DST Phase Two ESA on July 17, 2017:

- The depths to groundwater measured within the on-Site monitoring wells installed within the overburden aquifer ranged from 3.30 mbgs at monitoring well BH2017-05 to 7.60 mbgs at monitoring well BH2017-07.

- The calculated groundwater elevations within the groundwater monitoring wells installed within the overburden aquifer ranged between 57.10 mamsl at BH2017-07 and 62.10 mamsl at BH2017-02.

The following summarizes the findings of a groundwater monitoring event completed during the 2020 Paterson Phase Two ESA on September 30, 2020:

- The depths to groundwater measured within the on-Site monitoring wells installed within the overburden aquifer ranged from 4.18 mbgs at monitoring well BH3-20 to 5.05 mbgs at monitoring well BH3-20.
- The calculated groundwater elevations within the groundwater monitoring wells installed within the overburden aquifer ranged between 59.86 mamsl at BH4-20 and 61.73 mamsl at BH2-20.
- No NAPL thicknesses were measured with the oil/water interface probe in any of the groundwater monitoring wells.

The following summarizes the findings of a groundwater monitoring event completed on April 21 and April 22, 2021:

- The depths to groundwater measured within the on-Site monitoring wells installed within the overburden aquifer ranged from 3.41 mbgs at monitoring well BHMW3 to 4.79 mbgs at monitoring well BH1-20.
- The calculated groundwater elevations within the groundwater monitoring wells installed within the overburden aquifer ranged between 59.95 mamsl at BH4-20 and 63.36 mamsl at BHMW3.
- No NAPL thicknesses were measured with the oil/water interface probe in any of the groundwater monitoring wells.

The following summarizes the findings of a groundwater monitoring event completed on June 9 to June 15, 2021:

- The depths to groundwater measured within the on-Site monitoring wells installed within the overburden aquifer ranged from 3.02 mbgs at monitoring well BHMW116 to 5.54 mbgs at monitoring well BHMW108.
- The calculated groundwater elevations within the groundwater monitoring wells installed within the overburden aquifer ranged between 59.26 mamsl at BH116 and 62.09 mamsl at BHMW110.

- The depths to groundwater measured within the on-Site monitoring wells installed within the bedrock aquifer ranged from 4.98 mbgs at monitoring well BHMW120 to 17.10 mbgs at monitoring well BHMW111.
- The calculated groundwater elevations within the groundwater monitoring wells installed within the bedrock aquifer ranged between 49.45 mamsl at BH111 and 60.04 mamsl at BHMW120.
- No NAPL thicknesses were measured with the oil/water interface probe in any of the groundwater monitoring wells.

The following summarizes the findings of a groundwater monitoring event completed on October 12, 2021:

- The depths to groundwater measured within the on-Site monitoring wells installed within the overburden aquifer ranged from 5.02 mbgs at monitoring well BHMW125 to 5.07 mbgs at monitoring well BH127.
- The calculated groundwater elevations within the groundwater monitoring wells installed within the overburden aquifer ranged between 59.85 mamsl at BHMW127 and 60.72 mamsl at BHMW125.
- No NAPL thicknesses were measured with the oil/water interface probe in any of the groundwater monitoring wells.

The surveyed top of well riser pipe elevations were utilized in conjunction with the measured depths to groundwater to calculate the groundwater level elevation data. The measured depths to groundwater and calculated groundwater elevation measurements, and the results of NAPL monitoring for all monitoring events are summarized in Tables 5 and 6, respectively.

The inferred groundwater flow vectors and calculated groundwater elevation contour intervals at the Phase Two Property within the overburden aquifer based on depth to groundwater measurements on July 17, 2017, June 23, 2021 and November 30, 2021 are shown on Figure 7Ai, Figure 7Bi and Figure 7Ci, respectively. The inferred groundwater flow vectors and calculated groundwater elevation contour intervals at the Phase Two Property within the bedrock aquifer based on depth to groundwater measurements on July 17, 2017, June 23, 2021, and November 30, 2021, are shown on Figure 7Aii, Figure 7Bii and Figure 7Cii, respectively.

All depth to groundwater measurements in each of the on-Site groundwater monitoring wells were used to calculate the groundwater elevation contours. As shown on Figure 7Ai through Figure 7Cii, the calculated groundwater surface elevation contours indicate that groundwater flow across the Phase Two Property is generally to the northwest and east/northeast (subject to seasonal variability) within the overburden and bedrock aquifers, respectively.

The groundwater depth data collected over the course of all monitoring events indicate that the temporal fluctuations in the overburden water table appear to be minimal. Also, based on the measured depths to groundwater, it is unlikely that the groundwater flow regime would be influenced by the buried utilities present at the Phase Two Property.

6.3 Groundwater Hydraulic Gradients

6.3.1 Groundwater Horizontal Hydraulic Gradients

The plotted groundwater surface elevation contours (as shown on Figures 9A and 9B) were utilized to estimate horizontal hydraulic gradient values for the overburden aquifer at the Phase Two Property. The horizontal hydraulic gradient can be estimated by dividing the difference between two groundwater contour values by the distance between the two plotted groundwater contours. The distance between select groundwater contours can be determined by drawing a straight line which transects each contour in a perpendicular fashion on the plotted groundwater contour figure.

The horizontal hydraulic gradient within the overburden aquifer at the Phase Two Property was calculated to be 0.031 m/m in the overburden unit and 0.006 m/m in the limestone/shale bedrock unit, based on the September 2020 and April 2021 data. Vertical hydraulic gradients calculated using water levels at well pairs screened within the bedrock and overburden units indicated a downward vertical gradient of 0.392 m/m. This horizontal gradient is essentially “flat”, with a significant downward vertical gradient indicative of an aquifer recharging condition. These findings confirm the interpretation that the shallow and deep-water bearing zones within the overburden aquifer have good hydraulic connectivity.

6.4 Fine-Medium Soil Texture

Ten soil samples collected from the boreholes advanced at the Phase Two Property were submitted for 75 micron single-sieve grain size analysis. The soil samples selected for analysis were considered to be representative of the two primary stratigraphic units observed at the borehole locations, which were a sand and gravel fill unit and a native silty clay till unit. As indicated in Table 3, five soil samples (BH103 SS-2, BH105 SS-2, BHMW108 SS-2, BHMW112 SS-3 and BH113 SS-3) that were representative of the sand and gravel fill (subgrade) material present beneath the asphalt at the Site was classified as coarse-textured (between 51% and 69% coarse-grained soil) and five representative samples (BH103 SS-7,

BH105 SS-7, BHMW109 SS-7, BHMW112 SS-7, and BH113 SS-7) of the native silty clay till present beneath the surficial fill material at the Phase Two Property were classified as medium and fine-textured (Between 2% and 28% coarse-grained soil), with the exception of BHMW109 SS-7 (59% coarse grained soil).

Based on these grain size analysis results and the observed stratigraphy at the borehole locations at the Phase Two Property, it is the QP's opinion that over two-third of the overburden at the Phase Two Property is coarse-textured as defined by O. Reg. 153/04. Therefore, the soil at the Phase Two Property was interpreted to be coarse-textured for the purpose of determining the MECP Site Condition Standards applicable to the Phase Two Property.

6.5 Soil Field Screening

Soil vapour headspace concentrations measured in the soil samples collected as part of this Phase Two ESA are presented in the borehole logs. Soil vapour headspace values measured with the CGI in methane elimination mode ranged from 0 ppm by volume (ppm_v) in several of the collected soil samples to a maximum of 8000 ppm_v in soil sample BHMW111 SS-6 collected from borehole BHMW111 at a depth of approximately 3.7 to 4.6 mbgs. Soil vapour headspace values measured with the PID ranged from 0.0 ppm_v in several of the collected soil samples to a maximum of 2000 ppm_v in soil sample BHMW111 SS-6 collected from borehole BHMW111 at a depth of approximately 3.7 to 4.6 mbgs,

A minimum of one "worst case" soil sample, based on vapour concentrations as well as visual and/or olfactory considerations, preferred pathway migration, groundwater depths and contaminant characteristics, recovered from each borehole was submitted for laboratory analysis of one or more of the following COPCs: VOCs, BTEX, PHCs (F1-F4), PAHs and/or metals.

6.6 Soil Quality

A total of 27 boreholes were advanced at the Phase Two Property at the locations shown on Figure 7 in order to assess for the presence of subsurface impacts resulting from the APECs identified in the Pinchin Phase One ESA Update and for the delineation of identified impacts. Select soil samples were collected from each of the advanced boreholes and submitted for laboratory analysis of the COPCs. The soil sample locations, depths and laboratory analyses are summarized in Table 3 and in the borehole logs.

The soil sample analytical results were compared to the *Table 3 Standards* and the following subsections provide a discussion of the findings.

6.6.1 VOCs

The soil sample analytical results for VOCs, along with the corresponding *Table 3 Standards*, are presented in Table 3. As indicated in Table 3, all reported concentrations of VOCs in the soil samples submitted for analysis were below the *Table 3 Standards*, except for the following:

- Soil samples submitted for analysis from boreholes BH2017-1 and BH2017-5 collected during the 2017 DST Phase Two ESA had concentrations of one or more VOC parameters that exceeded the *Table 3 Standards; and*
- Soil samples submitted for analysis from boreholes BHMW108, BHMW110 and BHMW111 collected during the 2021 Pinchin Phase Two ESA had concentrations of one or more VOC parameters that exceeded the *Table 3 Standards.*

6.6.2 PHCs F1-F4

The soil sample analytical results for PHCs F1-F4, along with the corresponding *Table 3 Standards*, are presented in Table 3. As indicated in Table 3, all reported concentrations of PHCs F1- F4 in the soil samples submitted for analysis were below the *Table 3 Standards*, except for the following:

- Soil samples submitted for analysis from boreholes BH2017-1, BH2017-5A and BH2017-5 collected during the 2017 DST Phase Two ESA had concentrations of one or more PHC parameters that exceeded the *Table 3 Standards; and*
- Soil samples submitted for analysis from boreholes BH107, BH108, BH110, BH111, BH112, BH113, BH115, BH112 and BH126 collected during the 2021 Pinchin Phase Two ESA had concentrations of one or more PHC parameters that exceeded the *Table 3 Standards.*

6.6.3 PAHs

The soil sample analytical results for PAHs, along with the corresponding *Table 3 Standards*, are presented in Table 3. As indicated in Table 3, all reported concentrations of PAHs in the soil samples submitted for analysis were below the *Table 3 Standards*, except for the following:

- Soil samples submitted for analysis from borehole BH2017-11 collected during the 2017 DST Phase Two ESA had concentrations of one or more PAH parameters that exceeded the *Table 3 Standards;*
- Soil samples submitted for analysis from boreholes BH2-20, BH3-20, and BH5-20, collected during the 2020 Paterson Phase Two ESA had concentrations of one or more PAH parameters that exceeded the *Table 3 Standards;* and

- Soil samples submitted for analysis from boreholes BH101, BH102, BH104, BH105, BH111, BH124 and BH126 collected during the 2021 Pinchin Phase Two ESA had concentrations of one or more PAH parameters that exceeded the *Table 3 Standards.*

6.6.4 Metals and Inorganics

The soil sample analytical results for metals and inorganics parameters, along with the corresponding *Table 3 Standards*, are presented in Table 3. As indicated in Table 3, all reported concentrations of metals and inorganics in the soil samples submitted for analysis were below the *Table 3 Standards*, except for the following:

- Soil samples submitted for analysis from boreholes BH2017-5, BH2017-8, BH2017-11, and BH2017-13 collected during the 2017 DST Phase Two ESA had concentrations of one or more metal and inorganic parameters that exceeded the *Table 3 Standards;*
- Soil samples submitted for analysis from boreholes BH3-20, BH4-20, and BH5-20 collected during the 2020 Paterson Phase Two ESA had concentrations of one or more metal and inorganic parameters that exceeded the *Table 3 Standards; and*
- Soil samples submitted for analysis from boreholes BH102, BH104, BH112, and BH124 collected during the 2021 Pinchin Phase Two ESA had concentrations of one or more metal and inorganic parameters that exceeded the *Table 3 Standards.*

6.6.5 General Comments on Soil Quality

The soil sample results show no evidence of chemical or biological transformations of chemical parameters in the subsurface.

6.7 Groundwater Quality

During the 2021 Pinchin Phase Two ESA, groundwater samples were collected from monitoring wells BH2017-10, BH1-20, BH2-20, BH3-20, BH4-20, BH5-20, BHMW3, BHMW108, BHMW109, BHMW110, BHMW111, BHMW112, BHMW115, BHMW116, BHMW117, BHMW118, BHMW119, BHMW120, BHMW122, BHMW123, BHMW124, BHMW125, and BHMW127 and submitted for analysis of the COPCs to assess for the presence of subsurface impacts within the APECs identified in the Pinchin Phase One ESA Update and for the delineation of identified impacts. Pinchin is relying on the groundwater analytical data collected during the 2017 DST and 2020 Paterson Phase Two ESAs.

The locations of the monitoring wells are shown on Figure 7. The groundwater sample collection depths and laboratory analysis are summarized in Table 7. All groundwater samples collected for metals analysis were filtered in the field using dedicated, disposable 0.45 micron in-line filters prior to preservation in accordance with the *Analytical Protocol.* In addition, all groundwater samples collected for benzo(a)pyrene analysis were filtered by BV Labs prior to analysis as permitted by the *Analytical Protocol*.

The groundwater sample analytical results were compared to the *Table 3 Standards* and the following subsections provide a discussion of the findings.

6.7.1 VOCs

The groundwater analytical results for VOCs, along with the corresponding *Table 3 Standards*, are presented in Table 7. As indicated in Table 7, all reported concentrations of VOCs in the groundwater samples submitted for analysis were below the *Table 3 Standards*, except for the following:

- Groundwater samples submitted for analysis from monitoring wells BH2017-2, BH2017-5, and BH2017-9 collected during the 2017 DST Phase Two ESA had concentrations of one or more VOC parameters that exceeded the *Table 3 Standards;*
- Groundwater samples submitted for analysis from monitoring wells BH1-20, BH2-20, BH4-20, BH5-20 collected during the 2020 Paterson Phase Two ESA had concentrations of one or more VOC parameters that exceeded the *Table 3 Standards; and*
- Groundwater samples submitted for analysis from monitoring wells BH1-20, BH4-20, BHMW116, BHMW119, BHMW120 collected during the 2021 Pinchin Phase Two ESA had concentrations of one or more VOC parameters that exceeded the *Table 3 Standards.*

6.7.2 PHCs F1-F4

The groundwater analytical results for PHCs F1-F4, along with the corresponding *Table 3 Standards*, are presented in Table 7. As indicated in Table 7, all reported concentrations of PHCs F1-F4 in the groundwater samples submitted for analysis met the *Table 3 Standards*, except for the following:

- Groundwater sample submitted for analysis from monitoring well BH2017-2 collected during the 2017 DST Phase Two ESA had concentrations of one or more PHC parameters that exceeded the *Table 3 Standards;*
- Groundwater sample submitted for analysis from monitoring well BH2-20 collected during the 2020 Paterson Phase Two ESA had concentrations of one or more PHC parameters that exceeded the *Table 3 Standards; and*
- Groundwater samples submitted for analysis from monitoring wells BHMW3, BHMW108, BHMW110, BHMW115 and BHMW122 collected during the 2021 Pinchin Phase Two ESA had concentrations of one or more PHC parameters that exceeded the *Table 3 Standards.*

6.7.3 PAHs

The groundwater analytical results for PAHs, along with the corresponding *Table 3 Standards*, are presented in Table 7. As indicated in Table 7, all reported concentrations of PAHs in the groundwater samples submitted for analysis met the *Table 3 Standards*.

6.7.4 Metals and Inorganics

The groundwater analytical results for metals and inorganic parameters, along with the corresponding *Table 3 Standards*, are presented in Table 7. As indicated in Table 7, all reported concentrations of metals and inorganics parameters in the groundwater samples submitted for analysis met the *Table 3 Standards*, except for the following:

- Groundwater samples submitted for analysis from monitoring well BHMW124 collected during the 2021 Pinchin Phase Two ESA had concentrations of inorganic parameters that exceeded the *Table 3 Standards.*

6.7.5 General Comments on Groundwater Quality

The groundwater sample results show no evidence of chemical or biological transformations of chemical parameters in the subsurface.

6.8 Sediment Quality

Sediment sampling was not completed as part of this Phase Two ESA.

6.9 Quality Assurance and Quality Control Results

QA/QC comprises technical activities that are used to measure or assess the effect of errors or variability in sampling and analysis. It may also include specification of acceptance criteria for the data and corrective actions to be taken when they are exceeded. QA/QC also includes checks performed to evaluate laboratory analytical quality, checks designed to assess the combined influence of field sampling and laboratory analysis and checks to specifically evaluate the potential for cross contamination during sampling and sample handling.

The QA/QC samples collected and submitted for analysis by Pinchin during the Phase Two ESA consisted of the following:

- Field duplicate soil and groundwater samples to assess the suitability of field sampling methods and laboratory performance.

- Trip blank water samples to assess whether ambient conditions during transport of groundwater sample containers from the analytical laboratory to the Phase Two Property and back to the analytical laboratory may have biased the groundwater sample results with respect to volatile constituents.

In addition to the above, laboratory quality control activities and sample checks employed by BV Labs included:

- Method blanks - where a clean sample is processed simultaneously with and under the same conditions (i.e., using the same reagents and solvents) as the samples being analyzed. These are used to confirm whether the instrument, reagents and solvents used are contaminant free.
- Laboratory duplicates - where two samples obtained from the sample container are analyzed. These are used to evaluate laboratory precision.
- Surrogate spike samples - where a known mass of compound not found in nature (e.g., deuterated compounds such as toluene-d8) but that has similar characteristics to the analyzed compounds is added to a sample at a known concentration. These are used to assess the recovery efficiency.
- Matrix spike samples - where a known mass of target analyte is added to a matrix sample with known concentrations. These are used to evaluate the influence of the matrix on a method’s recovery efficiency.
- Use of standard or certified reference materials - a reference material where the content or concentration has been established to a very high level of certainty (usually by a national regulatory agency). These are used to assess accuracy.

The results of the QA/QC samples are discussed in the following subsections.

6.9.1 Soil Duplicate Results

During borehole soil sampling activities, a total of five separate soil duplicate sample pairs were submitted for laboratory analysis. The field duplicate samples were collected by vertically splitting the soil cores into two equal halves, with one half collected as the regular sample and the other half collected as the field duplicate sample. The sample pairings and corresponding laboratory analyses are as follows:

- Soil sample “BH107 SS3” and its corresponding field duplicate “DUP-1” were submitted for laboratory analysis of BTEX and PHCs, PAHs and metals.
- Soil sample “BHMW110 SS7” and its corresponding field duplicate “DUP-2” were submitted for laboratory analysis of VOCs, PHCs and PAHs.

- Soil sample "BHMW118 SS2" and its corresponding field duplicate "DUP-3" were submitted for laboratory analysis of VOCs, BTEX and PHCs, PAHs and metals.
- Soil sample "BHMW121 SS1" and its corresponding field duplicate "DUP101" were submitted for laboratory analysis of PHCs, PAHs and PCBs.
- Soil sample "BHMW124 SS1" and its corresponding field duplicate "DUP102" were submitted for laboratory analysis of inorganics.

The quality of the analytical results was evaluated by calculating relative percent differences (RPDs) for the parameters analyzed for the original and field duplicate samples. The RPD for each parameter was calculated using the following equation:

$$RPD = \frac{(\text{Original Concentration} - \text{Duplicate Concentration}) \times 100}{(\text{Original Concentration} + \text{Duplicate Concentration})/2}$$

An RPD was not calculated unless the parameter concentration in both the original and duplicate sample had detectable concentrations above the corresponding practical quantitation limit for the parameter, which is equal to five times the lowest laboratory reportable detection limit (RDL).

The calculated RPDs for the original and field duplicate soil samples have been compared to performance standards provided in the *Analytical Protocol.* Pinchin notes that although these performance standards only strictly apply to laboratory duplicate samples, they have been considered suitable for comparison to the field duplicate soil sample results as well.

The calculated RPDs values met the performance standards with the exception of the following:

- The RPD values for soil sample pairing BH107 SS3/DUP-1, collected from borehole BH107 at a depth of 1.5 – 2.3 mbgs, exceeded the corresponding performance standards for PHC (F3), PHC (F4), PHC (F4G), and cadmium;
- The RPD values for soil sample pairing BHMW110 SS7/DUP-2, collected from borehole BHMW110 at a depth of 4.6 – 5.3 mbgs, exceeded the corresponding performance standards for PHC (F1), methylnaphthalene, and naphthalene.
- The RPD values for soil sample pairing BHMW118 SS2/DUP-3, collected from borehole BHMW118 at a depth of 0.75 – 1.5 mbgs, exceeded the corresponding performance standards for fluoranthene, pyrene, chromium, cobalt, copper, lead, molybdenum, and uranium;
- The RPD values for soil sample pairing BH121 SS2/DUP-101, collected from borehole BH121 at a depth of 0.0 – 0.75 mbgs, exceeded the corresponding performance standard for fluoranthene;

- The RPD values for soil sample pairing BHMW124 SS1/DUP-102, collected from borehole BH124 at a depth of 0.0 – 0.75 mbgs, exceeded the corresponding performance standard for electrical conductivity;

The primary cause of the elevated RPD values and discrepancies observed in the analytical results for the soil sample pairings is inferred to be heterogeneity in the matrix of the fill materials from which the samples were collected. Pinchin notes that fill materials are generally more variable in terms of parameter concentrations in comparison to native, undisturbed soil deposits. As such, the observed variances in RPDs for these sample pairings are not expected to reflect deficiencies in sampling or analytical methods. Furthermore, all parameter concentrations in the soil sample pairings are either both above or both below the corresponding *Table 3 Standards* so the apparent lack of precision is not considered a concern. Based on Pinchin's review of the calculated RPD values for the remainder of the collected soil duplicate sample pairings, the level of observed variance in the reported analytical results is considered acceptable for the purpose of meeting the data quality objectives of this Phase Two ESA.

6.9.2 Groundwater Sample Duplicate Results

During groundwater sampling activities, a total of five separate groundwater duplicate sample pairs were submitted for laboratory analysis. The sample pairings and corresponding laboratory analyses are as follows:

- Groundwater sample "BH4-20" and its corresponding field duplicate "DUP" were submitted for laboratory analysis of VOCs during the 2020 Paterson Phase Two ESA.
- Groundwater sample "BHMW3" and its corresponding field duplicate "DUP-1" were submitted for laboratory analysis of VOCs, PHCs and PAHs.
- Groundwater sample "BHMW120" and its corresponding field duplicate "GWDUP-1" were submitted for laboratory analysis of VOCs, PHCs and PAHs.
- Groundwater sample "BHMW124" and its corresponding field duplicate "GWDUP-2" were submitted for laboratory analysis of VOCs, PHCs, chloride, sodium, PAHs, metals and inorganics.
- Groundwater sample "BH2017-05" and its corresponding field duplicate "BHMW-D" were submitted for laboratory analysis of VOCs, PHCs, sodium, metals and inorganics during the 2017 DST Phase Two ESA.

The calculated RPDs for the original and field duplicate groundwater samples have been compared to performance standards provided in the *Analytical Protocol.* Pinchin notes that although these performance standards only strictly apply to laboratory duplicate samples, they have been considered suitable for comparison to the field duplicate groundwater sample results as well.

Each of the calculated RPDs met the corresponding performance standard.

Based on Pinchin's review of the calculated RPD values for the submitted groundwater sample duplicate pairings, the level of observed variance in the reported analytical results is considered acceptable for the purpose of meeting the data quality objectives of this Phase Two ESA.

6.9.3 Groundwater Trip Blank Results

Trip blank samples, consisting of VOC-free water contained within a set of VOC sample vials, were prepared by BV Labs and accompanied the VOC groundwater sample containers during transportation to the Phase Two Property and were stored in the coolers with the VOC groundwater samples in the field and during transportation back to BV Labs. A total of three trip blank samples (one for each laboratory submission) were submitted to BV Labs for chemical analysis of VOCs during the groundwater sampling activities completed as part of this Phase Two ESA.

As indicated in Table 7, the concentrations of the VOC parameters analyzed in the trip blank samples were below the laboratory RDLs. These findings indicate that ambient conditions during the transportation of the sample containers to and from the Phase Two Property, and during groundwater sampling, did not positively bias the VOCs parameter analytical results for the groundwater samples.

6.9.4 Deviations from Analytical Protocol

There were no deviations from the holding times, preservation methods, storage requirements and container types specified in the *Analytical Protocol* during the completion of the Phase Two ESA.

6.9.5 Laboratory Certificates of Analysis

Pinchin has reviewed the laboratory Certificates of Analysis provided by BV Labs for the samples submitted during the Phase Two ESA and confirms the following:

- All laboratory Certificates of Analysis contain a complete record of the sample submission and analysis and meet the requirements of Section 47(3) of O. Reg. 153/04.
- A laboratory Certificate of Analysis has been received for each sample submitted for analysis during the Phase Two ESA.
- All laboratory Certificates of Analysis have been included in full in Appendix H.
- All of the analytical data reported in the Certificates of Analysis have been summarized, in full, in Tables 3 and 7.

6.9.6 Laboratory Comments Regarding Sample Analysis

BV Labs routinely conducts internal QA/QC analyses in order to satisfy regulatory QA/QC requirements. The results of the BV Labs QA/QC analyses for the submitted soil samples are summarized in the laboratory Certificates of Analyses provided in Appendix H. Also included in Appendix H are all correspondences between the laboratory and staff at Pinchin.

The following summarizes comments noted by BV Labs on the laboratory Certificates of Analysis for the submitted soil samples:

- Laboratory Certificates C1B6083, C1B8527, and C1E5924 - The RDLs for PAHs in a number of soil samples were raised as a result of a required sample dilution due to the sample matrices. The RDLs reported for these soil samples were below the *Table 3 Standards*. As such, the increased RDLs have no impact on the conclusions for these soil samples.
- Laboratory Certificate C1B6083 - The RDL for VOCs and PHCs F1 in soil samples BHMW108 SS-8, BHMW110 SS-7, DUP-2, and BHMW111 SS-6 was raised as a result of a required sample dilution due to a high amount of PHCs and target analytes. Given that the RDL was below the corresponding *Table 3 Standard*, the increased RDL has no impact on the conclusions for soil samples BHMW108 SS-8, BHMW110 SS-7, DUP-2, and BHMW111 SS-6.
- Laboratory Certificate C1B6083 - The 1-methylnaphthalene recovery (151%) in a batch matrix spike sample were noted to be above the corresponding control limit (50% to 130%) during the laboratory QA/QC analysis. BV Labs indicated that the overall quality control for the batch matrix spike analysis met the acceptable laboratory criteria. As such, Pinchin does not consider this result to be an issue of significant concern and it has no impact on the overall interpretation of the analytical data.
- Laboratory Certificate C1E5924 - Due to an error in processing the vial for soil sample BHMW124 SS-1, the results of the analysis were not representative. BV Labs completed a VOC re-analysis of the sample using the remaining opened jar. As such, the results may be biased low.

The following summarizes comments noted by BV Labs on the laboratory Certificates of Analysis for the submitted groundwater samples:

- Laboratory Certificates C1G1158, C1G6182, and C1T8290 – BV Labs indicated that all groundwater sample vials submitted for laboratory analysis of VOCs and PHCs F1 contained visible sediment. Based on Pinchin's field observations, the volume of sediment in the submitted groundwater sample containers was a trace to minor amount. Given that these parameters are volatile constituents and are not expected to sorb to soil particles, the presence of trace to minor amounts sediment in the sample vials is not anticipated to result in significant sample bias. As such, the presence of sediment does not alter the conclusions of the submitted groundwater samples.
- Laboratory Certificate C1G1158 – The laboratory RDLs for several PAH and metals parameters in a number of the submitted groundwater samples were raised due to interferences in the sample matrix (possibly related to elevated sodium concentrations). However, the increased RDLs for several of the metals parameters were below the *Table 3 Standards* and this had no impact on the overall interpretation of the analytical data.
- Laboratory Certificate C1G1158, C1G6182, and C1T8290 – BV Labs indicated that all groundwater sample containers submitted for laboratory analysis of PHCs F2-F4 and PAHs contained visible sediment that was included in the laboratory extraction. Based on Pinchin's field observations, the volume of sediment in the submitted groundwater sample containers was a trace to minor amount. These parameters have a tendency to sorb to soil particles. As such, the reported concentrations of PHCs F2-F4 and PAHs in the submitted groundwater samples may be positively biased.

The results of the QA/QC analyses were reviewed by the project staff at BV Labs and observed to be within the laboratory's internal requirements. Pinchin has also reviewed the laboratory Certificates of Analysis and has confirmed that the results of the analyses are acceptable for the purpose of meeting the data quality objectives of this Phase Two ESA.

The following general comments apply to the laboratory Certificates of Analysis received from BV Labs as part of this Phase Two ESA:

- The temperatures of the submitted soil and groundwater samples upon receipt met the sample preservation requirements of the *Analytical Protocol* of 5 ± 3ºC (i.e., between 2 and 8ºC), with the exception of submission C1G6182, which had an arrival temperature of 9ºC. The groundwater samples were placed in coolers with ice immediately after sample collection and were delivered to BV Labs on the day of sampling. As such, it is possible that there was insufficient time between sample collection and delivery to the laboratory for the soil samples to be cooled to temperatures below 8 ºC. Given these factors, it is the QP's opinion that the elevated sample temperatures reported by BV Labs for these samples did not bias the analytical results.
- The custody seal was present and intact on all submissions.

6.9.7 QA/QC Sample Summary

The overall evaluation of the QA/QC sample results indicates no issues with respect to field collection methods and laboratory performance, and no apparent bias due to ambient conditions at the Phase Two Property and during transportation of the sample containers/samples to and from the analytical laboratory.

As such, it is the QP's opinion that the soil and groundwater analytical data obtained during the Phase Two ESA are representative of actual Site conditions and are appropriate for meeting the objective of assessing whether the soil and groundwater at the Phase Two Property meets the applicable MECP Site Condition Standards.

6.10 Phase Two Conceptual Site Model

The Phase Two Property is triangular in shape, approximately 1.1 hectares (2.6 acre) in size and is located on the northeast corner of the intersection of Gladstone Avenue and Loretta Avenue North in Ottawa, Ontario. A key map showing the Phase Two Property location is provided as Figure 1. The Phase Two Property is bounded by Loretta Avenue North to the west, commercial/light industrial properties and a railway line to the north, a railway line, parkland, and commercial land uses to the east and northeast and Gladstone Avenue and commercial and residential land use to the south. The Site and surrounding land use are illustrated on Figure 2 and 3.

The Phase Two Property is currently occupied by a multi-level commercial building (Site Building A at 951 Gladstone Avenue) and a three-storey commercial building (Site Building B at 145 Loretta Avenue North). At the time of the Phase One ESA Update completed by Pinchin, the Site Buildings were occupied by various commercial tenants, including but not limited to a tattoo parlor, furniture designer, art and music studios, automotive parts sales, brewer, winemaker, IT company, and a gym.

The Client intends to redevelop the Site for mixed residential/commercial use with two buildings. One building is proposed to have two 33 to 35 storey towers, and the other is proposed to have a 30-storey tower. Up to five levels of an underground parking garage (UPG) is proposed, which would extend below all of the buildings and occupy the majority of the Site footprint. Given that this constitutes a change to a more sensitive land use, the filing of an RSC for the Phase Two Property with the MECP is a mandatory requirement of O. Reg. 153/04.

A Phase One CSM was created during the Pinchin Phase One ESA Update in order to provide a detailed visualization of the APECs which could occur on, in, under, or affecting the Phase Two Property. The Phase One CSM is summarized in Figures 1 through 6, which illustrate the following features within the Phase One Study Area, where present:

- Existing buildings and structures.
- Water bodies located in whole or in part within the Phase One Study Area.
- Areas of natural significance located in whole or in part within the Phase One Study Area.
- Drinking water wells located at the Phase One Property.
- Land use of adjacent properties.
- Roads within the Phase One Study Area.
- PCAs within the Phase One Study Area, including the locations of tanks.
- APECs at the Phase One Property.

The Phase One Study Area is depicted on Figure 2. The Phase One Property with a depiction of current buildings, structures, and known underground utilities, is shown on Figure 3.

The following subsections expand on the Phase One CSM with the information collected during the completion of the Phase Two ESA.

6.10.1 Potentially Contaminating Activities

A total of 27 PCAs were identified within the Phase One Study Area, consisting of 13 PCAs at the Phase One Property and 14 PCAs within the Phase One Study Area, outside of the Phase One Property. Groundwater flow within the Phase One Study Area is interpreted to be to the north/northwest towards the Ottawa River. As shown on Figure 5, one of the off-Site PCAs consists of a PFO located at 175 Loretta Avenue North with ASTs located approximately 30 m south of the Phase One Property. In addition, four of the off-Site PCAs are in close proximity to the Phase One Property, including a former

UST located adjacent to the north property boundary, a former railway line located adjacent to the east property boundary, a former ordnance depot located approximately 50 m northeast of the Phase One Property, and a current printing facility located approximately 20 m west of the Phase One Property. Given that these five PCAs are located upgradient and/or are less than 50 m from the Phase One Property, these off-Site PCAs are considered to result in APECs at the Phase One Property. All other PCAs identified within the Phase One Study Area do not represent APECs at the Phase One Property based on inferred groundwater flow direction and/or distance between the PCA and the Phase One Property. Identified on-Site and off-Site PCAs are summarized in Table 2 and their locations are shown on Figure 4 (on-Site PCAs) and Figure 5 (off-Site PCAs).

The potential for PCAs to result in APECs at the Phase One Property was evaluated by considering the source of a contaminant, as well as its mobility under the influence of soil and groundwater conditions present at the Phase One Property and the Phase One Study Area. Highly mobile contaminants situated upgradient of the Site relative to the inferred groundwater flow were considered more likely to result in an APEC at the Site than relatively immobile contaminants situated trans-gradient of the Site. This rationale was used by the QP in selecting PCAs that contribute to APECs at the Phase One Property.

6.10.2 Areas of Potential Environmental Concern

Table 1 summarizes the APECs identified at the Phase Two Property, as well as their respective PCAs, COPCs and the media that could potentially be impacted. APECs at the Phase Two Property are illustrated on Figure 6. The Phase Two ESA included an assessment of soil and groundwater quality within each of the APECs.

The following table summarizes the boreholes, test pits and monitoring wells completed to investigate each of the APECs:

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	COPCs	Media Potentially Impacted
APEC-1 (Fill of unknown quality)	Entire Phase One Property	Item 30 - Importation of Fill Material of Unknown Quality	On-Site	Metals PHCs PAHs	Soil and Groundwater
APEC-2 (One gasoline above ground storage tank [AST])	Northeast portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	COPCs	Media Potentially Impacted
APEC-3 (Former On-Site retail fuel outlet [RFO] with three underground storage tanks [USTs])	Southwest portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-4 (Former On-Site UST west of 145 Loretta Site Building)	West-central portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-5 (Former On-Site AST within east portion of 951 Gladstone Site Building)	Southeast portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-6 (Former Automotive Service Garage in 145 Loretta Site Building)	Central Portion of Phase One Property	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	On-Site	VOCs PHCs PAHs	Soil and Groundwater
APEC-7 (Former Printing Facility within east portion of 951 Gladstone Site Building)	Southeast Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	On-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-8 (Former Rail Spur)	Southeast Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	On-Site	BTEX PHCs PAHs Metals	Soil and Groundwater
APEC-9 (Off-Site UST to the north at 131 Loretta Avenue North)	North Portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	BTEX PHCs	Soil and Groundwater
APEC-10 (Off-Site Rail Tracks at the east adjacent property)	East Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	Off-Site	BTEX PHCs PAHs Metals	Soil and Groundwater

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	COPCs	Media Potentially Impacted
APEC-11 (Former Off-Site Ordnance Depot to the northeast across the rail tracks)	East Portion of Phase One Property	Item 38 - Ordnance Use	Off-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-12 (Off-Site Private Fuel Outlet to the south at 175 Loretta Avenue North)	Southeast Portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	VOCs PHCs Metals	Soil and Groundwater
APEC-13 (Off-Site Printing Facility to the west at 975 Gladstone Avenue)	West Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-14 (On-Site Pad Mounted Transformer west of 145 Loretta Site Building)	Central West Portion of Phase One Property	Item 55 - Transformer Manufacturing, Processing and Use	On-Site	PHCs PCBs	Soil
APEC-15 (Former On-Site UST northwest of 145 Loretta Site Building)	Northwest of Site Building B	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-16 (On-Site Salt Storage in a Quonset building)	Northeast Portion of Phase One Property	Item 48 - Salt Manufacturing, Processing and Bulk Storage	On-Site	EC SAR Sodium Chloride	Soil and Groundwater
APEC-17 (Current/Former On-Site UST northeast of 951 Gladstone Site Building)	Northeast of Site Building A	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	COPCs	Media Potentially Impacted
APEC-18 (One gasoline above ground storage tank [AST])	Northeast portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater

Notes:

As, Sb, Se – arsenic, antimony, selenium; BTEX – benzene, toluene, ethylbenzene, xylenes; Cr (VI) – chromium VI; PCBs – polychlorinated biphenyls; PHCs – petroleum hydrocarbon fractions F1-F4; PAHs – polycyclic aromatic hydrocarbons; VOCs – volatile organic compounds; AST – above ground storage tank; UST – underground storage tank

Figure 4 shows the locations of the APECs.

The Phase Two ESA included an assessment of soil and/or groundwater quality within each of the APECs. In addition, the Phase Two ESA relied on soil and groundwater data obtained during previous subsurface investigations completed by DST in 2017 and Paterson in 2020.

The following table summarizes the soil and groundwater sampling program completed by DST, Paterson and Pinchin to investigate each of the APECs. The following table does not include boreholes and monitoring wells advanced outside of APEC areas for delineation purposes.

APEC	Borehole Advanced	Soil Analysis	Monitoring Well Sampled	Groundwater Analysis
APEC 1	BH101, BH102, BH103, BH104, BH105, BH106, BH107, BHMW108, BHMW112, BH113, BHMW115, BHMW117, BHMW118, BHMW123, BHMW124	PHCs, BTEX, PAHs, Metals	Groundwater is not a medium of concern	NA
	BHMW114	PHCs, BTEX, Metals		
	BH121, BH126	PHCs, BTEX, PAHs		
APEC 2	BH2017-13, BHMW117, BHMW124	PHCs, VOCs, PAHs, Metals	BHMW117	PHCs, VOCs, PAHs
	BH2017-10	PHCs, VOCs, Metals		

APEC	Borehole Advanced	Soil Analysis	Monitoring Well Sampled	Groundwater Analysis
	BH2017-11, BH103	PHCs, BTEX, PAHs, Metals		
APEC 3	BHMW108, BHMW112	PHCs, VOCs, PAHs, Metals	BH2-20, BHMW3, BHMW108, BHMW110, BHMW111, BHMW112	PHCs, VOCs, PAHs
APEC 3	BH2017-01, BH2017-02	PHCs, VOCs, Metals	BH2017-02	PHCs, VOCs, Metals
APEC 3	BH2-20	PHCs, BTEX, PAHs	BHMW109	PHCs, VOCs
APEC 3	BHMW109, BHMW110, BHMW111	PHCs, VOCs, PAHs	BHMW109	PHCs, VOCs
APEC 4	BHMW125	PHCs, VOCs, PAHs	BH5-20, BHMW125	PHCs, VOCs, PAHs
APEC 4	BH5-20	VOCs, PAHs	BH2017-06	PHCs, VOCs, Metals
APEC 4	BH2017-06, BH2017-08	PHCs, VOCs, Metals	BH2017-06	PHCs, VOCs, Metals
APEC 5	BH2017-04	PHCs, VOCs, PAHs, Metals	BH2017-04	PHCs, VOCs, Metals
APEC 6	BH2017-05, BH2017-05A, BH2017-08	PHCs, VOCs, Metals	BH2017-05	VOCs, Metals
APEC 6	BH2017-09	PHCs, VOCs, PAHs, Metals	BH2017-09	PHCs, VOCs, Metals
APEC 7	BH2017-05, BH2017-05A	PHCs, VOCs, Metals	BH2017-04	PHCs, VOCs, Metals
APEC 7	BH2017-03	PHCs, BTEX, Metals	BH2017-05	VOCs, Metals
APEC 7	BH2017-04	PHCs, VOCs, PAHs, Metals	BH2017-05	VOCs, Metals

APEC	Borehole Advanced	Soil Analysis	Monitoring Well Sampled	Groundwater Analysis
APEC 8	BH2017-04	PHCs, VOCs, PAHs, Metals	BH2017-04	PHCs, VOCs, Metals
	BH2017-05	PHCs, VOCs, Metals	BH2017-05	VOCs, Metals
	BH2017-05A	PHCs, VOCs		
APEC 9	BH2017-11	PHCs, BTEX, PAHs, Metals	BH2017-11	PHCs, VOCs
APECs 10 and 11	BH2017-04, BH2017-09, BH2017-13	PHCs, VOCs, PAHs, Metals	BH2017-04, BH2017-09	PHCs, VOCs, Metals
	BH2017-03	PHCs, BTEX, Metals	BH2017-05	VOCs, Metals
	BH2017-05	PHCs, VOCs, Metals		
	BH2017-05A	PHCs, VOCs		
APEC 12	BH2017-04	PHCs, VOCs, PAHs, Metals	BH2017-04	PHCs, VOCs, Metals
	BH2017-03	PHCs, BTEX, Metals		
APEC 13	BH2017-01, BH2017-02, BH2017-06, BH2017-08, BH2017-10	PHCs, VOCs, Metals	BH2017-02, BH2017-06, BH2017-07	PHCs, VOCs, Metals
	BH2017-03	PHCs, BTEX, Metals	BH2017-11	PHCs, VOCs
	BH2017-07, BH2017-11	PHCs, BTEX, PAHs, Metals		
APEC 14	BH121	PHCs, BTEX, PAHs, PCBs	Groundwater is not a medium of concern	NA
APEC 15	BHMW122, BHMW123	PHCs, VOCs, PAHs, Metals	BHMW122, BHMW123	PHCs, VOCs, PAHs

APEC	Borehole Advanced	Soil Analysis	Monitoring Well Sampled	Groundwater Analysis
APEC 16	BHMW124	PHCs, VOCs, PAHs, Metals, EC, SAR	BHMW124	PHCs, VOCs, PAHs, Metals, Sodium, Chloride
APEC 17	BH113, BH126, BHMW127	PHCs, VOCs, PAHs	BHMW127	PHCs, VOCs, PAHs
APEC 18	BH2017-13, BHMW117, BHMW124	PHCs, VOCs, PAHs, Metals	BHMW117	PHCs, VOCs, PAHs
	BH2017-10	PHCs, VOCs, Metals		
	BH2017-11, BH103	PHCs, BTEX, PAHs, Metals		

Notes:

NA – Not applicable as it is not a media of concern for APEC

The APECs and associated boreholes/monitoring wells are shown on Figure 5B.

6.10.3 Subsurface Structures and Utilities

Underground utilities which are known or inferred to be present at the Phase Two Property include the following:

- A hydro duct bank runs parallel to Loretta Avenue North, west of Site Building B and enters a pad-mounted transformer southwest of Site Building B. The depth of the hydro duct bank is unknown; however, is inferred to be located approximately 1 mbgs;
- One natural gas line runs in an east-west direction from the central portion of the Phase Two Property boundary and enters Site Building B along the north elevation. A second gas line runs in an east-west direction from the southwest portion of the Phase Two Property boundary and enters Site Building A along the southwest elevation. The depth of the natural gas lines are unknown; however, is inferred to be located approximately 1 mbgs; and
- Storm water sewers are located at various locations throughout the exterior portion of the Phase Two Property. The storm water sewers range in depth from approximately 2 to 3 mbgs.

Interaction of the groundwater at the Phase Two Property with buried utilities is unlikely given that the water table in most areas of the Phase Two Property is located at approximate depths of between 3 and 6 mbgs and the utilities are assumed to be located at depths less than 3 mbgs. The underground utilities are shown on Figure 5C.

6.10.4 Physical Setting

Based on the work completed as part of this Phase Two ESA, the following subsections provide a summary of the physical setting of the Phase Two Property.

Stratigraphy

The observed stratigraphy at the borehole locations completed for the Phase Two ESA generally consisted of granular fill (sand and gravel with some silty sand, trace silt and trace clay) of unknown origin to a maximum depth of approximately 5.3 mbgs. The native soil stratigraphy underlying the surficial fill materials was generally comprised of sand and gravel, silty clay, and silty clay with trace gravel to a depth ranging from approximately 2.1 mbgs to 8.2 mbgs. Limestone/shale bedrock was encountered underlying the native soil, from a minimum depth of 5.2 mbgs to the maximum borehole completion depth of 20.7 mbgs. The borehole locations are shown on Figure 5C. Cross-sections summarizing the subsurface geological conditions at the time of the Phase Two ESA have been provided as Figures 6A and 6B.

Hydrogeological Characteristics

The overburden and bedrock units are interpreted to represent an overburden aquifer. The groundwater flow direction in the overburden aquifer at the Phase Two Property is inferred to be towards the northwest. The groundwater flow direction in the bedrock aquifer at the Phase Two Property is inferred to be towards the east/northeast (subject to seasonal variability). Refer to the groundwater elevation plans for monitoring wells screened within the overburden (Figures 7Ai, 7Bi and 7Ci) and for wells screened within the bedrock (Figures 7Aii, 7Bii and 7Cii). The July 17, 2017, bedrock groundwater elevations and resultant contours and interpretation of the groundwater flow direction are inconsistent with the remainder of the available dataset and appear to be related to an anomalous groundwater elevation reported at BH2017-5, resulting in a radial flow pattern in the bedrock at the Site. These 2017 bedrock groundwater elevations may have been influenced by the bedrock drilling methodology employed (i.e., diamond core barrel utilizing water as a drilling fluid).

The horizontal hydraulic gradient within the overburden aquifers at the Phase Two Property was calculated to be 0.031 m/m in the overburden unit and 0.006 m/m in the limestone/shale bedrock unit, based on the September 2020 and April 2021 data. Vertical hydraulic gradients calculated using water levels at well pairs screened within the bedrock and overburden units indicated a downward vertical gradient of 0.392 m/m. This horizontal gradient is essentially “flat”, with a significant downward vertical gradient indicative of an aquifer recharging condition. These findings confirm the interpretation that the shallow and deep-water bearing zones within the overburden aquifer have good hydraulic connectivity.

Depth to Bedrock

Bedrock was encountered at several borehole locations across the Phase Two Property at depths ranging from 5.2 mbgs at borehole BHMW116 to 8.2 mbgs at borehole BHMW119 (i.e., greater than 2.0 mbgs at all borehole locations).

Depth to Water Table

The water table at the Phase Two Property is located primarily within the shallow silt/silty sand/sand unit located as well as the limestone/shale bedrock stratigraphy, which represents an overburden aquifer. The depth to the water table across the Phase Two Property ranged from approximately 4.0 to 7.6 mbgs during the July 17, 2017, groundwater sampling event. The depth to the water table across the Phase Two Property ranged from approximately 2.91 to 15.73 mbgs during the June 23, 2021, groundwater sampling event. The depth to the water table across the Phase Two Property ranged from approximately 2.77 to 6.62 mbgs during the November 30, 2021, groundwater sampling event.

The shallowest depth to groundwater measured on-Site was 2.77 mbgs.

Applicability of Section 35 of O. Reg 153/04 – Non-Potable Site Condition Standards

Site Condition Standards for non-potable groundwater use have been applied to the Phase Two Property given that the following conditions specified in Section 35 of O. Reg. 153/04 have been met:

- The Phase Two Property and all properties within 250 metres of the Phase Two Property are supplied by a municipal drinking water system.
- The Phase Two Property is not located within a well head protection area or other designation identified by the City.
- There are no wells located at the Phase Two Property or within the Phase One Study Area that are used or intended for use as a water source for human consumption or agriculture.

The City was advised in writing in a letter submitted by Pinchin dated April 30, 2021 of the intent to apply non-potable Site Condition Standards at the Phase Two Property. Pinchin has not received a response letter from the City and, given that 30 days have elapsed since the notification letter was submitted, Pinchin has concluded that the City has no objection to the use of non-potable Site Condition Standards at the Phase Two Property.

Applicability of Section 41 of O. Reg 153/04 – Environmentally Sensitive Area

Section 41 of O. Reg. 153/04 states that a property is classified as an "environmentally sensitive area" if the property is within an area of natural significance, the property includes or is adjacent to an area of natural significance or part of such an area, the property includes land that is within 30 m of an area of natural significance or part of such an area, the soil at the property has a pH value for surface soil less than 5 or greater than 9 or the soil at the property has a pH value for subsurface soil less than 5 or greater than 11.

The Phase Two Property is not located in or adjacent to, nor does it contain land within 30 m of, an area of natural significance. However, the pH values measured in the submitted soil samples were within the pH range for a sensitive site. As such, the Phase Two Property is an environmentally sensitive area as defined by Section 41 of O. Reg. 153/04.

Applicability of Section 43.1 of O. Reg 153/04 – Shallow Soil Property and Proximity to a Water Body

Section 43.1 of O. Reg. 153/04 states that a property is classified as a "shallow soil property" if one-third or more of the area consists of soil less than 2 m in depth.

Based on a review of the depths to bedrock and the spatial distribution of the borehole locations, the depth to bedrock is interpreted to be greater than 2.0 mbgs over more than one-third of the Phase Two Property. As such, the Phase Two Property is not a shallow soil property as defined by Section 43.1 of O. Reg. 153/04.

As per Section 43.1 of O. Reg. 153/04, the proximity of the Phase Two Property to a water body must be considered when selecting the appropriate Site Condition Standards.

The Phase Two Property does not include all or part of a water body, it is not adjacent to a water body and it does not include land within 30 m of a water body. As such, Site Condition Standards for use within 30 m of a water body were not applied.

Soil Imported to Phase Two Property

No soil was imported to the Phase Two Property during completion of the Phase Two ESA.

Proposed Buildings and Other Structures

The Client intends to redevelop the Site for mixed residential/commercial use with two buildings. One building is proposed to have two 33 to 35 storey towers, and the other is proposed to have a 30 storey tower. Up to five levels of a UPG is proposed, which would extend below all of the buildings and occupy the majority of the Site footprint.

6.10.5 Applicable Site Condition Standards

Based on the grain size analysis of representative soil samples collected during the Phase Two ESA and the observed stratigraphy at the borehole locations, Pinchin concluded that over two-thirds of the overburden at the Phase Two Property is medium and fine-textured as defined by O. Reg. 153/04 and Site Condition Standards for coarse-textured soil were not applied.

Based on the information obtained from the Phase One and Two ESAs, the appropriate Site Condition Standards for the Phase Two Property are:

- "*Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition*", provided in the Ontario Ministry of the Environment, Conservation and Parks (MECP) document entitled, "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*" dated April 15, 2011 (*Table 3 Standards*) for:
  - Coarse-textured soils; and
  - Residential/parkland/institutional property use.

6.10.6 Contaminants Exceeding Applicable Site Condition Standards in Soil

The following COCs were identified in soil:

- **PHCs:** PHCs F1 to F4;
- **VOCs:** benzene, 1,4-dichlorobenzene (1,4-DCB), 1,2-dichloroethane (1,2-DCA), ethylbenzene, hexane, toluene and xylenes;
- **PAHs:** acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, methylnaphthalenes, naphthalene, phenanthrene and pyrene;
- **Metals:** arsenic, barium, cobalt, lead, molybdenum, selenium, vanadium and zinc; and,
- **Salt-related parameters:** electrical conductivity (EC) and sodium adsorption ratio (SAR).

PHCs in Soil

PHCs F1, F2, F3 and/or F4 concentrations reported in soil samples collected from the following sampling locations BH101, BH104, BH105, BH107 (DUP-1), BH110, BH111, BH112, BH113, BH115, BH122 and BH126 at depths ranging between 0.0 and 5.33 mbgs during the Phase Two ESA exceeded the corresponding *Table 3 Standards.* In addition, the PHCs F1, F2 and/or F3 concentrations in the following samples collected at BH2017-1, BH2017-5 and BH2017-7 at depths ranging between 1.2 and 7.2 mbgs during the 2017 DST Phase Two ESA also exceeded the *Table 3 Standards*.

The PHC impacts may be associated with several sources, including the former automotive service operations that occurred on the central portion of the Site (APEC-6); former on-Site USTs located on the west-central portion of the Site (APEC-4), northwest of Site Building B (APEC-15), and northeast of Site Building A (APEC-17); the former RFO located on the southwest portion of the Phase Two Property (APEC-3); and imported fill material of unknown quality (APEC-1). The observed PHC impacts were generally limited in lateral extent to the central, northwest and southwest portions of the Phase Two Property as shown on Figure 8A. Vertical delineation has been achieved at approximately 6.1 mbgs at BH114 at the central portion, and between approximately 4.57 and 7.8 mbgs along the west property boundary. PHCs in soil are presented on Figures 8A through 8C.

BTEX in Soil

The benzene, toluene, ethylbenzene and xylenes (BTEX) concentrations reported in the soil samples collected at boreholes BH108 and BH111 during the Phase Two ESA and BH2017-01 during the 2017 DST Phase Two ESA, at depths ranging between 3.6 to 7.2 mbgs, exceeded the *Table 3 Standards.* These boreholes were situated in the southwest portion of the Phase Two Property.

The BTEX impacts soil in this area may be associated with the former retail fuel outlet (APEC-3) located on the southwest portion of the Phase Two Property. The observed BTEX impacts were limited in lateral extent to the southwest portions of the Phase Two Property. BTEX in soil are presented on Figures 9A through 9C.

VOCs in Soil

The 1,4-DCB and hexane concentrations reported in the soil samples collected at boreholes BH108, BH110 and BH111 during the Phase Two ESA, and BH2017-01 during the 2017 DST Phase Two ESA at depths ranging between 3.8 to 7.2 mbgs exceeded the *Table 3 Standards.* These boreholes were situated in the southwest portion of the Phase Two Property. The 1,4-DCB and hexane impacts in soil in this area may be associated with the former retail fuel outlet (APEC-3) located on the southwest portion of the Phase Two Property, similar to the BTEX impacts in this area. The observed 1,4-DCB and hexane impacts were limited in lateral extent to the southwest portions of the Phase Two Property.

The 1,2-DCA concentrations reported in the soil samples collected at borehole BH2017-05 during the 2017 DST Phase Two ESA at a depth ranging between 1.2 to 1.8 mbgs exceeded the *Table 3 Standards.* This borehole is situated in the west-central portion of the Phase Two Property. The 1,2-DCA impacts in soil in this area may be associated with the former automotive service garage (APEC-6) located on the central portion of the Phase Two Property or a former on-Site UST (APEC-17). The observed 1,2-DCA impacts were limited in lateral extent to the west-central portion of the Phase Two Property. Vertical delineation has been achieved at approximately 3.6 mbgs at BH2017-5 at the west-central portion.

VOCs in soil are presented on Figures 10A through 10C.

PAHs in Soil

PAH concentrations reported in the soil samples collected from the following sampling locations BH101, BH102, BH104, BH105, BH111, BH124 and BH126 at depths ranging between 0.0 and 4.57 mbgs during the Phase Two ESA exceeded the corresponding *Table 3 Standards.* In addition, PAH concentrations in the following samples collected at BH2017-11, BH2-20, BH3-20, and BH5-20 at depths ranging between 0.76 and 4.41 mbgs during the 2017 DST Phase Two ESA or the 2020 Paterson Phase Two ESA also exceeded the *Table 3 Standards*.

The PAH exceedances in soil are located at the southwest, southeast and north portions of the Site, as shown on Figure 11A, and may be associated with the importation of fill materials to the Phase Two Property (APEC-1) and with the former on-Site RFO (APEC-3). Vertical delineation has been achieved between approximately 3.81 and 5.33 mbgs at the north portion, at approximately 4.57 mbgs at the southwest portion, and at approximately 2.4 mbgs at the southeast portion. PAHs in soil are presented on Figures 11A through 11C.

The depth to groundwater across the Phase Two Property ranges between approximately 3 and 6 mbgs, which is below the depth of observed fill materials in these areas. In addition, groundwater samples collected from all wells were below the *Table 3 Standards* for all PAHs. Given the above evidence as well as the low solubility of PAHs, the PAH exceedances in soil are unlikely to impact groundwater at the Site.

Metals in Soil

Metal concentrations reported in the soil samples collected from the following sampling locations BH102, BH104, BH112 and BH124 at depths ranging between 0.75 and 6.10 mbgs during the Phase Two ESA exceeded the corresponding *Table 3 Standards.* In addition, metal concentrations in the following samples collected at BH2017-5, BH2017-8, BH2017-11, BH2017-13, BH3-20, and BH4-20 at depths ranging between 0.76 and 4.2 mbgs during the 2017 DST Phase Two ESA or the 2020 Paterson Phase Two ESA also exceeded the *Table 3 Standards*.

Metals exceedances in soil are widespread laterally across the Phase Two Property, as shown on Figure 12A, and may be associated with the importation of fill materials to the Phase Two Property (APEC-1). Vertical delineation has been achieved between approximately 4.57 and 7.2 mbgs at various areas. Metals in soil are presented on Figures 12A through 12C.

Groundwater samples collected from all wells were below the *Table 3 Standards* for all metals. Given the above evidence as well as the low mobility of most metals in soil at the pH levels identified at the Site, the metal exceedances in soil are unlikely to impact groundwater at the Site.

Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR) in Soil

The EC and SAR concentrations reported in the soil samples collected at borehole BH124 during the Phase Two ESA at a depth of 0 – 0.75 mbgs (SAR) and 5.33 – 6.10 mbgs (EC) exceeded the *Table 3 Standards.* BH124 was situated in the north portion of the Phase Two Property adjacent to the on-Site Quonset hut, as shown on Figure 13. The EC and SAR impacted soil in this area may be associated with the on-Site salt storage (APEC-16) located on the northeast portion of the Phase Two Property.

Fate and Transport of Soil COCs

A number of factors can govern the transport and fate of contaminants in subsurface environments, including dilution, adsorption, advection and dispersion, volatilization, geochemical dynamics, and chemical or biological transformation (microbial attenuation). The soil with concentrations of PHCs and VOCs exceeding the *Table 3 Standards* are located at depths up to approximately 7.6 mbgs, within the groundwater bearing zone, and may serve as a future source of groundwater contaminants; however, PHC and VOC impacts are already present in groundwater. The soil with concentrations of PAHs and metals exceeding the *Table 3 Standards* are generally located at depth above the water table, and are unlikely to impact groundwater at the Site.

In the absence of future remediation, it is expected that geochemical factors, such as microbial attenuation and to a lesser degree, volatilization, would reduce the PHC and VOC concentrations in soil. However, the rate of attenuation cannot be accurately quantified and, would be anticipated to persist for some period of time at the Phase Two Property. The PAH and metal concentrations in soil would likely persist given the strong adsorption of these groups of parameters onto soil.

6.10.7 Contaminants Exceeding Applicable Site Condition Standards in Groundwater

The following COCs were identified in groundwater.

- **PHCs:** PHCs F1 to F4;
- **VOCs:** chloroform, 1,2-DCA, hexane, methyl-tert-butyl ether (MTBE) and xylenes; and,
- **Salt-related parameter:** chloride.

PHCs F1 to F4 in Groundwater

Concentrations of PHCs F1, F2, F3 and/or F4 exceeded the corresponding *Table 3 Standards* in groundwater samples collected at BH2017-2, BH2-20, BHMW3, BHMW108, BHMW110, BHMW115 and BHMW122 at depths ranging from approximately 2.8 to 6.5 mbgs during the current Phase Two ESA and previous Phase Two ESAs.

The PHC F1 and F2 groundwater impacts at monitoring wells BH2017-2, BH2-20, BHMW108 and BHMW110 may be associated with the former on-Site RFO (APEC-3) located on the southwest portion of the Phase Two Property, as shown on Figure 14A. It should be noted that monitoring well BH2-20 initially reported a PHC F1 exceedance, however, was resampled in April 2021 and was below the RDL. Vertical delineation was achieved at the southwest portion of the Site with monitoring well BHMW111 at a depth of approximately 17.6 mbgs. BHMW3 at the southwest portion of the Site also reported PHC F3 and F4 exceedances, but that may be associated with sediment bias in a duplicate sample collected in April 2021, given that the original sample collected at the same time had PHC concentrations below the *Table 3 Standards*.

The PHC F2, F3 and/or F4 groundwater impacts at BHMW115 at the west-central portion of the Site, as shown on Figure 14A, may be associated with the former on-Site automotive service garage (APEC-6) or the former on-Site UST (APEC-17) in this area. Vertical delineation was achieved at the west-central portion of the Site with monitoring well BH1-20 at a depth of approximately 8.1 mbgs.

The PHC F2 groundwater impacts at BHMW122 at the northwest portion of the Site, as shown on Figure 14A, may be associated with the former on-Site fuel oil UST (APEC-15) located northwest of Site Building B. However, subsequent sampling of this monitoring well in November 2021 indicated that PHCs were all non-detect, suggesting that the marginal PHC F2 impact during June 2021 may have been associated with the presence of sediment. Vertical delineation was achieved at the northwest portion of the Site with monitoring well BH5-20 at a depth of approximately 10.4 mbgs.

Lateral delineation of PHC impacts in groundwater was achieved with various monitoring wells. PHCs in groundwater are presented on Figures 14A through 14C.

VOCs in Groundwater

Concentrations of 1,2-DCA exceeded the corresponding *Table 3 Standards* in groundwater samples collected at BH2017-5, BH2017-09, BH1-20, BH4-20, BHMW116, BHMW119 and BHMW120 at depths ranging from approximately 1.8 to 14.9 mbgs during the current Phase Two ESA and previous Phase Two ESAs. The 1,2-DCA exceedances in groundwater are limited to the east property boundary, as shown on Figure 15A, and were found in monitoring wells installed both in the overburden and the limestone/shale bedrock stratigraphy at the Phase Two Property. The 1,2-DCA impacts may be associated with the former on-Site automotive repair garage located on the central portion of the Site (APEC-6), similar to the 1,2-DCA impacts in soil. Vertical delineation of 1,2-DCA impacts in groundwater has not been achieved, and non-standard delineation (NSD) has been applied (refer to Section 1.10).

Concentrations of VOCs including chloroform, 1,2-DCA, hexane, methyl-tert-butyl ether (MTBE), xylenes, and exceeded the corresponding *Table 3 Standards* in groundwater samples collected at BH2017-2, BH2017-5, BH2017-09, BH1-20, BH2-20, BH4-20, BH5-20, BHMW116, BHMW119 and BHMW120 at depths ranging from 3.0 to 14.9 mbgs during the current Phase Two ESA and previous Phase Two ESAs.

Additional VOC impacts in groundwater including chloroform (BH5-20), hexane (BH2017-2 and BH2-20), MTBE (BH2017-5), and xylenes (BH2017-2) were limited in both lateral and vertical extent at the Phase Two Property, as shown on Figure 15A. It should be noted that monitoring well BH2-20 initially reported a hexane exceedance in September 2020, however, was resampled in April 2021 and had non-detect hexane concentrations below the RDL. Furthermore, the chloroform exceedance initially reported at BH5-20 in September 2020 was resampled in April 2021 and had a non-detect chloroform concentration below the RDL, with the initial groundwater sample likely biased due to the use of municipal water during bedrock coring activities. Nevertheless, these additional VOC impacts located at the southwest portion (BH2017-02 and BH2-20), at the northwest portion (BH5-20) and at the west-central portion (BH2017-05) have been laterally delineated by various wells in these areas, as shown on Figure 15A. Vertical delineation has been achieved at approximately 17.9 mbgs at the southwest portion and at approximately 11.8 mbgs at the west-central portion.

VOCs in groundwater are presented on Figures 15A through 15C.

Chloride in Groundwater

Chloride exceedances are limited to BHMW124 at a depth of approximately 3.0 to 6.21 mbgs, as shown on Figure 16, and may be associated with the on-Site salt storage activities (APEC-16) on the northeast portion of the Site.

Fate and Transport of Groundwater COCs

A number of factors can govern the transport and fate of PHCs and VOCs in groundwater, including dilution, adsorption, advection and dispersion, volatilization, geochemical dynamics, and chemical or biological transformation (microbial attenuation).

The distribution in terms of relative concentrations of groundwater impacts in shallow overburden monitoring wells versus the deeper bedrock monitoring wells indicates that natural attenuation of these parameters is likely occurring at the Phase Two Property. Therefore, these concentrations would be expected to decrease over time. However, the rate of attenuation cannot be accurately quantified and, would be anticipated to persist for some period of time at the Phase Two Property.

6.10.8 Meteorological and Climatic Conditions

The groundwater table was observed to fluctuate in elevation (i.e., a maximum difference of 1.2 m) over several rounds of groundwater monitoring completed between September 2020 and November 2021. The temporal groundwater table fluctuations likely reflect seasonal variations in water levels and are expected to have had a minimal effect on contaminant distribution throughout the Phase Two Property. Also, the Phase Two Property is either covered by pavement or by the Site Buildings, which is expected to have limited the influence of meteorological and climatic conditions on contaminant distribution and migration in the subsurface, especially given that the water table is located at depths of approximately 3 to 6 mbgs at the Phase Two Property. As such, it is the QP's opinion that meteorological or climatic conditions have not influenced the distribution or migration of the contaminants at the Phase Two Property.

6.10.9 Soil Vapour Intrusion

Soil vapour intrusion from impacted soil and groundwater may occur in the existing Site Buildings and a future on-Site building or surrounding properties through preferential pathways in the subsurface. Potential preferential vapour pathways may include entrapped floor drains, unsealed sumps, expansion joints and utility conduits. In addition, depressurization of buildings due to temperature differences between indoor and outdoor air, and operation of a building's HVAC systems may temporarily impact vapour intrusion.

6.10.10 Remedial Activities

No remedial activities have been conducted at the Phase Two Property.

6.10.11 Contaminant Exposure Assessment

Potential exposure pathways and receptors were evaluated for the Phase Two Property. The exposure pathways and receptors which are considered are as follows:

- GW1 – The protection of drinking water for humans.
- GW2 – The protection of indoor air sourced from vapours originating from groundwater for humans in an overlying building.
- GW3 – The protection of the aquatic environment in the nearest surface water body.
- S1 – High-frequency, high-intensity, human health direct contact exposure scenario equivalent to that of surface soil at a residential/parkland/institutional or agricultural/other site (children and pregnant women are present).
- S2 – Lower-frequency and lower-intensity, human health direct contact exposure scenario without children present and used at commercial/industrial/community sites or at depth at residential/parkland/institutional or agricultural/other sites.
- S3 – Low-frequency, high-intensity, human health direct contact exposure scenario without children present that is protective of a worker digging in the soil. It is used for subsurface soils at commercial/industrial/community sites.

- S-IA – The protection of indoor air sourced from vapours originating from soil for humans in an overlying building.
- S-OA – The protection of outdoor air sourced from vapours originating from soil, using a volatilization model combined with atmospheric mixing for humans.
- S-Odour – Soil concentrations that will not result in unacceptable odours from direct sniffing of the soil.
- S-GW1 – The protection of drinking water for humans via leaching of soil.
- S-GW3 – The protection of the aquatic environment in the nearest surface water body via leaching of soil.
- Plants and Soil Organisms (P&O) – Soil values protective of direct contact exposure scenario for plants and soil-dwelling organisms.
- Mammals and Birds (M&B) – Soil values protective of direct contact exposure scenario for some representative mammalian and avian species.

In considering the current and proposed land use scenarios and future redevelopment activities (i.e., digging, construction, etc.), all exposure pathway/receptor scenarios are considered applicable, with the exception of:

- S-GW1 and GW1 pathways, as the Phase Two Property is in a non-potable water scenario, rendering the potable groundwater pathways incomplete.

The human health CSM is presented in Figure 17, and the ecological CSM is presented in Figure 18.

6.10.12 Non-Standard Delineation

Efforts to vertically and laterally delineate soil and groundwater impacts at the Phase Two Property did not result in soil and groundwater at all delineation depths and locations meeting the *Table 3 Standards.* Given that an RA is planned for the Phase Two Property, a Non-Standard Delineation (NSD) was considered an acceptable alternative to undertaking additional delineation activities. It is the QP_{ESA}'s opinion that an NSD was suitable given the following:

- The delineation requirements outlined in Section 7 of Schedule E of O. Reg. 153/04 were met except for the requirement that all COCs have been delineated to the *Table 3 Standards*.
- The Phase Two ESA has identified all COCs at the Phase Two Property through the investigation of all APECs.

- The Phase Two ESA investigated known source areas within APECs. Where impacts were identified within these APECs, follow up sampling for delineation purposes showed decreasing concentrations laterally and/or vertically with distance from the source area as follows:
    - As shown on Figure 15A, vertical delineation of 1,2-DCA in groundwater was not achieved. The concentrations of 1,2-DCA in groundwater decreases vertically, with the highest 1,2-DCA concentrations of 8.1 to 22 µg/L reported in groundwater collected from the shallow overburden monitoring well (BH2017-9 and BHMW116 screened between approximately 1.8 and 4.9 mbgs), and the 1,2-DCA concentrations decreasing in the intermediate monitoring wells (BH4-20, BH1-20 and BH2017-05 screened between 7.7 and 11.1 mbgs) and deep monitoring wells (BHMW119 and BHMW120 screened between approximately 11.8 and 14.9 mbgs); and

  As such, it is the QP_{ESA}'s opinion that maximum COC concentrations have been identified at the Phase Two Property.

Based on the above, it is the QP_{ESA}'s opinion that further delineation would not provide any meaningful information regarding the distribution and extent of COCs at the Phase Two Property.

6.10.13 Applicability of Section 49.1 Exemptions

The Phase One Property has a paved parking area located east of the Site Building. According to the Site Representative, salt has historically been applied to the parking area for safety reasons during winter conditions to remove snow and ice. It is the opinion of the QP_{ESA} supervising the Phase One ESA that, although salt-related parameters such as Sodium Adsorption Ratio and electrical conductivity in soil and sodium and chloride in groundwater may be present at concentrations exceeding the applicable Site Condition Standards (i.e., *Table 3 Standards*), the exemption provided in Section 49.1 of O. Reg. 153/04 can be applied. As such, these parameters would be deemed to meet the Site Condition Standards and were not assessed as part of this Phase Two ESA.

7.0 CONCLUSIONS

Pinchin completed a Phase Two ESA at the Phase Two Property in accordance with the requirements stipulated in O. Reg. 153/04 for the purpose of filing an RSC. The RSC is required by the Client in relation to the future redevelopment of the Phase Two Property from commercial to mixed commercial/residential land use.

The Phase Two ESA completed by Pinchin included the advancement of 27 boreholes at the Phase Two Property, 17 of which were completed as groundwater monitoring wells to facilitate the sampling of groundwater, and the resampling of one existing groundwater monitoring well installed by others.

Based on Site-specific information, the applicable regulatory standards for the Phase Two Property were determined to be the *Table 3 Standards* for residential land use and coarse-textured soils. Soil samples were collected from each of the borehole locations and submitted for laboratory analysis of one or more of the following parameters of concern: VOCs, BTEX, PHCs, PAHs, metals and/or inorganic parameters. In addition, groundwater samples were collected from the 17 newly-installed monitoring wells, as well as seven previously-installed monitoring wells, and submitted for laboratory analysis of one or more of the following parameters of concern: VOCs, BTEX, PHCs, PAHs, metals and/or inorganic parameters.

The laboratory results for the soil samples submitted during the Phase Two ESA indicated that all reported concentrations for the parameters analyzed met the corresponding *Table 3 Standards*, with the exception of the following:

- Soil samples submitted for analysis from boreholes BH2017-1, BH2017-5, BHMW108, BHMW110 and BHMW111 collected during the 2017 DST and 2021 Pinchin Phase Two ESAs had concentrations of one or more VOC parameters that exceeded the *Table 3 Standards;*
- Soil samples submitted for analysis from boreholes BH2017-1, BH2017-5A, BH2017-5, BH107, BH108, BH110, BH111, BH112, BH113, BH115, BH112 and BH126 collected during the 2017 DST and 2021 Pinchin Phase Two ESAs had concentrations of one or more PHC parameters that exceeded the *Table 3 Standards;*
- Soil samples submitted for analysis from boreholes BH2017-11, BH2-20, BH3-20, BH5-20, BH101, BH102, BH104, BH105, BH111, BH124 and BH126 collected during the 2017 DST, the 2020 Paterson and 2021 Pinchin Phase Two ESAs had concentrations of one or more PAH parameters that exceeded the *Table 3 Standards;* and
- Soil samples submitted for analysis from borehole BH2017-5, BH2017-8, BH2017-11, BH2017-13, BH3-20, BH4-20, BH5-20, BH102, BH104, BH112, and BH124 collected during the 2017 DST, 2020 Paterson and 2021 Pinchin Phase Two ESAs had concentrations of one or more metal and inorganic parameters that exceeded the *Table 3 Standards.*

The laboratory results for all groundwater samples submitted during the Phase Two ESA indicated that all reported concentrations for the parameters analyzed met the corresponding *Table 3 Standards*, with the exception of the following:

- Groundwater samples submitted for analysis from monitoring wells BH2017-2, BH2017-5, and BH2017-9 collected during the 2017 DST Phase Two ESA had concentrations of one or more VOC parameters that exceeded the *Table 3 Standards;*
- Groundwater samples submitted for analysis from monitoring wells BH1-20, BH2-20, BH4-20, BH5-20 collected during the 2020 Paterson Phase Two ESA had concentrations of one or more VOC parameters that exceeded the *Table 3 Standards;*
- Groundwater samples submitted for analysis from monitoring wells BH1-20, BH4-20, BHMW116, BHMW119, BHMW120 collected during the 2021 Pinchin Phase Two ESA had concentrations of one or more VOC parameters that exceeded the *Table 3 Standards;*
- Groundwater sample submitted for analysis from monitoring well BH2017-2 collected during the 2017 DST Phase Two ESA had concentrations of one or more PHC parameters that exceeded the *Table 3 Standards;*
- Groundwater sample submitted for analysis from monitoring well BH2-20 collected during the 2020 Paterson Phase Two ESA had concentrations of one or more PHC parameters that exceeded the *Table 3 Standards;*
- Groundwater samples submitted for analysis from monitoring wells BHMW3, BHMW108, BHMW110, BHMW115 and BHMW122 collected during the 2021 Pinchin Phase Two ESA had concentrations of one or more PHC parameters that exceeded the *Table 3 Standards; and*
- Groundwater samples submitted for analysis from monitoring well BHMW124 collected during the 2021 Pinchin Phase Two ESA had concentrations of inorganic parameters that exceeded the *Table 3 Standards.*

The maximum reported soil and groundwater concentrations for the parameters analyzed are summarized in Tables 8 and 9, respectively.

With respect to the identified soil and groundwater parameter exceedances summarized above, the completion of a Risk Assessment in accordance with O. Reg. 153/04 will be required to develop PSS for the parameters exceeding the *Table 3 Standards* before an RSC can be filed for the Phase Two Property.

7.1 Signatures

This Phase Two ESA was undertaken under the supervision of Scott Mather, P.Eng., QP_{ESA} in accordance with the requirements of O. Reg. 153/04 to support the filing of an RSC for the Phase Two Property.

7.2 Terms and Limitations

This Phase Two ESA was performed for TIP Gladstone Limited Partnership by its General Partner TIP Gladstone GP Inc. c/o CLV Group Developments Inc. (Client) in order to investigate potential environmental impacts at 949, 949A, 949B, 951, 951A,953, 955B, 957C and 971 Gladstone Avenue and 145 and 155 Loretta Avenue North in Ottawa, Ontario (Site). The term recognized environmental condition means the presence or likely presence of any hazardous substance on a property under conditions that indicate an existing release, past release, or a material threat of a release of a hazardous substance into structures on the property or into the ground, groundwater, or surface water of the property. This Phase Two ESA does not quantify the extent of the current and/or recognized environmental condition or the cost of any remediation.

Conclusions derived are specific to the immediate area of study and cannot be extrapolated extensively away from sample locations. Samples have been analyzed for a limited number of contaminants that are expected to be present at the Site, and the absence of information relating to a specific contaminant does not indicate that it is not present.

No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions on a property. Performance of this Phase Two ESA to the standards established by Pinchin is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions on the Site, and recognizes reasonable limits on time and cost.

This Phase Two ESA was performed in general compliance with currently acceptable practices for environmental site investigations, and specific Client requests, as applicable to this Site.

This report was prepared for the exclusive use of the Client, subject to the terms, conditions and limitations contained within the duly authorized proposal for this project. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

If additional parties require reliance on this report, written authorization from Pinchin will be required. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed. Furthermore, this report should not be construed as legal advice. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

8.0 REFERENCES

The following documents provided information used in this report:

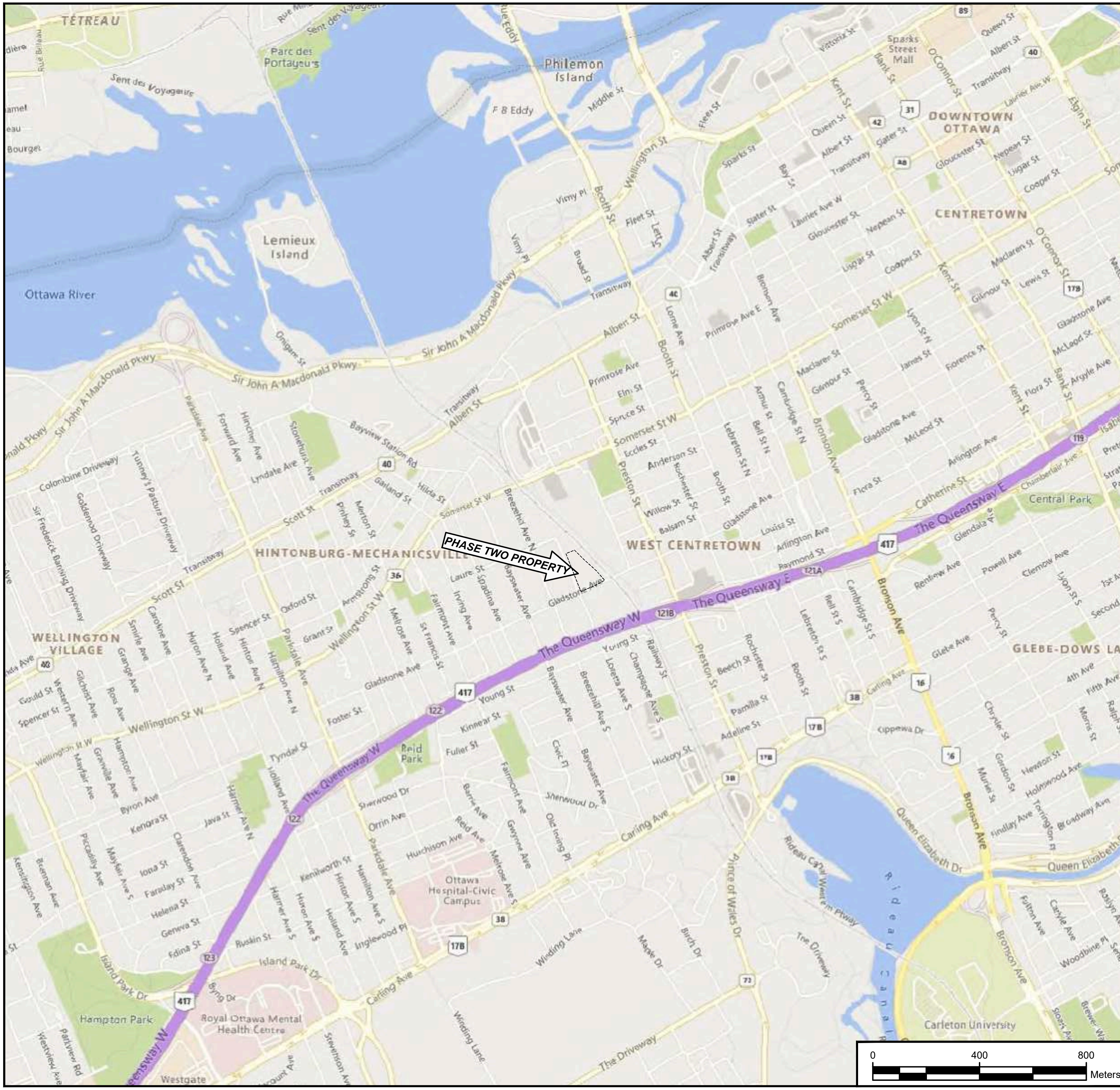
- Report entitled "*Phase One Environmental Site Assessment, 951 Gladstone Avenue & 145 Loretta Avenue North, Ottawa, Ontario*" prepared by DST Consulting Engineers Inc. and dated August 2017.
- Report entitled "*Phase Two Environmental Site Assessment, 951 Gladstone Avenue & 145 Loretta Avenue North, Ottawa, Ontario*" prepared by DST Consulting Engineers Inc. and dated August 2017.
- Report entitled "*Draft Supplemental Phase II Environmental Site Assessment, 951 Gladstone Avenue & 145 Loretta Avenue North, Ottawa, Ontario"* prepared by Paterson Group Inc. and dated October 2020.
- Report entitled "*Phase One Environmental Site Assessment Update, 949, 949A, 949B, 951, 951A, 953, 955A, 955B, 957A, 957C, and 971 Gladstone Avenue and 145 and 155 Lorretta Avenue North, Ottawa Ontario"* prepared by Pinchin Ltd. and dated September 8, 2021.
- Ontario Ministry of the Environment. Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario. December 1996.
- Ontario Ministry of the Environment. Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. March 9, 2004 amended July 1, 2011.

- Ontario Ministry of the Environment. Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. April 15, 2011.
- Province of Ontario. Environmental Protection Act, R.S.O 1990, Chapter E.19.
- Province of Ontario. R.R.O. 1990, Regulation 347, General – Waste Management, as amended by Ontario Regulation 234/11.
- Province of Ontario. Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Act. Last amended by Ontario Regulation 274/20 on July 1, 2020.

285722.003 Phase Two ESA Gladstone & Loretta Ottawa ON CLV

Template: Master Report for RSC Phase Two ESA Report – Impacted Site, EDR, October 16, 2020

9.0 FIGURES AND TABLES



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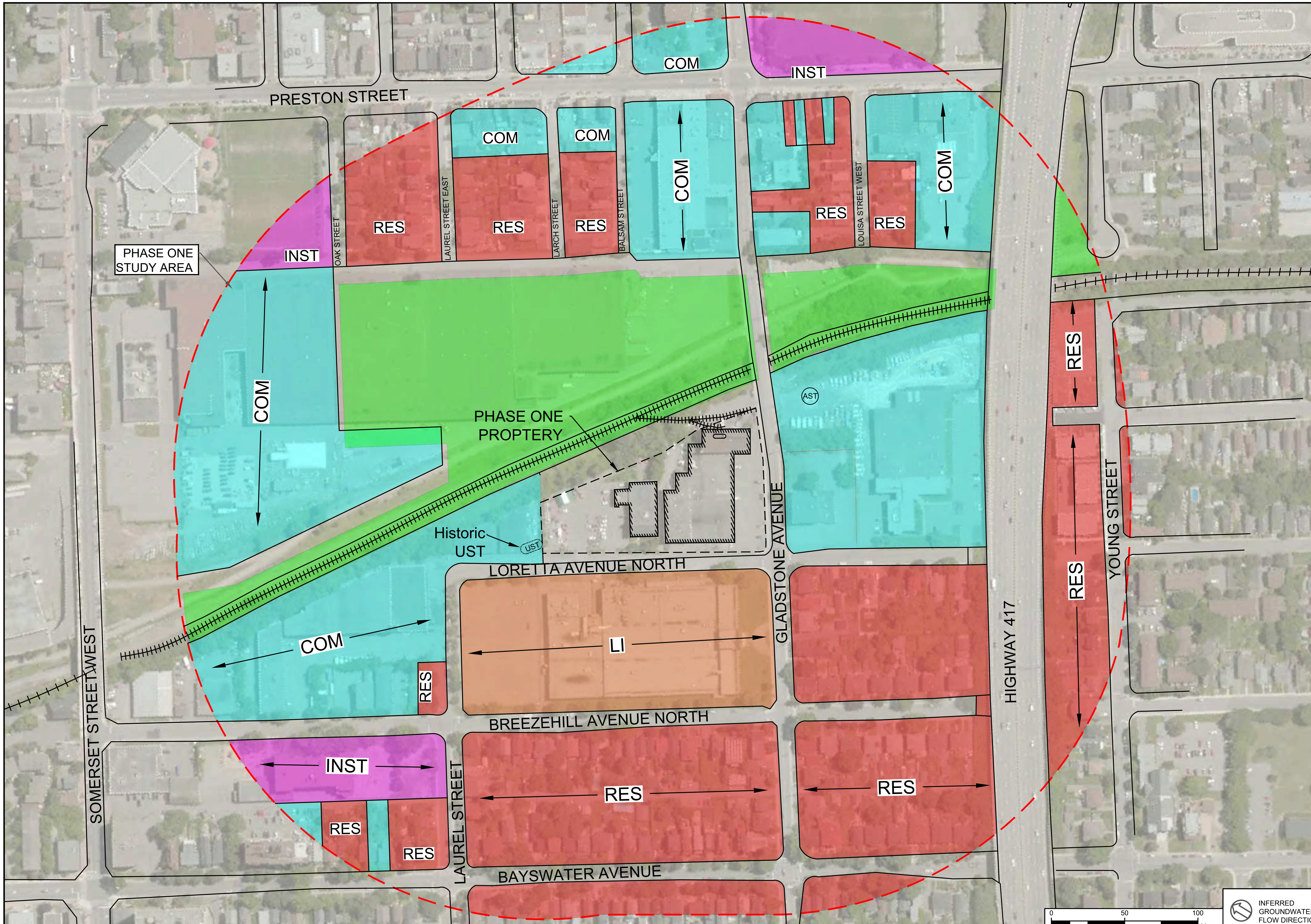
PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: KEY MAP	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 1



LEGEND

- PHASE ONE PROPERTY BOUNDARY
- PHASE ONE STUDY AREA
- SITE BUILDING
- RES RESIDENTIAL
- COM COMMERCIAL
- INST INSTITUTIONAL
- LI LIGHT-INDUSTRIAL
- AST ABOVEGROUND STORAGE TANK
- UST UNDERGROUND STORAGE TANK
- HISTORIC RAILWAY LINE
- RESIDENTIAL
- COMMERCIAL
- INSTITUTIONAL
- LIGHT-INDUSTRIAL
- PARKLAND

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PINCHIN

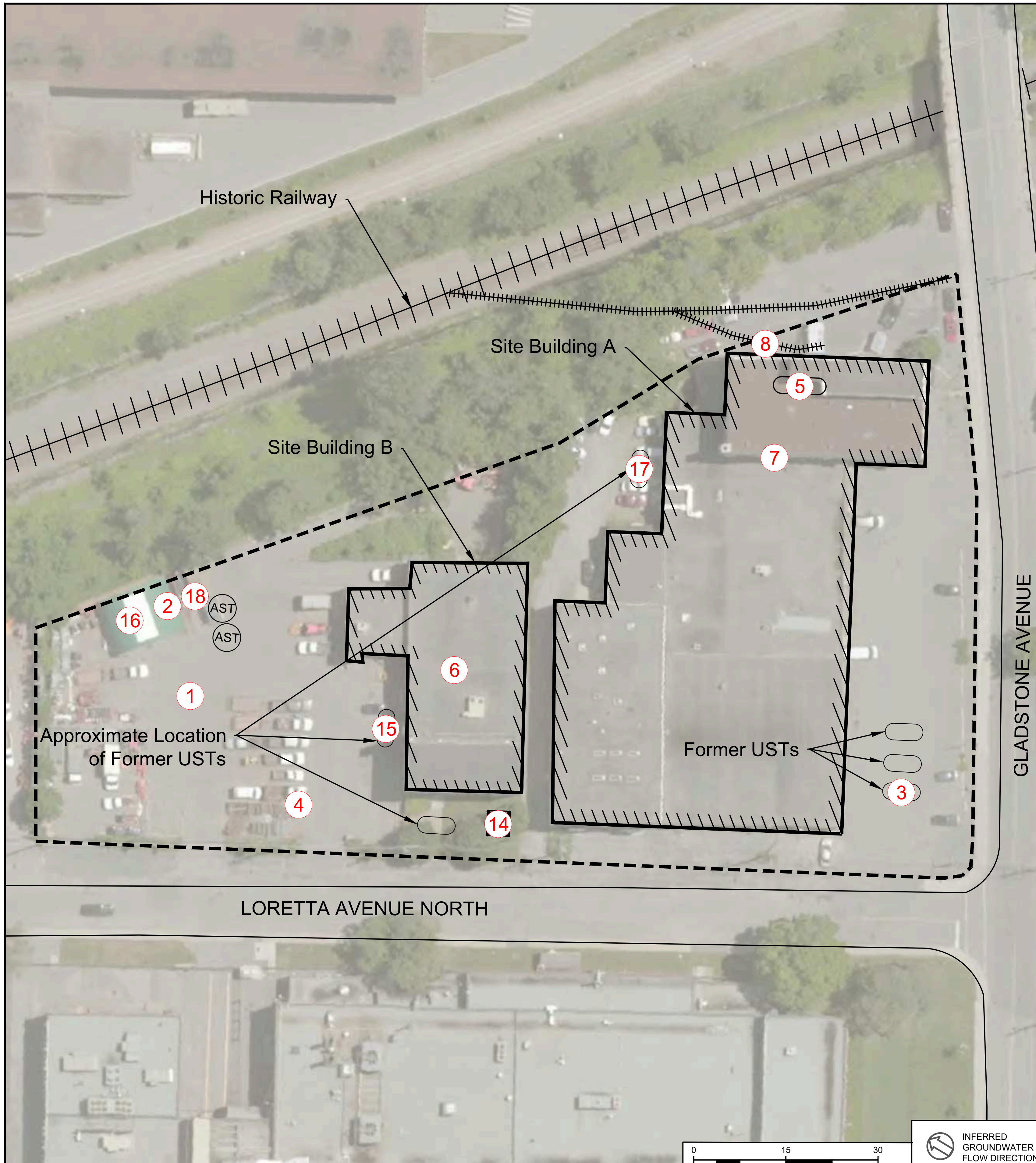
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: PHASE ONE STUDY AREA

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: AM
DATE: OCTOBER 2022	FIGURE NUMBER: 2



PCA Designation	Location of Potentially Contaminating Activity	Potentially Contaminating Activity	Location of PCA (On-Site or Off-Site)	Media Potentially Impacted (Ground Water, Soil and/or Sediment)
PCA-1	Parking areas and access routes located on the north and southwest portions of the Phase One Property	Item 30 - Importation of Fill Material of Unknown Quality	On-Site	Soil
PCA-2	Northeast portion of Phase One Property.	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Soil
PCA-3	Former on-Site RFO on the southwest portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Soil and Groundwater
PCA-4	Former on-Site UST on the west-central portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Soil and Groundwater
PCA-5	Former on-Site AST on the southeast portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Soil
PCA-6	Former on-Site automotive repair facility on the central portion of the Phase One Property	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	On-Site	Soil and Groundwater
PCA-7	Former on-Site printing facility on the southeast portion of the Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	On-Site	Soil and Groundwater
PCA-8	Former on-Site rail spur on the southeast portion of the Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	On-Site	Soil
PCA-14	Pad-mounted transformer on the west-central portion of the Phase One Property	Item 55 - Transformer Manufacturing, Processing and Use	On-Site	Soil
PCA-15	Former on-Site UST on the northwest portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Soil and Groundwater
PCA-16	On-Site bulk salt storage on the northeast portion of the Phase One Property	Item 48 - Salt Manufacturing, Processing and Bulk Storage	On-Site	Soil and Groundwater
PCA-17	Current on-Site UST located northeast of Site Building A	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Soil and Groundwater
PCA-18	One double-walled 2,275-litre steel AST located on the northeast portion of the Phase One Property, adjacent to the south elevation of the on-Site Quonset hut	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Soil and Groundwater

LEGEND

- PHASE ONE PROPERTY BOUNDARY
- SITE BUILDING
- PARKING
- HISTORIC RAILWAY LINE
- APEC — AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- PCA — POTENTIALLY CONTAMINATING ACTIVITY
- # — PCA DOES NOT CONTRIBUTES TO AN APEC
- # — PCA CONTRIBUTES TO AN APEC

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PINCHIN

PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION:
951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME:
POTENTIALLY CONTAMINATING ACTIVITIES (ON-SITE)

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: AM
DATE: OCTOBER 2022	FIGURE NUMBER: 3A

PCA Designation	Location of Potentially Contaminating Activity	Potentially Contaminating Activity	Location of PCA (On-Site or Off-Site)	Media Potentially Impacted (Ground Water, Soil and/or Sediment)
PCA-9	One former UST associated with Hall Fuel Ltd., located on the north adjacent property, 131 Loretta Avenue North	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Groundwater
PCA-10	Former railway tracks located on the east adjacent property (no civic address)	Item 46 - Rail Yards, Tracks and Spurs	Off-Site	Groundwater
PCA-11	No. 26 Central Ordnance Depot historically located 50 m east of the Phase One Property (no civic address)	Item 38 - Ordnance Use	Off-Site	Groundwater
PCA-12	Off-site PFO associated with the City of Ottawa's Traffic Operations, located at 175 Loretta Avenue North	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Groundwater
PCA-13	Off-Site printing facility located at 975 Gladstone Avenue	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	Groundwater
PCA-19	Former RFO located at 284 Preston Street	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Not Applicable
PCA-20	Various historical automotive repair facilities located at 55 Breezehill Avenue North	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	On-Site	Not Applicable
PCA-21	Renters News, an inferred publisher/printing facility, was formerly located at 950 Gladstone Avenue	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	Not Applicable
PCA-22	Barrie Coal & Wood Yard was located at 53 Breezehill Avenue North	Item 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products	Off-Site	Not Applicable
PCA-23	Various metal sign manufacturers were historically located at 35 Laurel Street	Item 34 - Metal Fabrication	Off-Site	Not Applicable
PCA-24	Grant Trading Coal & Wood was located at 75 Breezehill Avenue North	Item 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products	Off-Site	Not Applicable
PCA-25	An automotive repair facility, Grandtech Auto, was historically located at 111 Breezehill Avenue North	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	Off-Site	Not Applicable
PCA-26	Buchanan Lighting, an inferred light bulb manufacturer and retailer, was historically located at 127 Loretta Avenue	Item 29 - Glass Manufacturing	Off-Site	Not Applicable
PCA-27	Mario's Dry Cleaning, an inferred dry-cleaning facility, was historically located at 280 Preston Street	Item 37 - Operation of Dry Cleaning Equipment (where chemicals are used)	Off-Site	Not Applicable

0 80 160 Meters

INFERRED GROUNDWATER FLOW DIRECTION

LEGEND

- PHASE ONE PROPERTY BOUNDARY
- PHASE ONE STUDY AREA
- SITE BUILDING
- RES RESIDENTIAL
- COM COMMERCIAL
- INST INSTITUTIONAL
- CMY COMMUNITY
- APEC AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- PCA POTENTIALLY CONTAMINATING ACTIVITY
- # PCA DOES NOT CONTRIBUTES TO AN APEC
- # PCA CONTRIBUTES TO AN APEC

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PINCHIN

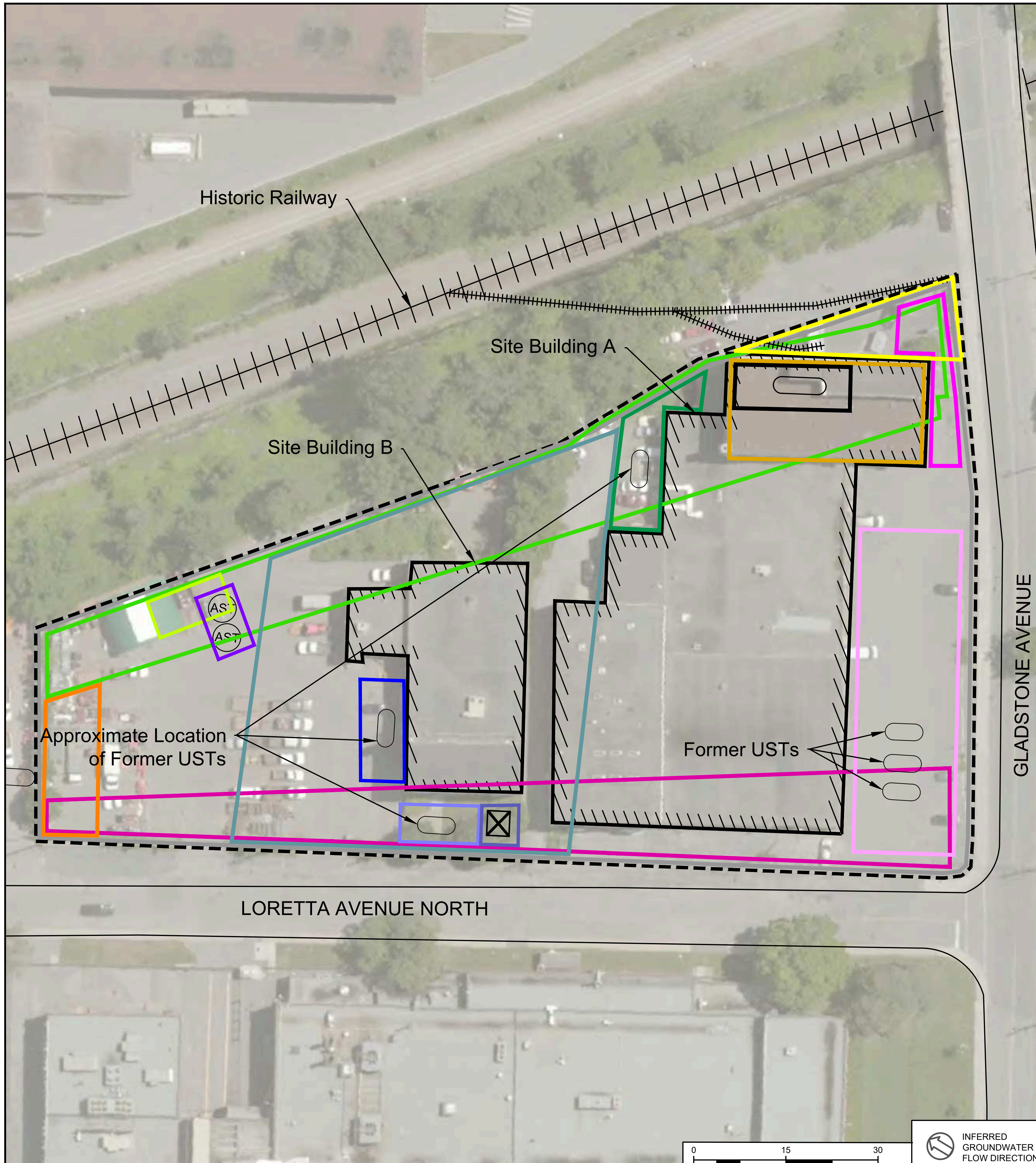
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: POTENTIALLY CONTAMINATING ACTIVITIES (OFF-SITE)

PROJECT NUMBER: 285722.002	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: MA
DATE: OCTOBER 2022	FIGURE NUMBER: 3B



APEC	Location of APEC	PCA	Location of PCA	COPCs	Media
APEC-1 (Fill of unknown quality)	Entire Phase One Property	Item 30 - Importation of Fill Material of Unknown Quality	On-Site	Metals, PHCs, PAHs	Soil and Groundwater
APEC-2 (Two gasoline above ground storage tanks [ASTs])	Northeast portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-3 (Former On-Site retail fuel outlet [RFO] with three underground storage tanks [USTs])	Southwest portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-4 (Former On-Site UST west of 145 Loretta Site Building)	West-central portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-5 (Former On-Site AST within east portion of 951 Gladstone Site Building)	Southeast portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-6 (Former Automotive Service Garage in 145 Loretta Site Building)	Central Portion of Phase One Property	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	On-Site	VOCs, PHCs, PAHs	Soil and Groundwater
APEC-7 (Former Printing Facility within east portion of 951 Gladstone Site Building)	Southeast Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	On-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-8 (Former Rail Spur)	Southeast Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	On-Site	BTEX, PHCs, PAHs, Metals	Soil and Groundwater
APEC-9 (Off-Site UST to the north at 131 Loretta Avenue North)	North Portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	BTEX, PHCs	Soil and Groundwater
APEC-10 (Off-Site Rail Tracks at the east adjacent property)	East Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	Off-Site	BTEX, PHCs, PAHs, Metals	Soil and Groundwater
APEC-11 (Former Off-Site Ordnance Depot to the northeast across the rail tracks)	East Portion of Phase One Property	Item 38 - Ordnance Use	Off-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-12 (Off-Site Private Fuel Outlet to the south at 175 Loretta Avenue North)	Southeast Portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	VOCs, PHCs, Metals	Soil and Groundwater
APEC-13 (Off-Site Printing Facility to the west at 975 Gladstone Avenue)	West Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-14 (On-Site Pad Mounted Transformer west of 145 Loretta Site Building)	Central West Portion of Phase One Property	Item 55 - Transformer Manufacturing, Processing and Use	On-Site	PHCs, PCBs	Soil
APEC-15 (Former On-Site UST northwest of 145 Loretta Site Building)	Northwest of Site Building B	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-16 (On-Site Salt Storage in a Quonset building)	Northeast Portion of Phase One Property	Item 48 - Salt Manufacturing, Processing and Bulk Storage	On-Site	EC, SAR, Sodium, Chloride	Soil and Groundwater
APEC-17 (Current/Former On-Site UST northeast of 951 Gladstone Site Building)	Northeast of Site Building A	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater

LEGEND

- PHASE ONE PROPERTY BOUNDARY
- SITE BUILDING
- (P) PARKING
- HISTORIC RAILWAY LINE
- APEC AREA OF POTENTIALLY ENVIRONMENTAL CONCERN
- APEC-1
- APEC-2
- APEC-3
- APEC-4
- APEC-5
- APEC-6
- APEC-7
- APEC-8
- APEC-9
- APEC-10
- APEC-11
- APEC-12
- APEC-13
- APEC-14
- APEC-15
- APEC-16
- APEC-17

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

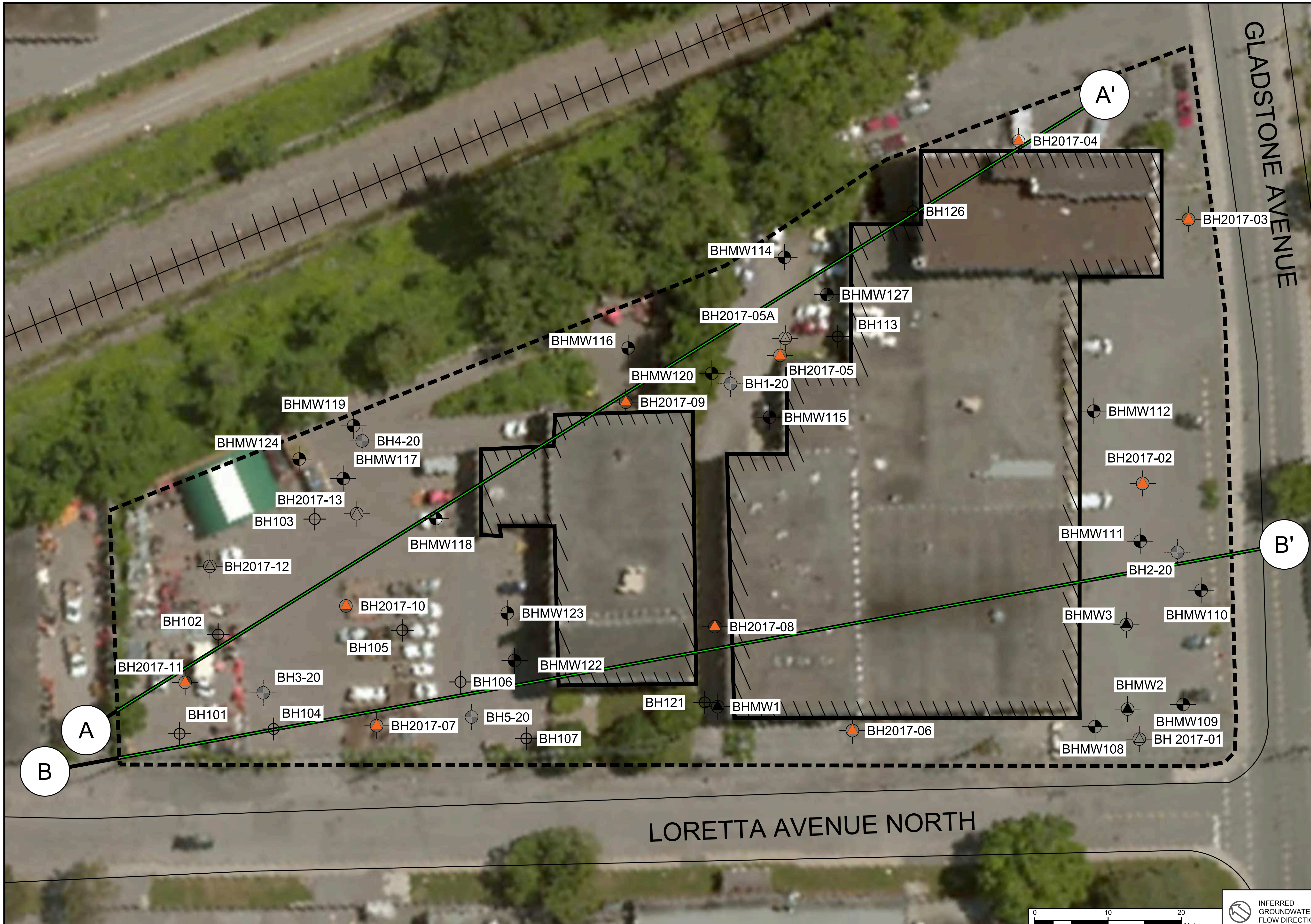
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION:
951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME:
AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: AM
DATE: OCTOBER 2022	FIGURE NUMBER: 4



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- MONITORING WELL (DST 2009)
- MONITORING WELL (DST 2017)
- BOREHOLE (DST 2017)
- BOREHOLE, MONITORING WELL (Patersongroup 2020)
- CROSS SECTIONS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

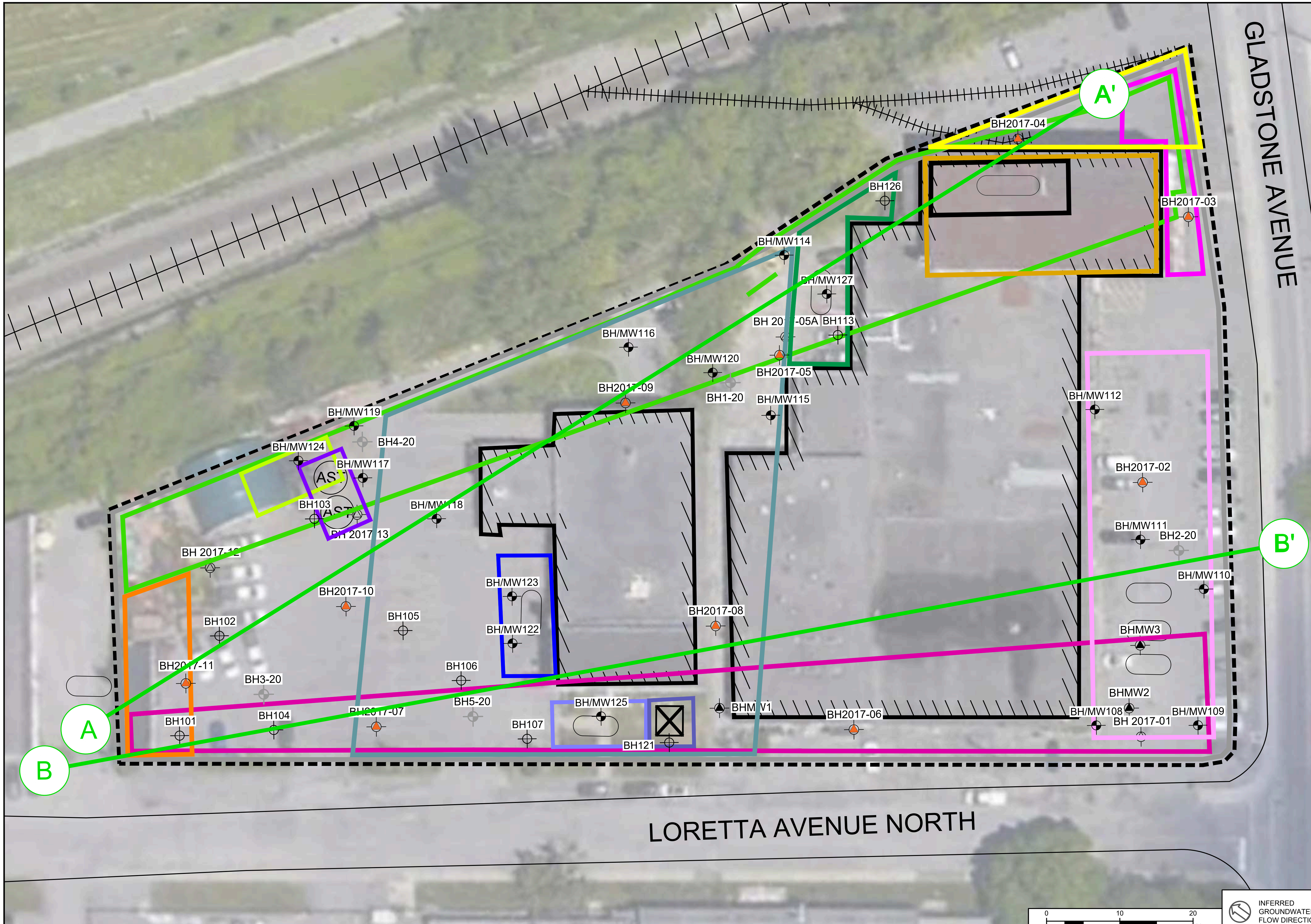
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: BOREHOLE AND MONITORING WELL LOCATION PLAN WITH CURRENT LAYOUT

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 5A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- APEC AREA OF POTENTIALLY ENVIRONMENTAL CONCERN
- CROSS SECTIONS

APEC-1	APEC-12
APEC-2	APEC-13
APEC-3	APEC-14
APEC-4	APEC-15
APEC-5	APEC-16
APEC-6	APEC-17
APEC-7	
APEC-8	
APEC-9	
APEC-10	
APEC-11	

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

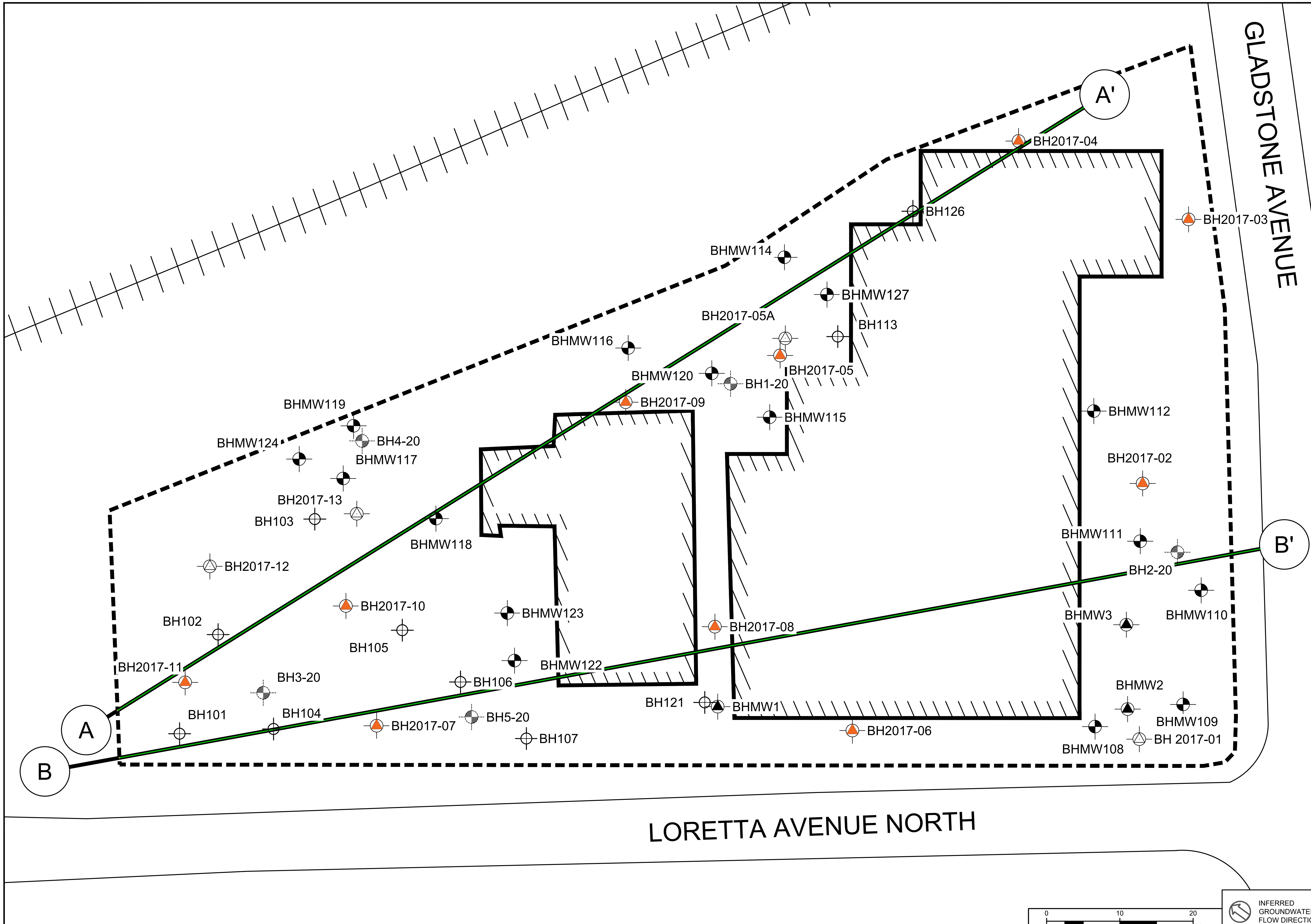
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: BOREHOLE AND MONITORING WELL LOCATION PLAN WITH AREAS OF POTENTIAL CONCERN

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 5B



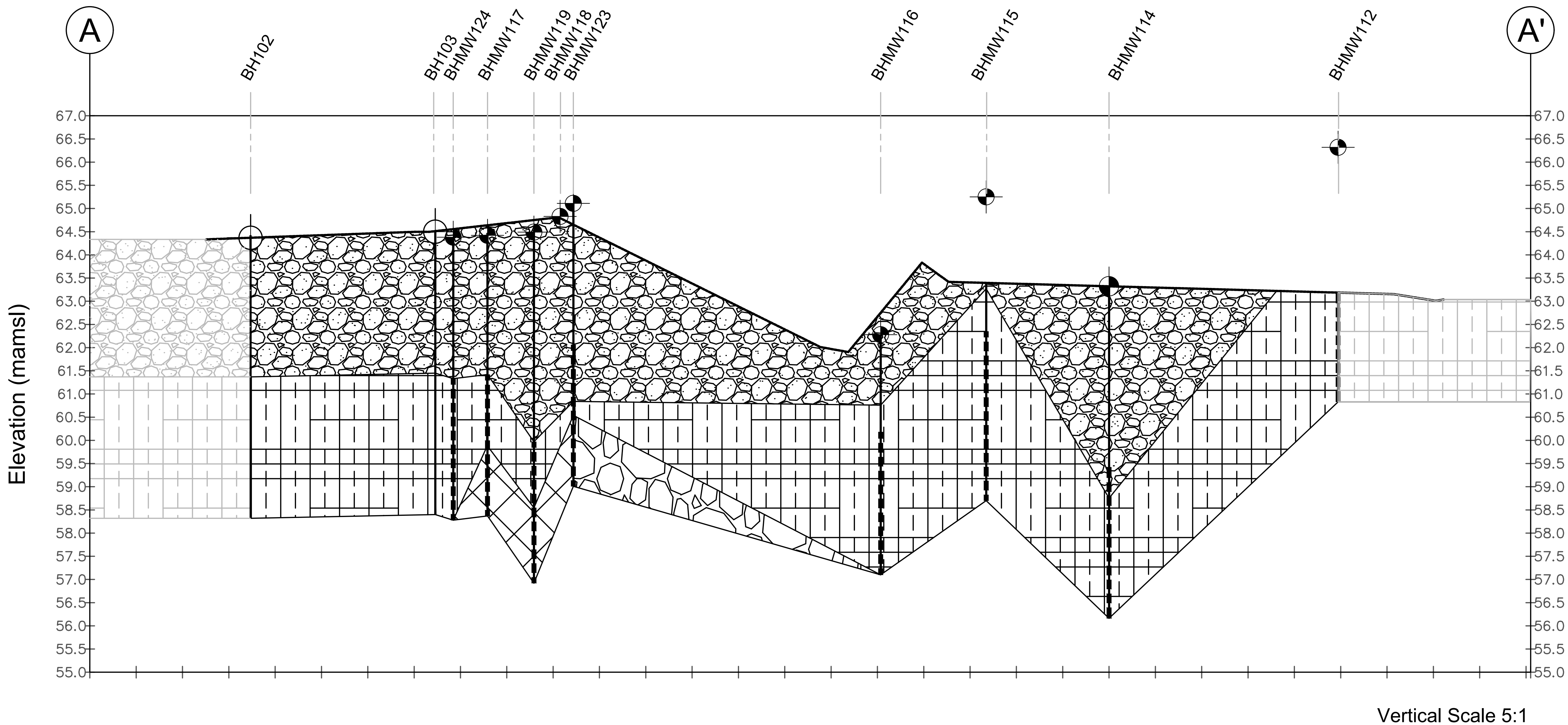
LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- MONITORING WELL (DST 2009)
- MONITORING WELL (DST 2017)
- BOREHOLE (DST 2017)
- BOREHOLE, MONITORING WELL (Patersongroup 2020)
- CROSS SECTIONS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: BOREHOLE AND MONITORING WELL LOCATION PLAN	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 5C



Cross Section

A-A'

LEGEND

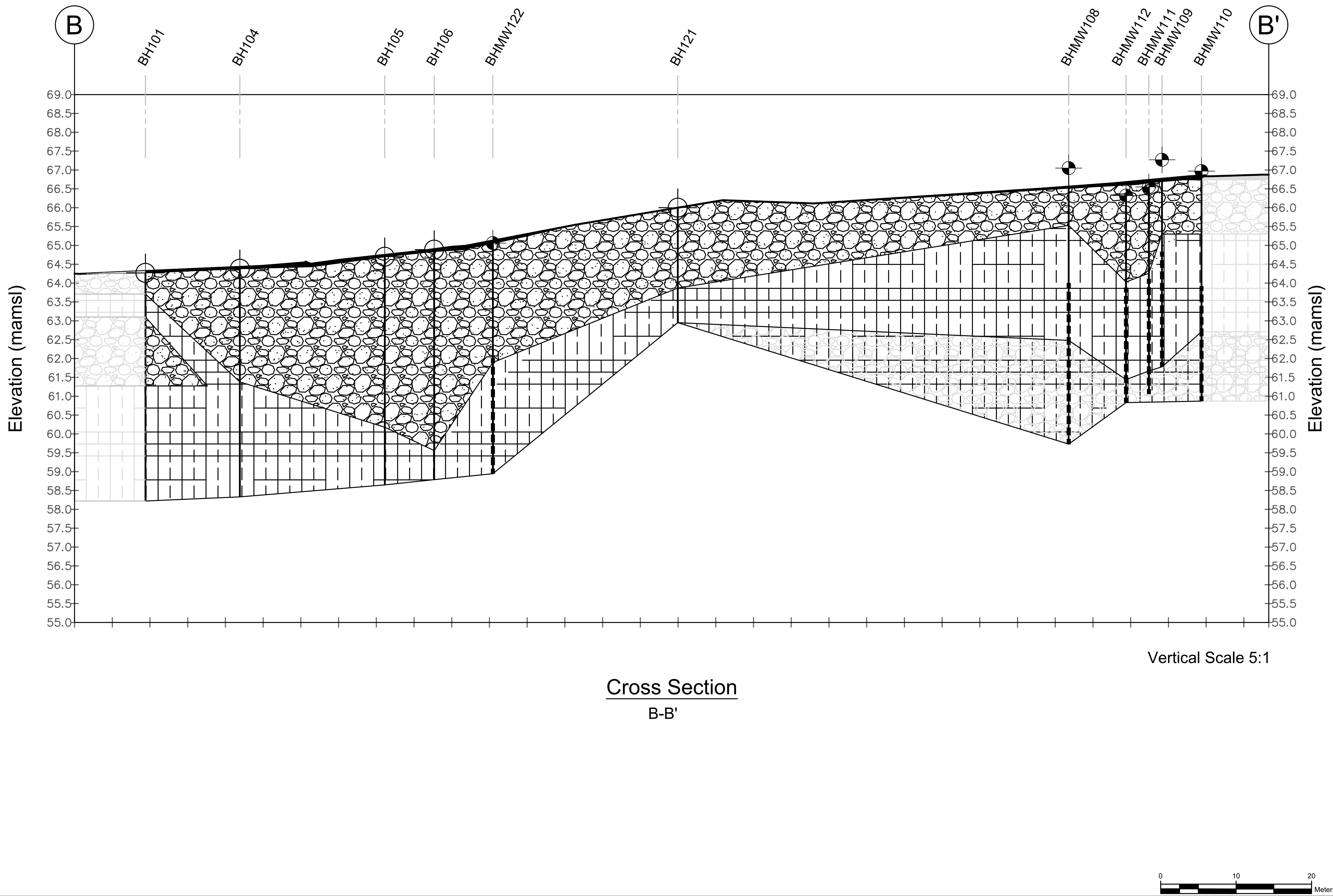
- GROUND SURFACE
- CLAY
- GRAVEL
- SAND
- SILT
- NO DATA
- BOULDERS
- SCREEN
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

0 10 20 Meters

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION A-A'	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 6A



Cross Section

B-B'

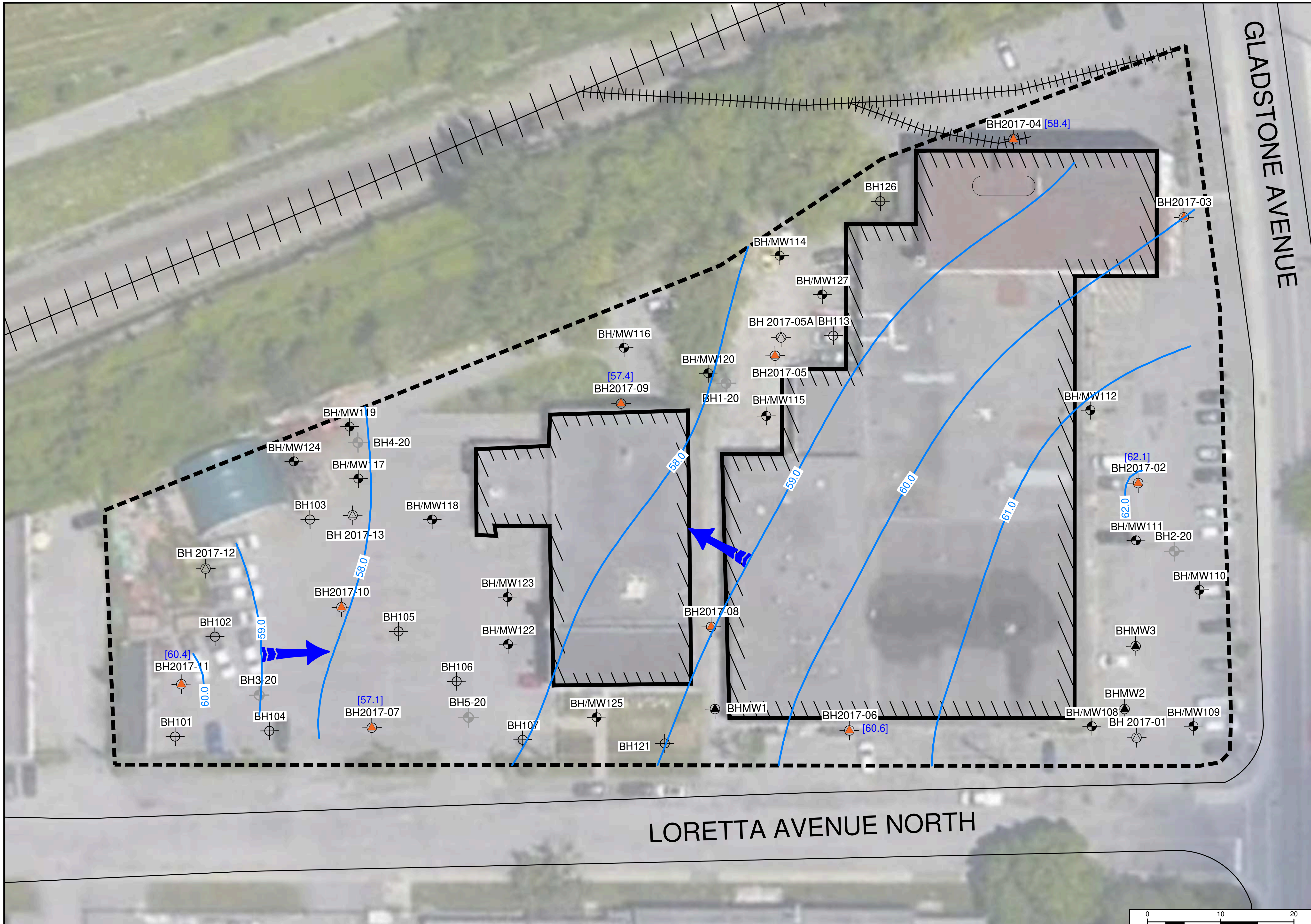
LEGEND

- GROUND SURFACE
- CLAY
- GRAVEL
- SAND
- SILT
- NO DATA
- SCREEN
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION B-B'	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 6B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

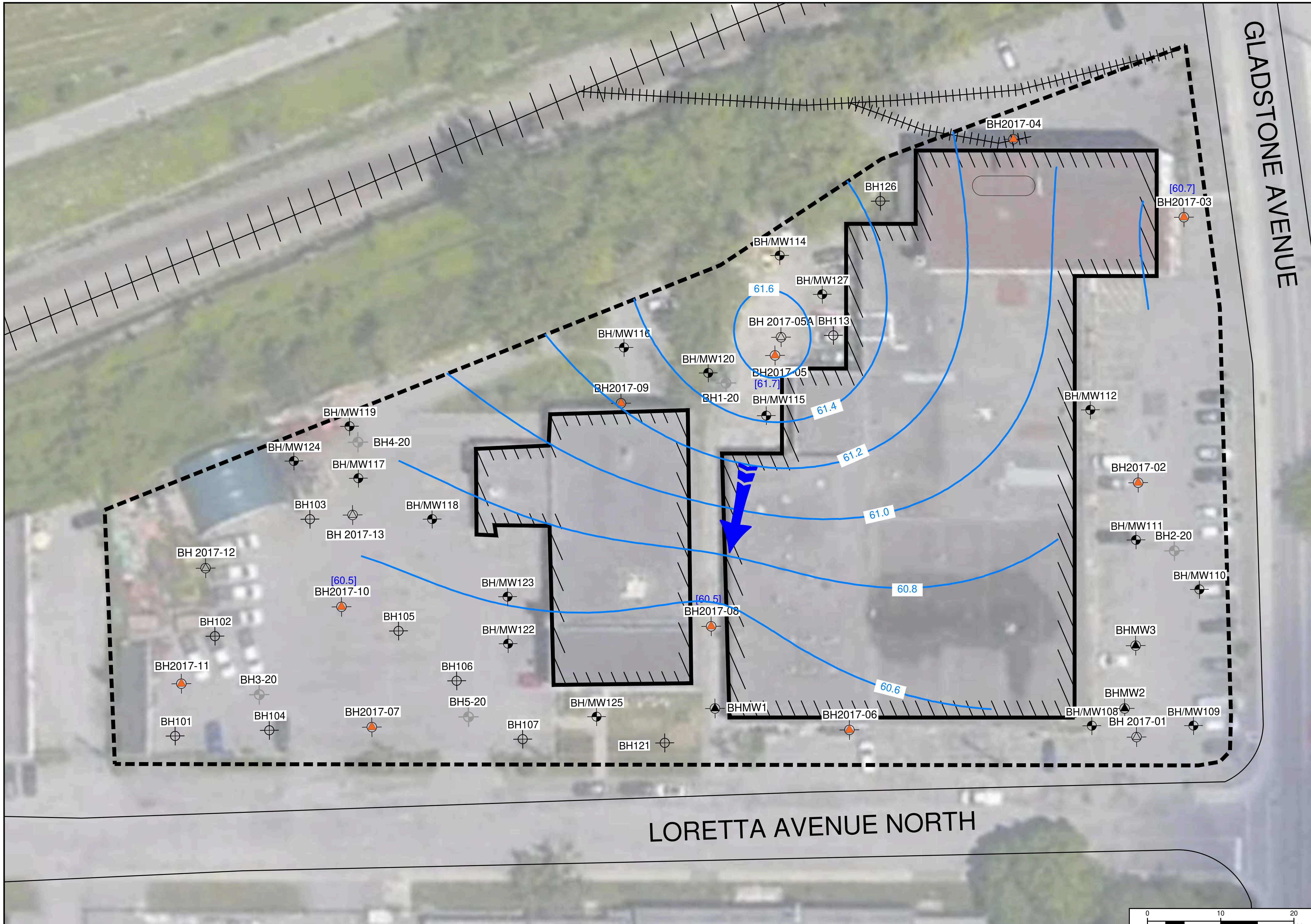
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: GROUNDWATER ELEVATION PLAN IN OVERBURDEN WELLS (JULY 17, 2017)

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 7Ai



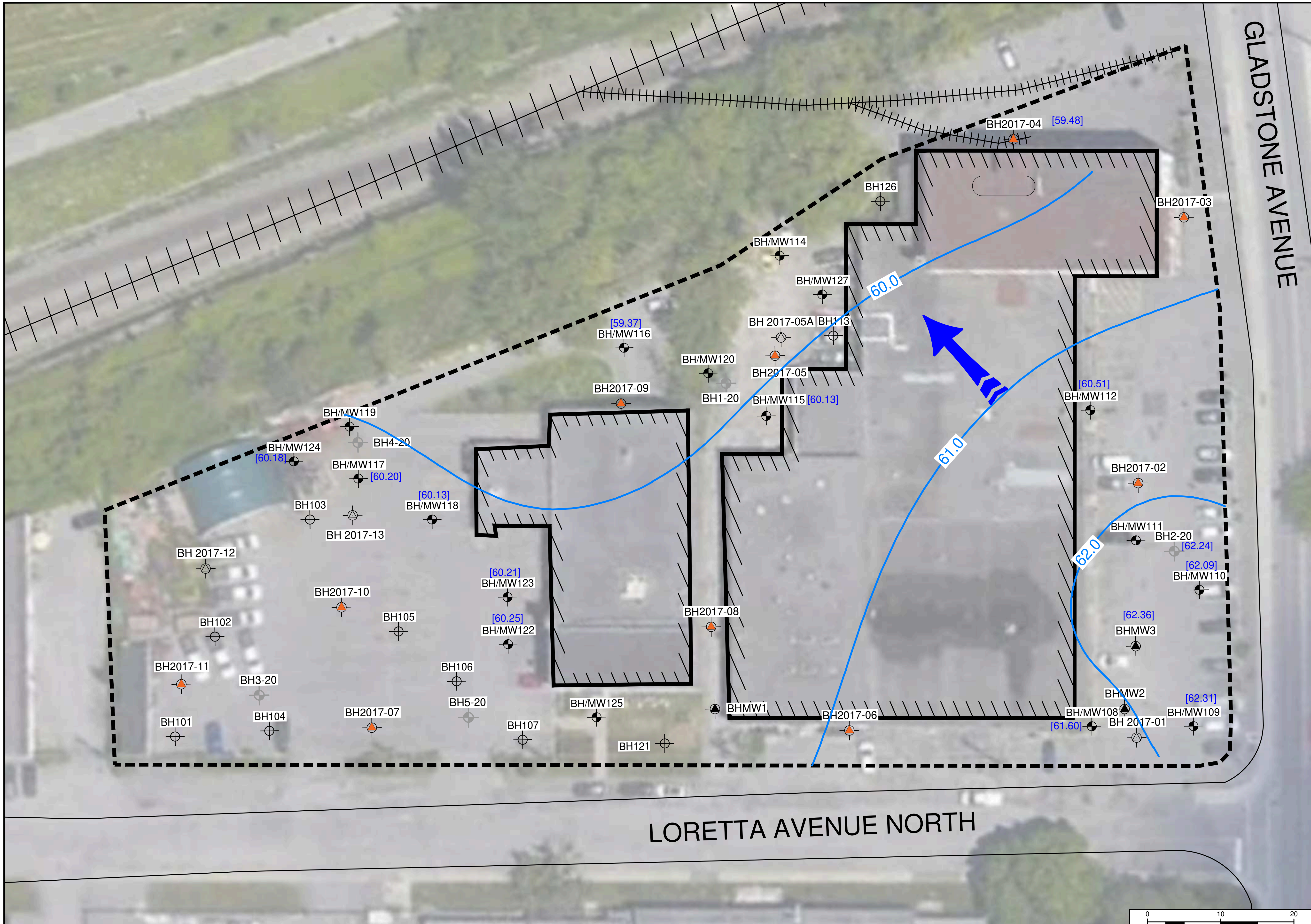
LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: GROUNDWATER ELEVATION PLAN IN BEDROCK WELLS (JULY 17, 2017)	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 7Aii



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

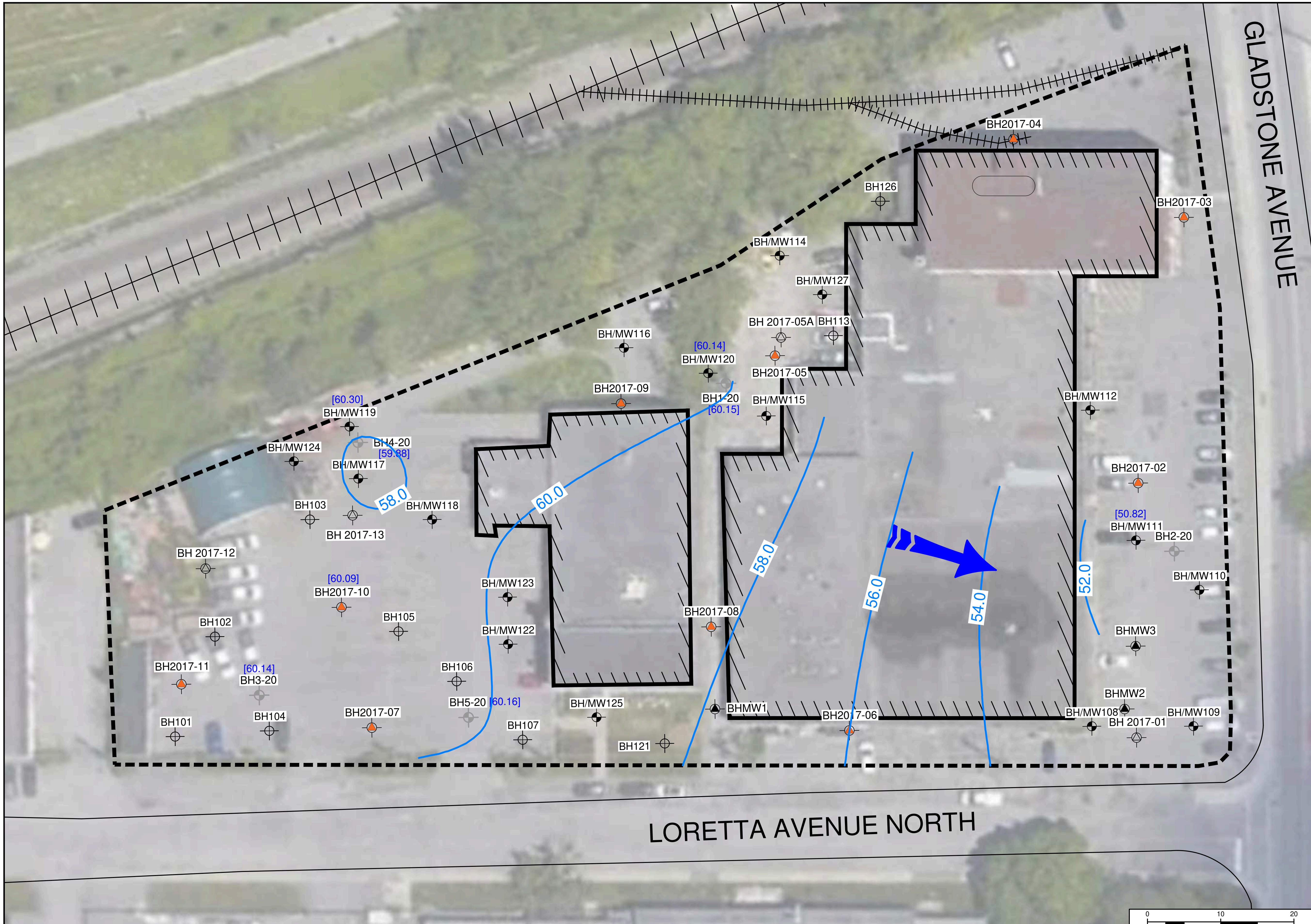
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: GROUNDWATER ELEVATION PLAN IN OVERBURDEN WELLS (JUNE 23, 2021)

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 7Bi



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

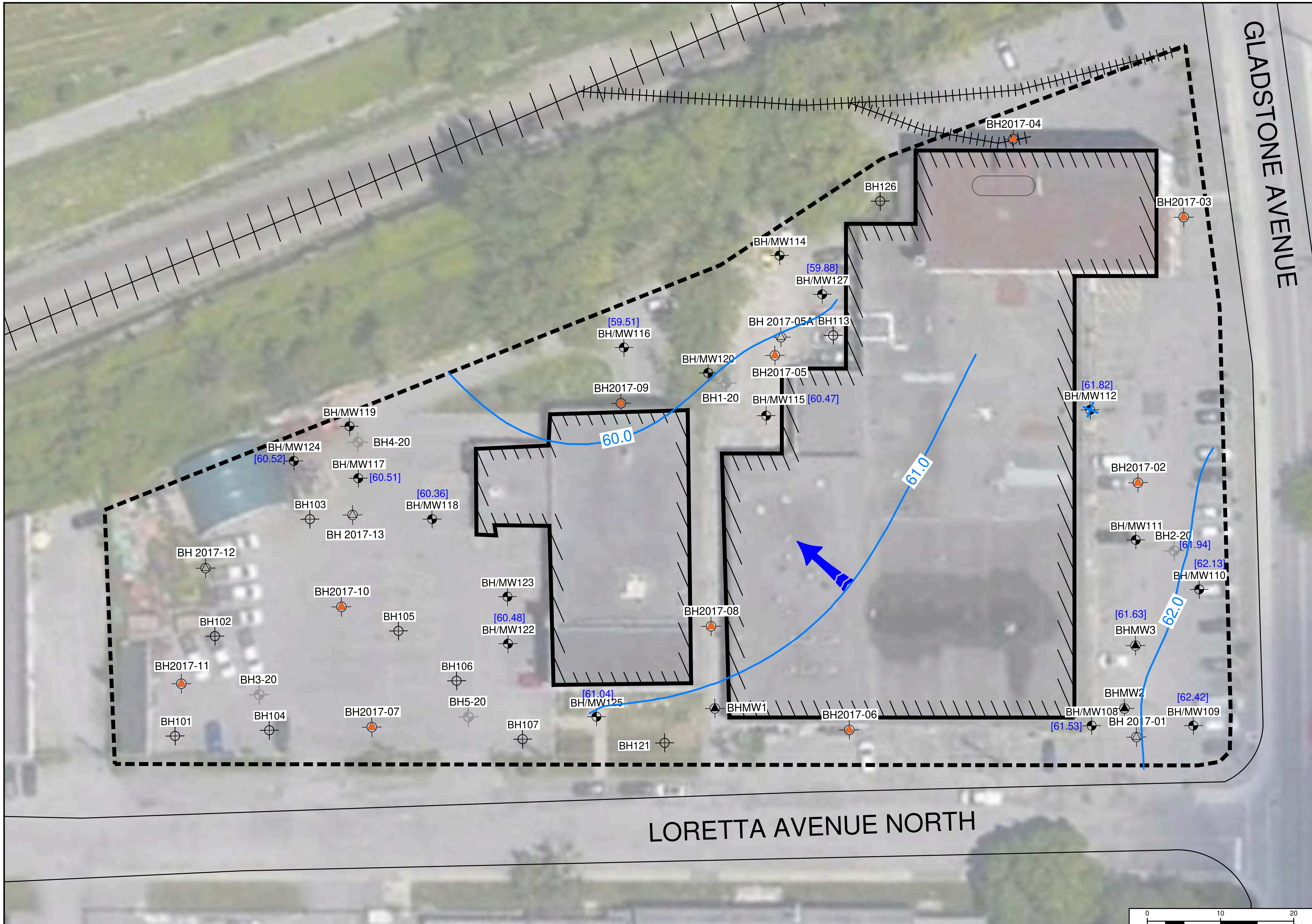
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: GROUNDWATER ELEVATION PLAN IN BEDROCK WELLS (JUNE 23, 2021)

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 7Bii



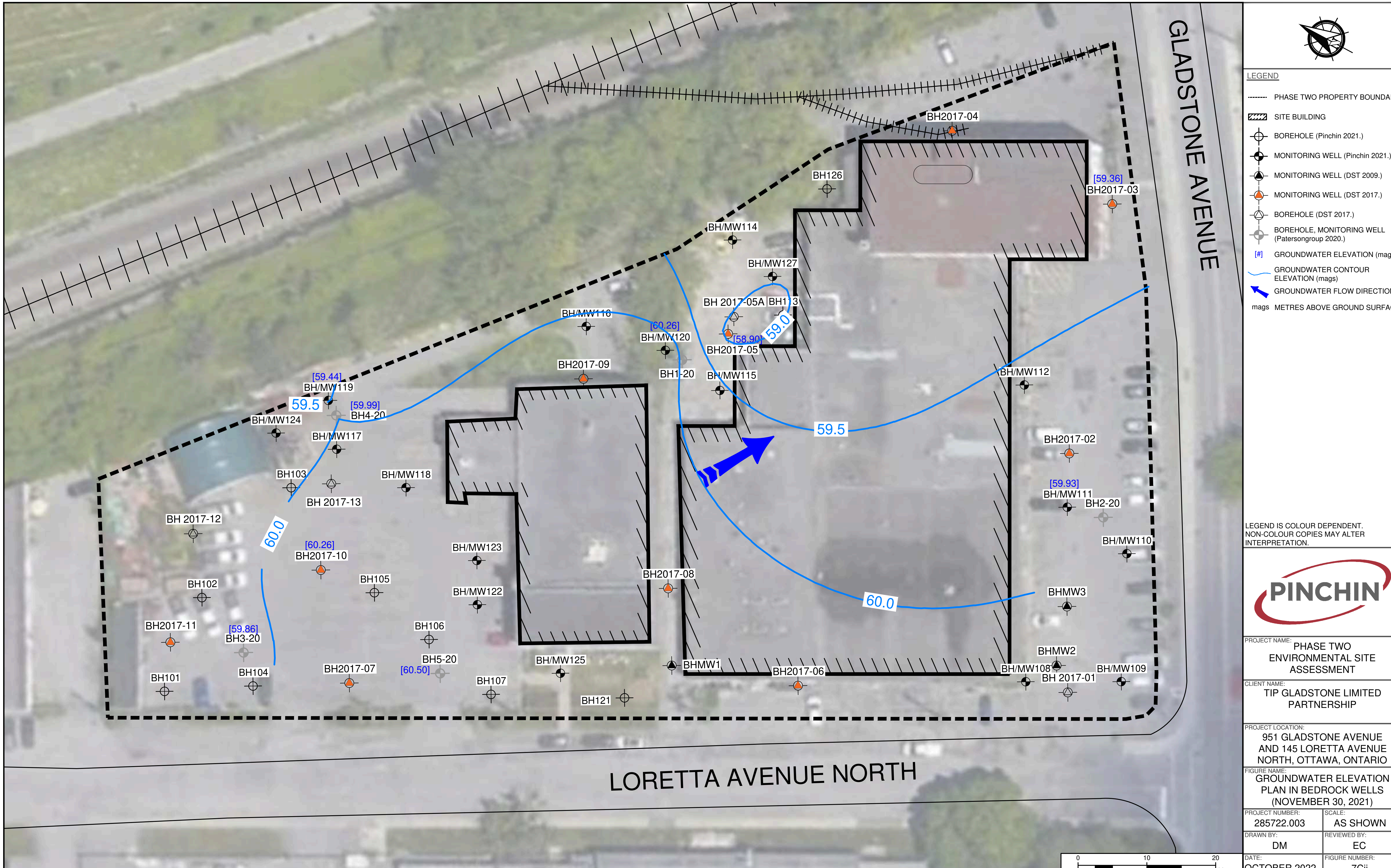
LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

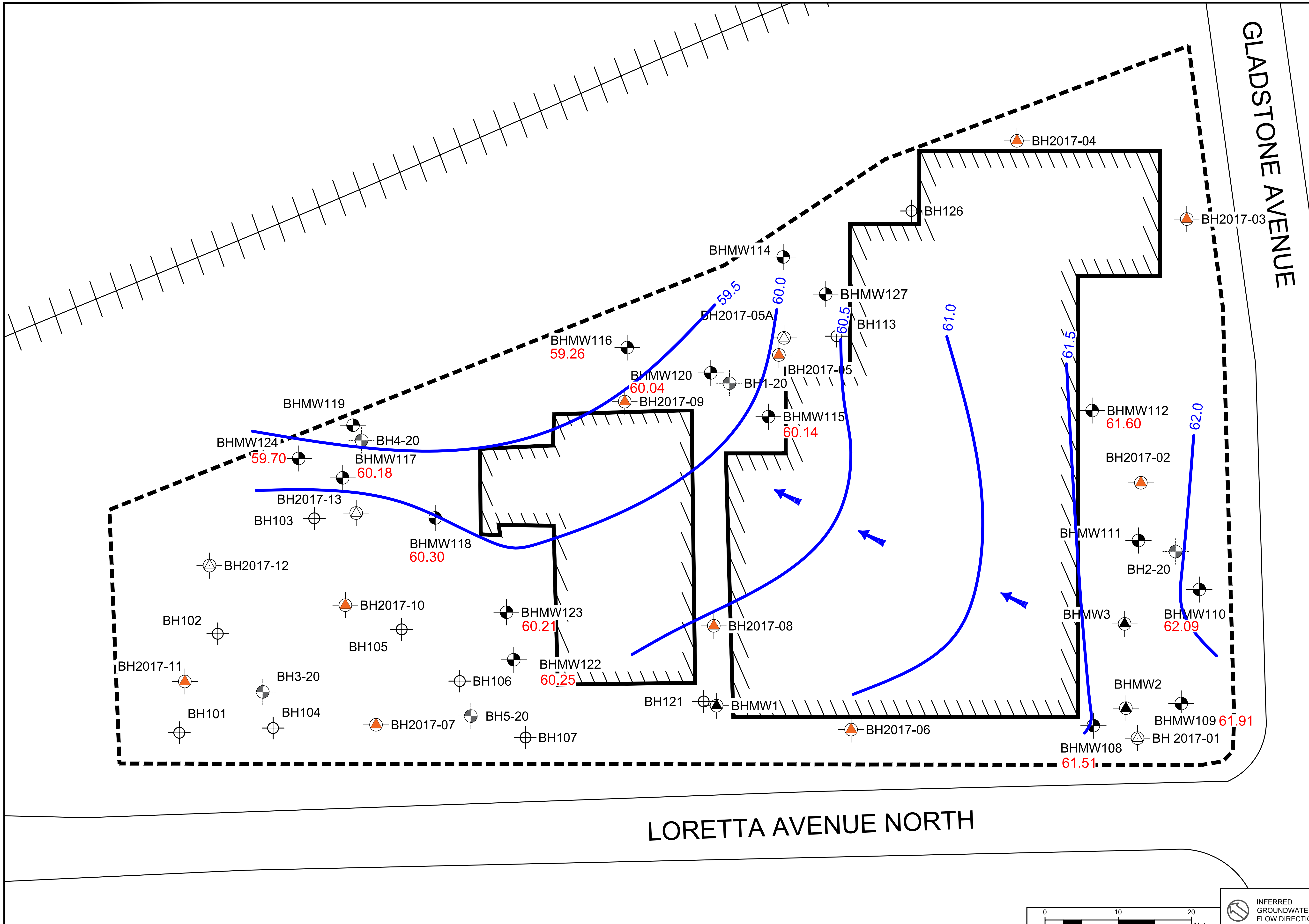
LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: GROUNDWATER ELEVATION PLAN IN OVERBURDEN WELLS (NOVEMBER 30, 2021)	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 7Ci



GLADSTONE AVENUE
LORETTA AVENUE NORTH
BH2017-04
BH126
[59.36]
BH2017-03
BH/MW114
BH/MW127
BH 2017-05A
BH1 3
59.0
[58.90]
BH2017-05
[60.26]
BH/MW120
BH/MW116
BH1-20
BH/MW115
BH2017-09
BH/MW112
[59.44]
BH/MW119
59.5
[59.99]
BH4-20
BH/MW124
BH/MW117
BH103
BH 2017-13
BH/MW118
BH2017-02
[59.93]
BH/MW111
BH2-20
BH 2017-12
60.0
[60.26]
BH2017-10
BH/MW123
BH/MW110
BH102
BH105
BH2017-08
BH/MW122
BHMW3
BH2017-11
[59.86]
BH3-20
BH106
BHMW2
BH5-20
[60.50]
BH/MW125
BHMW1
BH2017-06
BH/MW108
BH 2017-01
BH/MW109
BH101
BH104
BH2017-07
BH107
BH121
0
10
20
Meters
LEGEND
PHASE TWO PROPERTY BOUNDARY
SITE BUILDING
BOREHOLE (Pinchin 2021.)
MONITORING WELL (Pinchin 2021.)
MONITORING WELL (DST 2009.)
MONITORING WELL (DST 2017.)
BOREHOLE (DST 2017.)
BOREHOLE, MONITORING WELL (Patersongroup 2020.)
[#] GROUNDWATER ELEVATION (mags)
GROUNDWATER CONTOUR ELEVATION (mags)
GROUNDWATER FLOW DIRECTION
mags METRES ABOVE GROUND SURFACE
LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.
PINCHIN
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO
FIGURE NAME: GROUNDWATER ELEVATION PLAN IN BEDROCK WELLS (NOVEMBER 30, 2021)
PROJECT NUMBER: 285722.003
SCALE: AS SHOWN
DRAWN BY: DM
REVIEWED BY: EC
DATE: OCTOBER 2022
FIGURE NUMBER: 7Cii



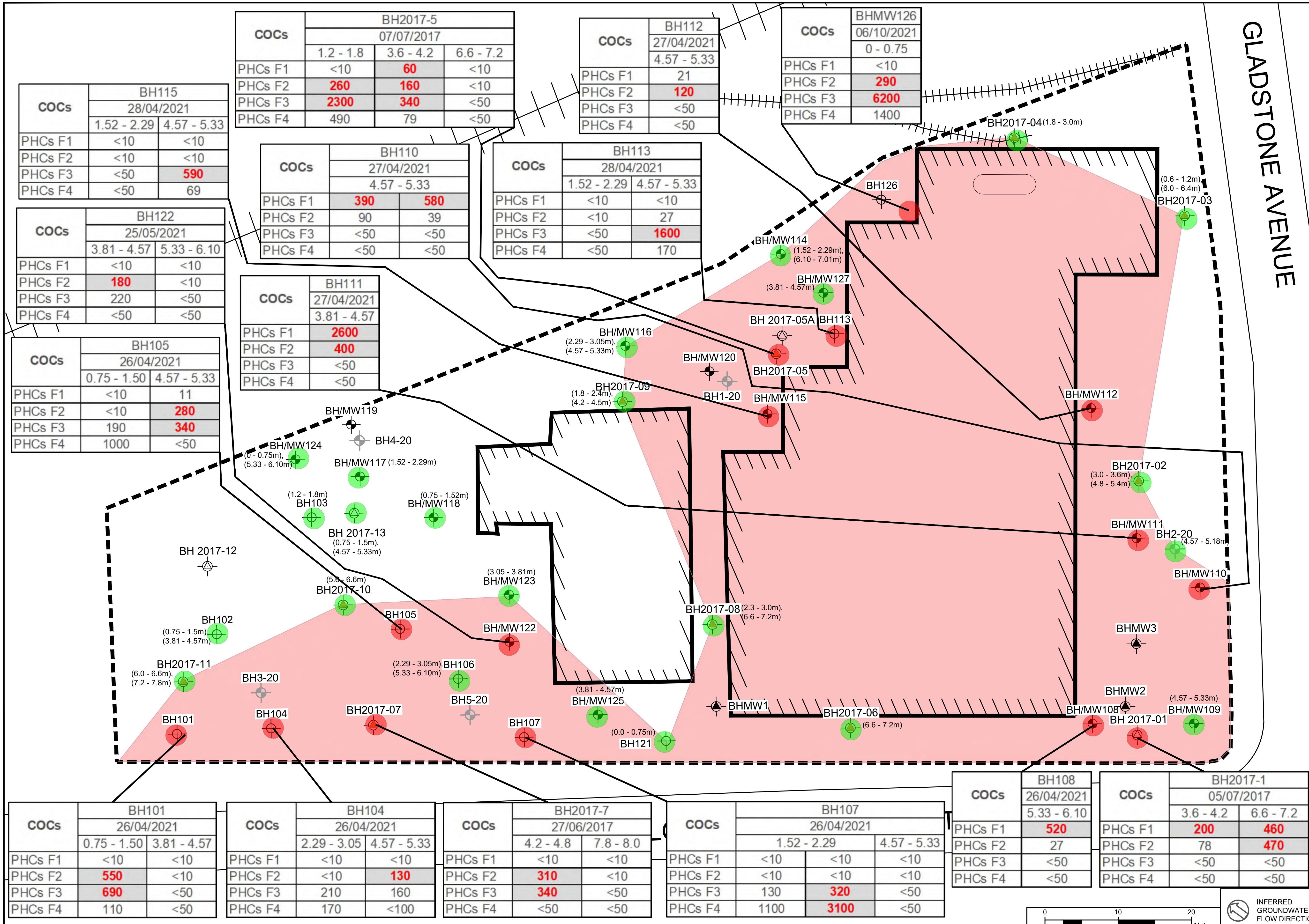
LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- 100.0 BOREHOLE ELEVATION (masl.)
- 100.0 GROUNDWATER CONTOUR ELEVATION (masl.)
- GROUNDWATER CONTOUR LINES
- GROUNDWATER FLOW DIRECTION

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: GROUNDWATER ELEVATION PLAN (JUNE 2021)	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 7D



COCs	BH2017-5 07/07/2017 1.2 - 1.8	3.6 - 4.2	6.6 - 7.2
PHCs F1	<10	**60**	<10
PHCs F2	**260**	**160**	<10
PHCs F3	**2300**	**340**	<50
PHCs F4	490	79	<50

COCs	BH112 27/04/2021 4.57 - 5.33
PHCs F1	21
PHCs F2	**120**
PHCs F3	<50
PHCs F4	<50

COCs	BHMW126 06/10/2021 0 - 0.75
PHCs F1	<10
PHCs F2	**290**
PHCs F3	**6200**
PHCs F4	1400

COCs	BH115 28/04/2021 1.52 - 2.29	4.57 - 5.33
PHCs F1	<10	<10
PHCs F2	<10	<10
PHCs F3	<50	**590**
PHCs F4	<50	69

COCs	BH110 27/04/2021 4.57 - 5.33	
PHCs F1	**390**	**580**
PHCs F2	90	39
PHCs F3	<50	<50
PHCs F4	<50	<50

COCs	BH113 28/04/2021 1.52 - 2.29	4.57 - 5.33
PHCs F1	<10	<10
PHCs F2	<10	27
PHCs F3	<50	**1600**
PHCs F4	<50	170

COCs	BH122 25/05/2021 3.81 - 4.57	5.33 - 6.10
PHCs F1	<10	<10
PHCs F2	**180**	<10
PHCs F3	220	<50
PHCs F4	<50	<50

COCs	BH111 27/04/2021 3.81 - 4.57
PHCs F1	**2600**
PHCs F2	**400**
PHCs F3	<50
PHCs F4	<50

COCs	BH105 26/04/2021 0.75 - 1.50	4.57 - 5.33
PHCs F1	<10	11
PHCs F2	<10	**280**
PHCs F3	190	**340**
PHCs F4	1000	<50

COCs	BH101 26/04/2021 0.75 - 1.50	3.81 - 4.57
PHCs F1	<10	<10
PHCs F2	**550**	<10
PHCs F3	**690**	<50
PHCs F4	110	<50

COCs	BH104 26/04/2021 2.29 - 3.05	4.57 - 5.33
PHCs F1	<10	<10
PHCs F2	<10	**130**
PHCs F3	210	160
PHCs F4	170	<100

COCs	BH2017-7 27/06/2017 4.2 - 4.8	7.8 - 8.0
PHCs F1	<10	<10
PHCs F2	**310**	<10
PHCs F3	**340**	<50
PHCs F4	<50	<50

COCs	BH107 26/04/2021 1.52 - 2.29		4.57 - 5.33
PHCs F1	<10	<10	<10
PHCs F2	<10	<10	<10
PHCs F3	130	**320**	<50
PHCs F4	1100	**3100**	<50

COCs	BH108 26/04/2021 5.33 - 6.10
PHCs F1	**520**
PHCs F2	27
PHCs F3	<50
PHCs F4	<50

COCs	BH2017-1 05/07/2017 3.6 - 4.2	6.6 - 7.2
PHCs F1	**200**	**460**
PHCs F2	78	**470**
PHCs F3	<50	<50
PHCs F4	<50	<50

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppm PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

	MECP Table 3 SCS
PHCs F1	55
PHCs F2	98
PHCs F3	300
PHCs F4	2800

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

Parameter	BOLD Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

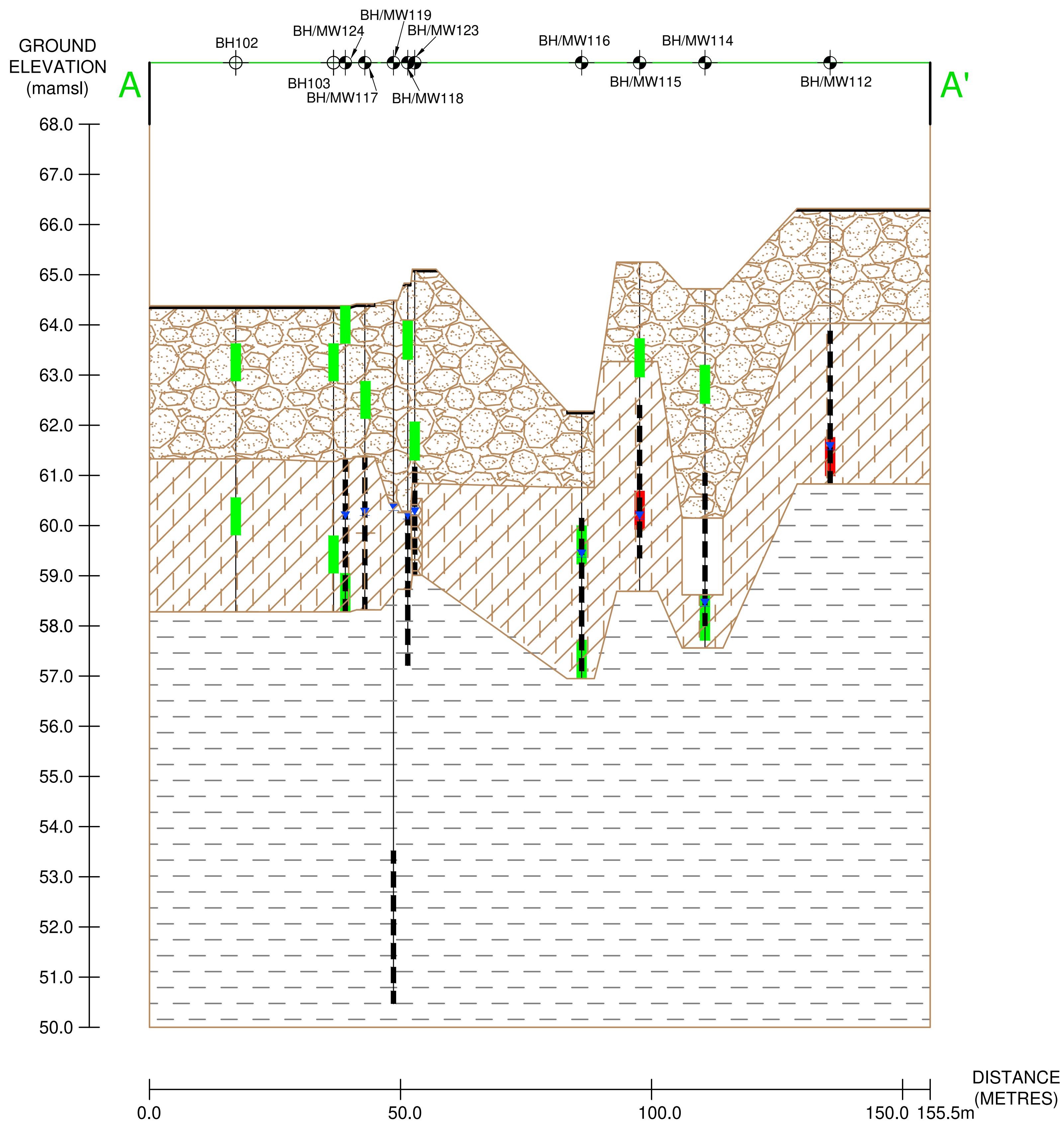
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: PHC EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003 | SCALE: AS SHOWN

DRAWN BY: DM | REVIEWED BY: EC

DATE: OCTOBER 2022 | FIGURE NUMBER: 8A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

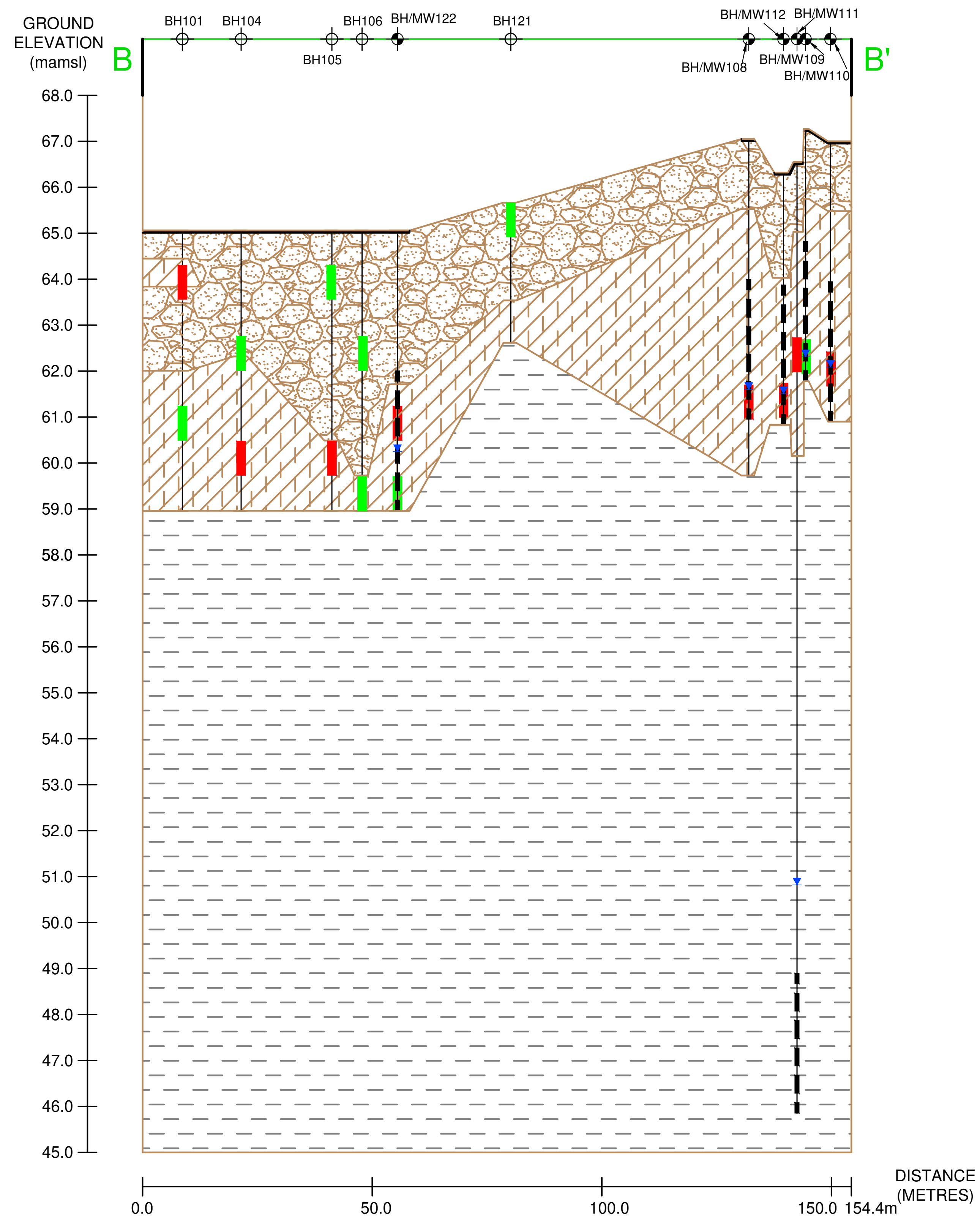
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: CROSS-SECTION A-A' WITH PHC EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 8B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

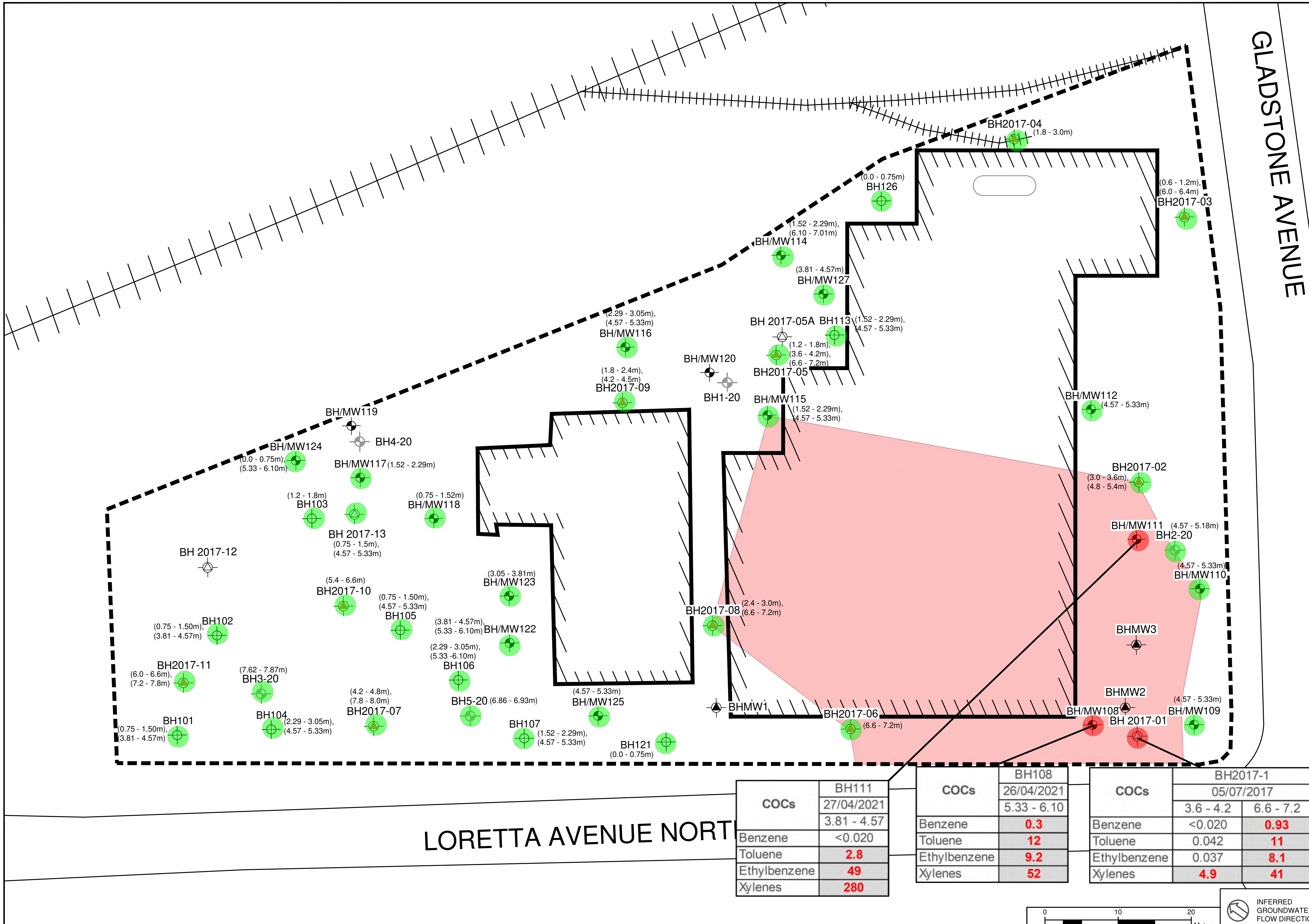
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: CROSS-SECTION B-B' WITH PHC EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 8C



COCs	BH111
	27/04/2021
	3.81 - 4.57
Benzene	<0.020
Toluene	**2.8**
Ethylbenzene	**49**
Xylenes	**280**

COCs	BH108
	26/04/2021
	5.33 - 6.10
Benzene	**0.3**
Toluene	**12**
Ethylbenzene	**9.2**
Xylenes	**52**

COCs	BH2017-1	
	05/07/2017	
	3.6 - 4.2	6.6 - 7.2
Benzene	<0.020	**0.93**
Toluene	0.042	**11**
Ethylbenzene	0.037	**8.1**
Xylenes	**4.9**	**41**

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppmv PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

	MECP Table 3 SCS
Benzene	0.21
Toluene	2.3
Ethylbenzene	2
Xylenes	3.1

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

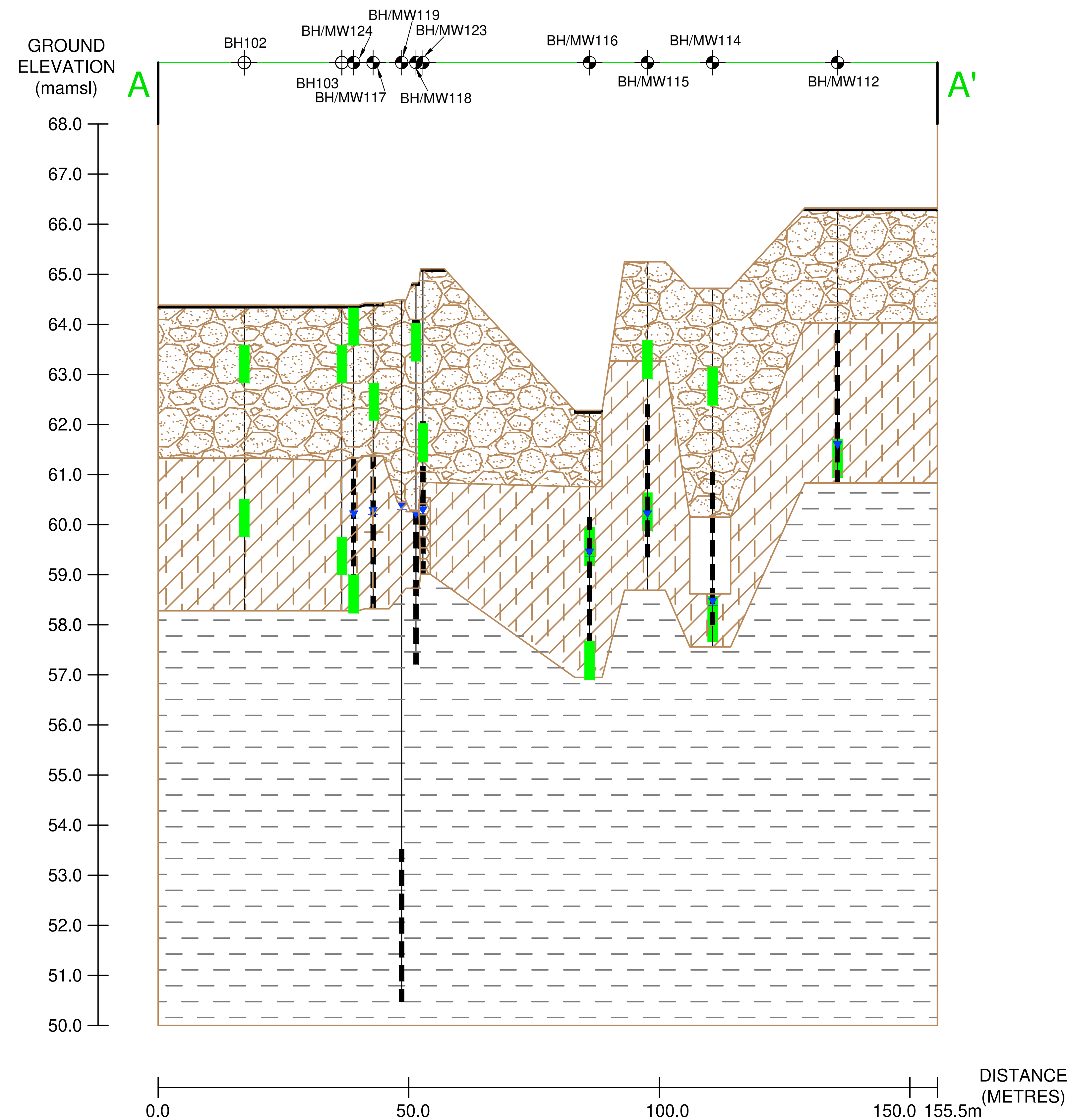
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: BTEX EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 9A



LEGEND

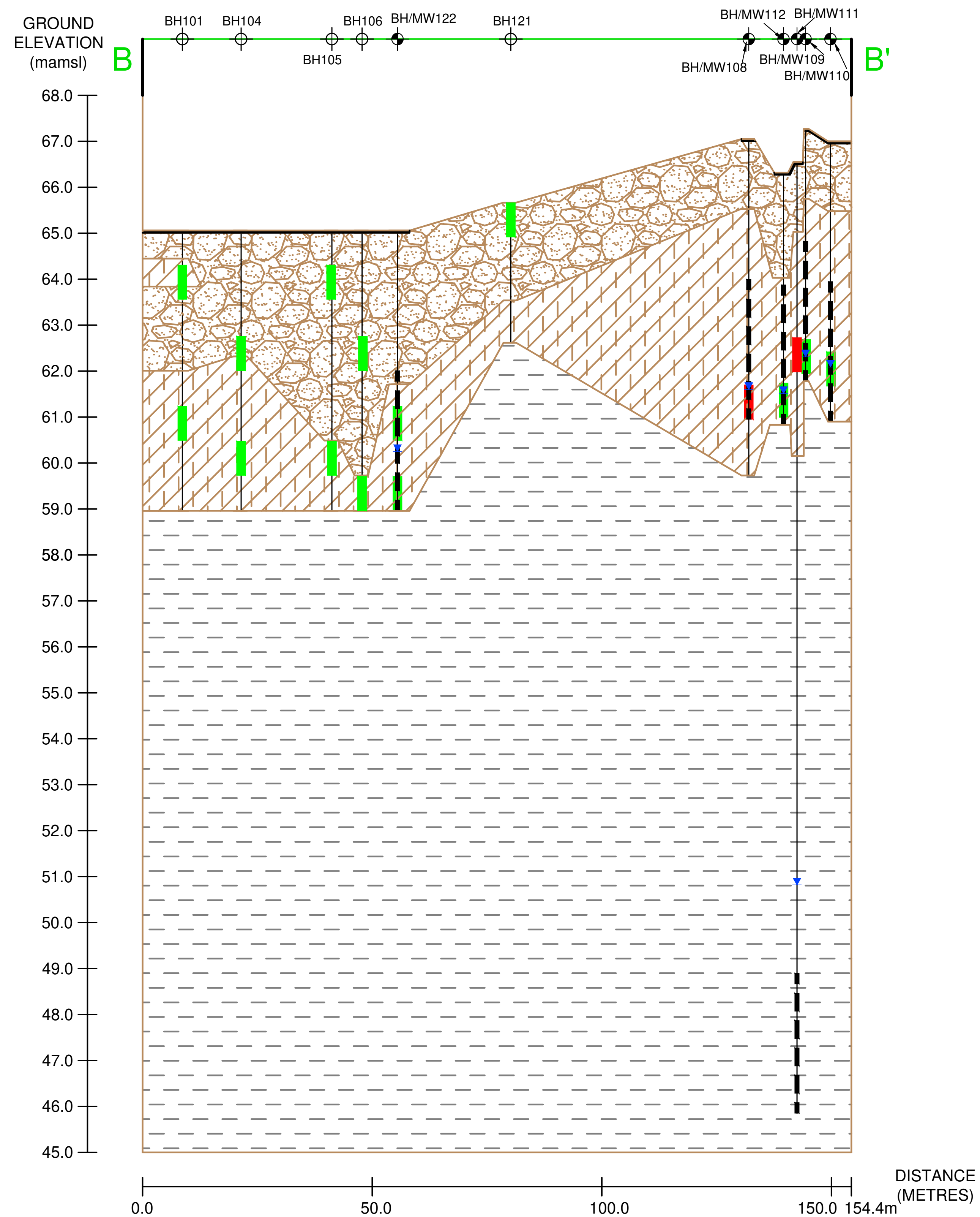
- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION A-A' WITH BTEX EXCEEDANCES IN SOIL	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 9B



LEGEND

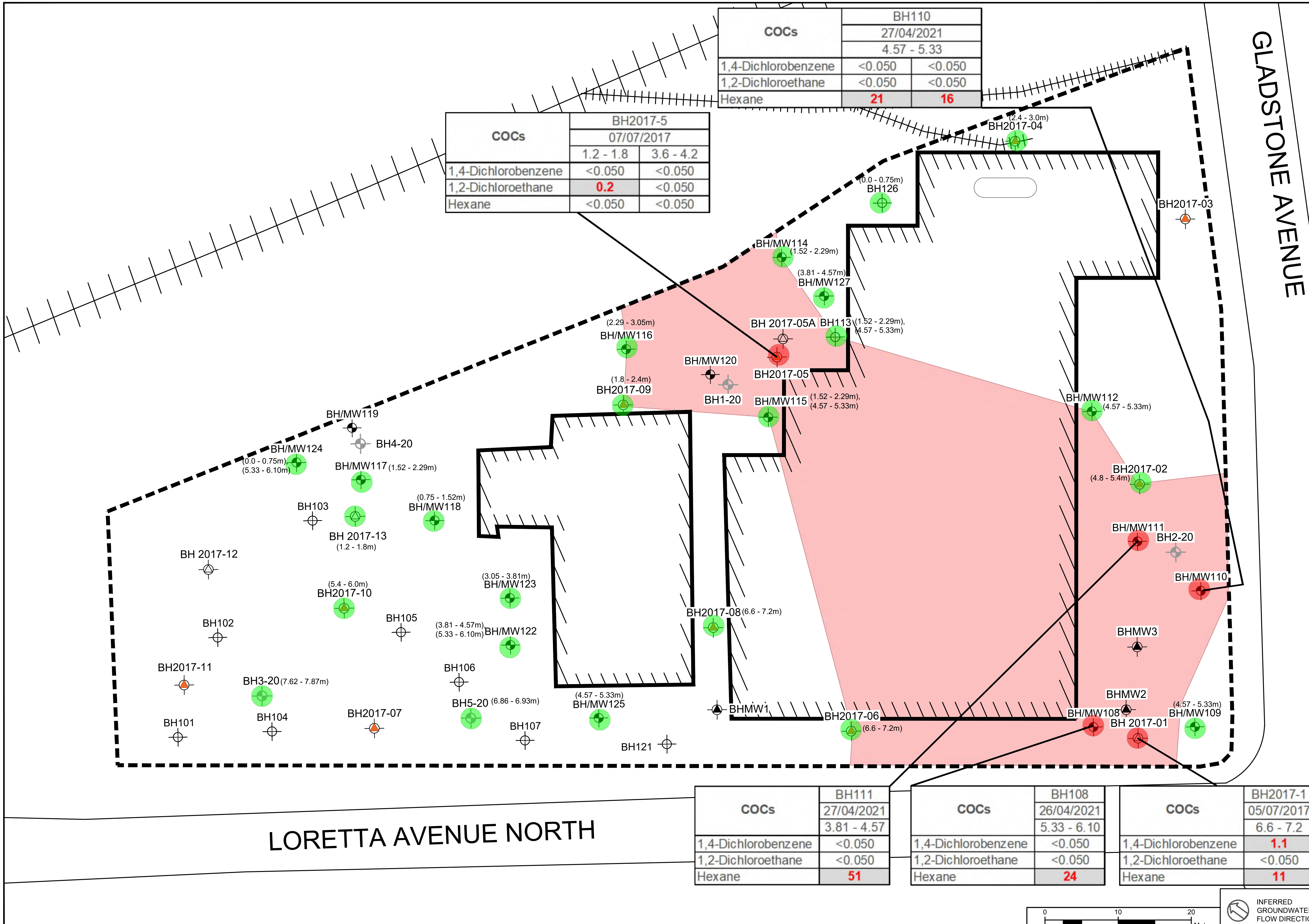
- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION B-B' WITH BTEX EXCEEDANCES IN SOIL	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 9C



COCs	BH110	
	27/04/2021	
	4.57 - 5.33	
1,4-Dichlorobenzene	<0.050	<0.050
1,2-Dichloroethane	<0.050	<0.050
Hexane	**21**	**16**

COCs	BH2017-5	
	07/07/2017	
	1.2 - 1.8	3.6 - 4.2
1,4-Dichlorobenzene	<0.050	<0.050
1,2-Dichloroethane	**0.2**	<0.050
Hexane	<0.050	<0.050

COCs	BH111
	27/04/2021
	3.81 - 4.57
1,4-Dichlorobenzene	<0.050
1,2-Dichloroethane	<0.050
Hexane	**51**

COCs	BH108
	26/04/2021
	5.33 - 6.10
1,4-Dichlorobenzene	<0.050
1,2-Dichloroethane	<0.050
Hexane	**24**

COCs	BH2017-1
	05/07/2017
	6.6 - 7.2
1,4-Dichlorobenzene	**1.1**
1,2-Dichloroethane	<0.050
Hexane	**11**

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppm PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
1,4-Dichlorobenzene	0.083
1,2-Dichloroethane	0.05
Hexane	2.8

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

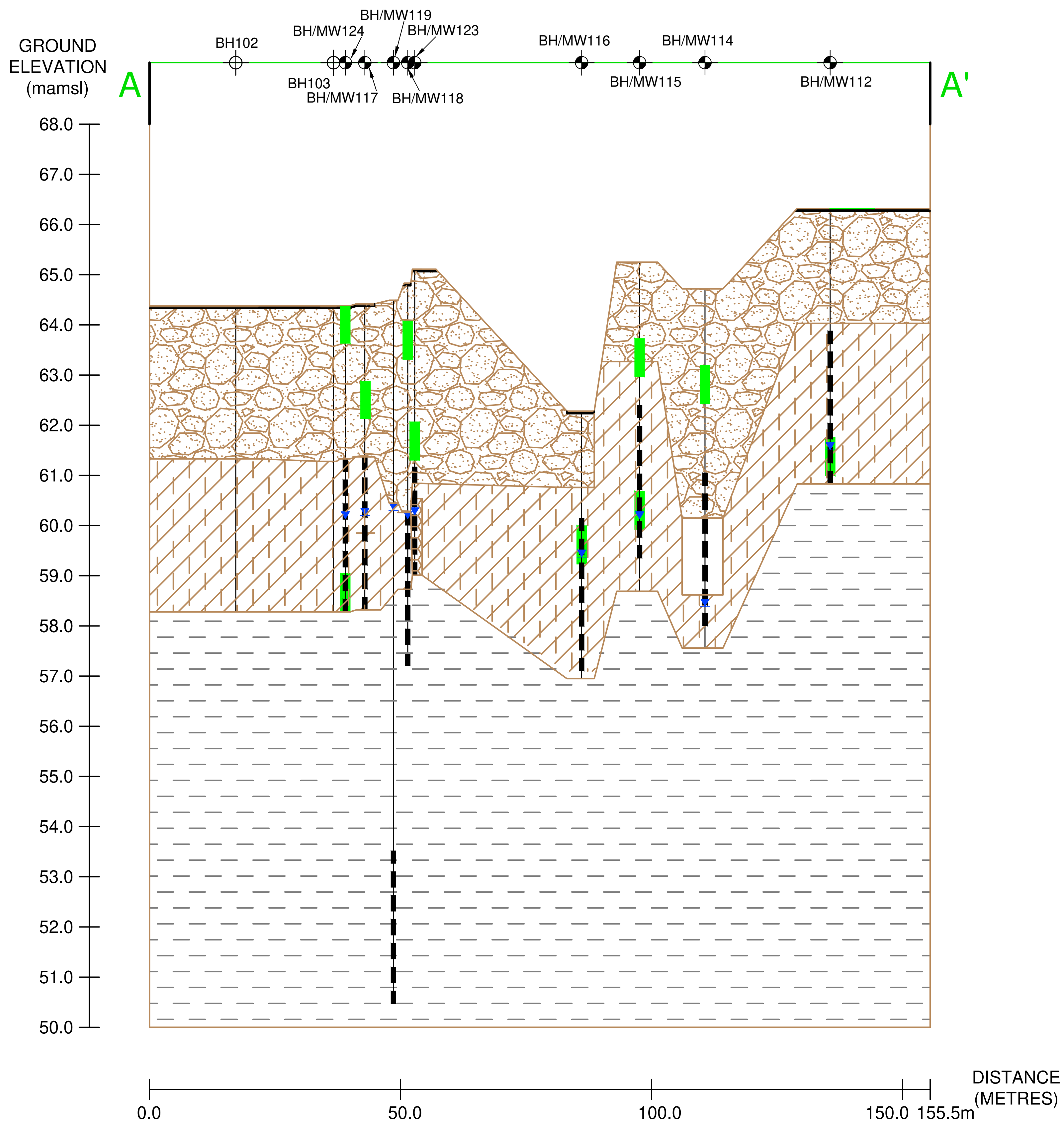
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: VOC EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 10A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

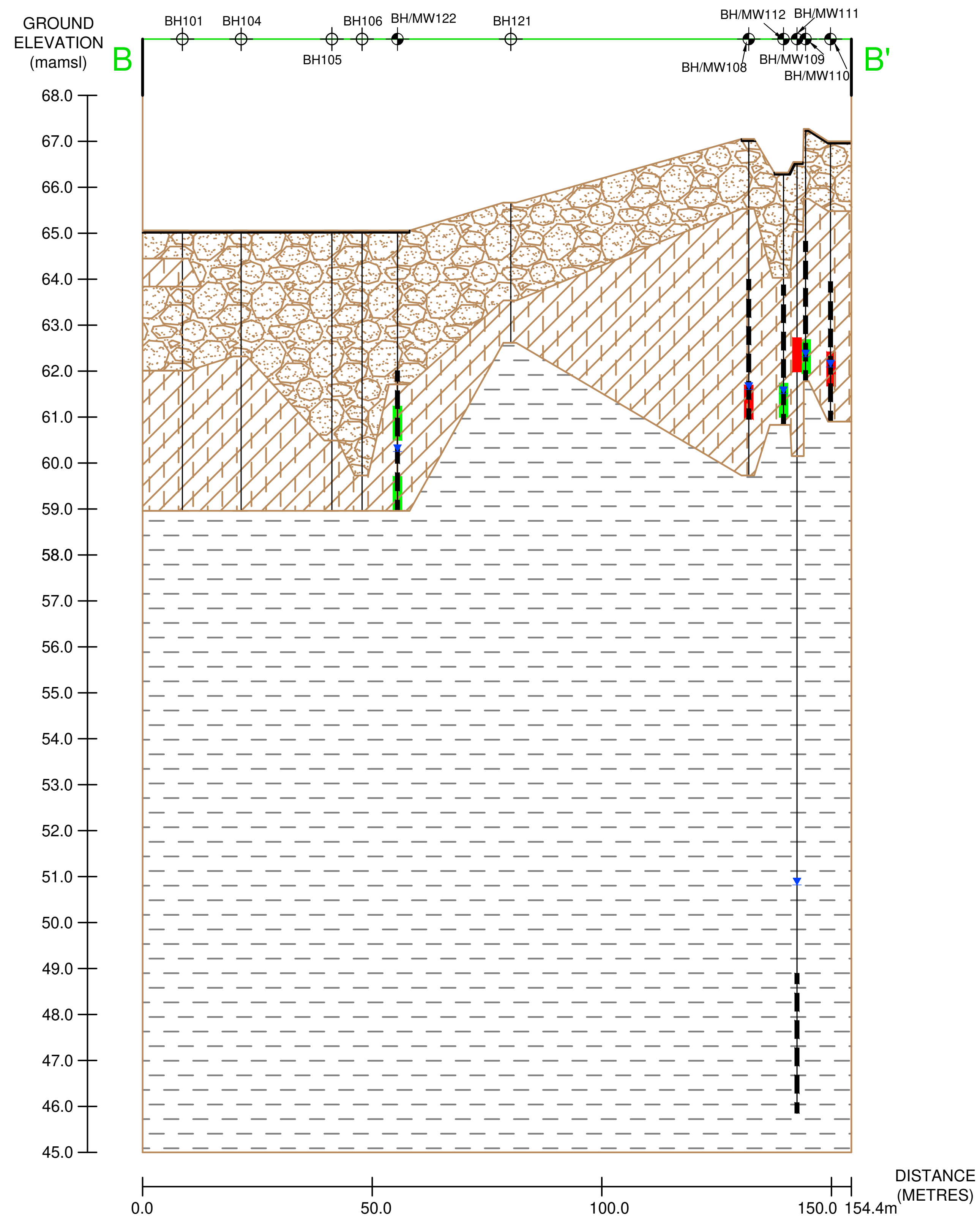
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: CROSS-SECTION A-A' WITH VOC EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 10B



LEGEND

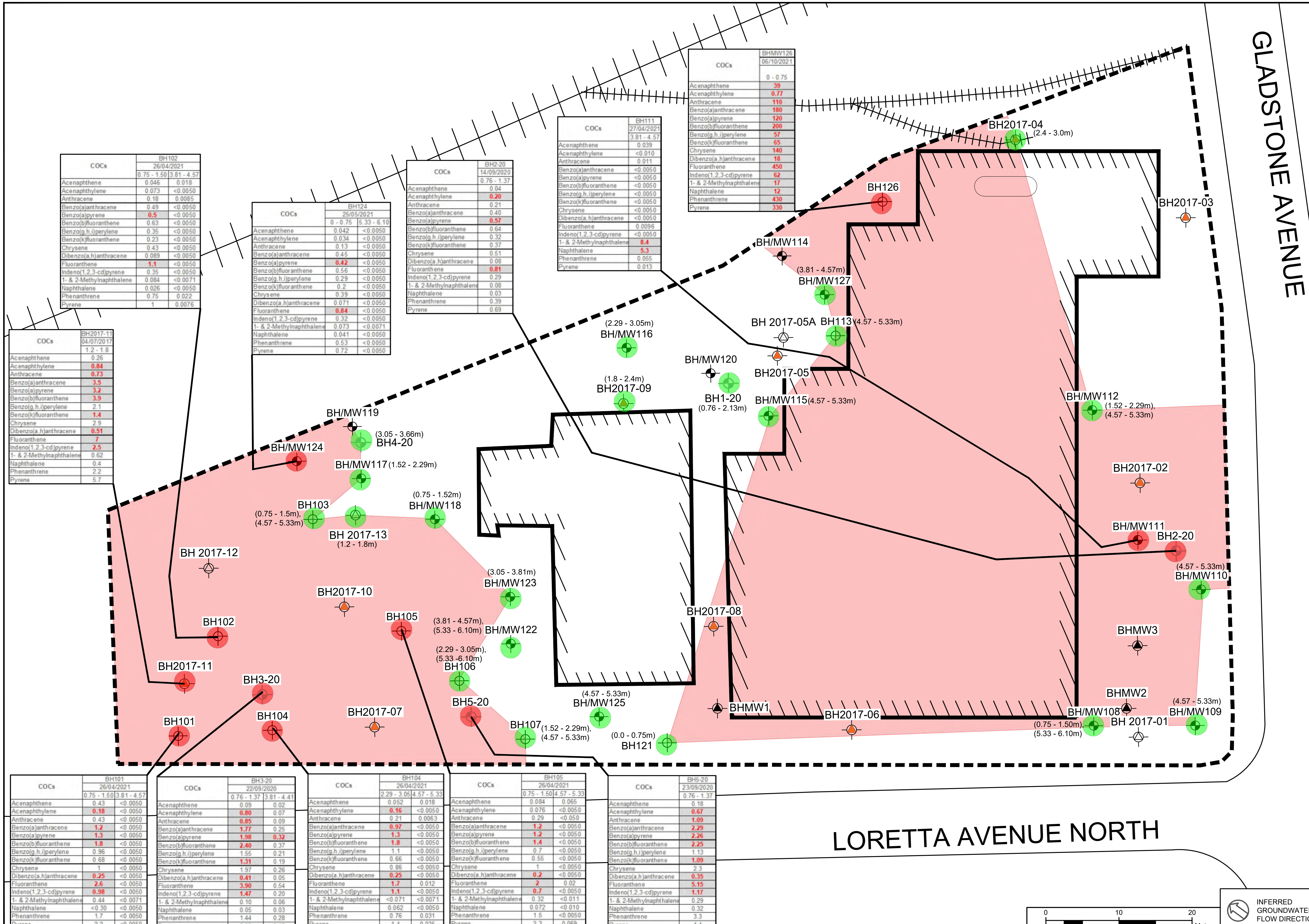
- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION B-B' WITH VOC EXCEEDANCES IN SOIL	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 10C



COCs	BH102 26/04/2021 0.75 - 1.50	BH102 26/04/2021 3.81 - 4.57
Acenaphthene	0.046	0.018
Acenaphthylene	0.073	<0.0050
Anthracene	0.18	0.0085
Benzo(a)anthracene	0.49	<0.0050
Benzo(a)pyrene	**0.5**	<0.0050
Benzo(b)fluoranthene	0.63	<0.0050
Benzo(g,h,i)perylene	0.35	<0.0050
Benzo(k)fluoranthene	0.23	<0.0050
Chrysene	0.43	<0.0050
Dibenzo(a,h)anthracene	0.089	<0.0050
Fluoranthene	**1.1**	<0.0050
Indeno(1,2,3-cd)pyrene	0.35	<0.0050
1- & 2-Methylnaphthalene	0.084	<0.0071
Naphthalene	0.026	<0.0050
Phenanthrene	0.75	0.022
Pyrene	1	0.0076

COCs	BH2017-11 04/07/2017 1.2 - 1.8
Acenaphthene	0.26
Acenaphthylene	**0.84**
Anthracene	**0.73**
Benzo(a)anthracene	**3.5**
Benzo(a)pyrene	**3.2**
Benzo(b)fluoranthene	**3.9**
Benzo(g,h,i)perylene	2.1
Benzo(k)fluoranthene	**1.4**
Chrysene	2.9
Dibenzo(a,h)anthracene	**0.51**
Fluoranthene	**7**
Indeno(1,2,3-cd)pyrene	**2.5**
1- & 2-Methylnaphthalene	0.62
Naphthalene	0.4
Phenanthrene	2.2
Pyrene	5.7

COCs	BH124 25/05/2021 0 - 0.75	BH124 25/05/2021 5.33 - 6.10
Acenaphthene	0.042	<0.0050
Acenaphthylene	0.034	<0.0050
Anthracene	0.13	<0.0050
Benzo(a)anthracene	0.45	<0.0050
Benzo(a)pyrene	**0.42**	<0.0050
Benzo(b)fluoranthene	0.56	<0.0050
Benzo(g,h,i)perylene	0.29	<0.0050
Benzo(k)fluoranthene	0.2	<0.0050
Chrysene	0.39	<0.0050
Dibenzo(a,h)anthracene	0.071	<0.0050
Fluoranthene	**0.84**	<0.0050
Indeno(1,2,3-cd)pyrene	0.32	<0.0050
1- & 2-Methylnaphthalene	0.073	<0.0071
Naphthalene	0.041	<0.0050
Phenanthrene	0.53	<0.0050
Pyrene	0.72	<0.0050

COCs	BH2-20 14/09/2020 0.76 - 1.37
Acenaphthene	0.04
Acenaphthylene	**0.20**
Anthracene	0.21
Benzo(a)anthracene	0.40
Benzo(a)pyrene	**0.57**
Benzo(b)fluoranthene	0.64
Benzo(g,h,i)perylene	0.32
Benzo(k)fluoranthene	0.37
Chrysene	0.51
Dibenzo(a,h)anthracene	0.08
Fluoranthene	**0.81**
Indeno(1,2,3-cd)pyrene	0.29
1- & 2-Methylnaphthalene	0.08
Naphthalene	0.03
Phenanthrene	0.39
Pyrene	0.69

COCs	BH111 27/04/2021 3.81 - 4.57
Acenaphthene	0.039
Acenaphthylene	<0.010
Anthracene	0.011
Benzo(a)anthracene	<0.0050
Benzo(a)pyrene	<0.0050
Benzo(b)fluoranthene	<0.0050
Benzo(g,h,i)perylene	<0.0050
Benzo(k)fluoranthene	<0.0050
Chrysene	<0.0050
Dibenzo(a,h)anthracene	<0.0050
Fluoranthene	0.0096
Indeno(1,2,3-cd)pyrene	<0.0050
1- & 2-Methylnaphthalene	**8.4**
Naphthalene	**5.3**
Phenanthrene	0.055
Pyrene	0.013

COCs	BHMW126 06/10/2021 0 - 0.75
Acenaphthene	**39**
Acenaphthylene	**0.77**
Anthracene	**110**
Benzo(a)anthracene	**180**
Benzo(a)pyrene	**120**
Benzo(b)fluoranthene	**200**
Benzo(g,h,i)perylene	**57**
Benzo(k)fluoranthene	**65**
Chrysene	**140**
Dibenzo(a,h)anthracene	**18**
Fluoranthene	**450**
Indeno(1,2,3-cd)pyrene	**62**
1- & 2-Methylnaphthalene	**17**
Naphthalene	**12**
Phenanthrene	**430**
Pyrene	**330**

COCs	BH101 26/04/2021 0.75 - 1.50	BH101 26/04/2021 3.81 - 4.57
Acenaphthene	0.43	<0.0050
Acenaphthylene	**0.18**	<0.0050
Anthracene	0.43	<0.0050
Benzo(a)anthracene	**1.2**	<0.0050
Benzo(a)pyrene	**1.3**	<0.0050
Benzo(b)fluoranthene	**1.8**	<0.0050
Benzo(g,h,i)perylene	0.96	<0.0050
Benzo(k)fluoranthene	0.68	<0.0050
Chrysene	1	<0.0050
Dibenzo(a,h)anthracene	**0.25**	<0.0050
Fluoranthene	**2.6**	<0.0050
Indeno(1,2,3-cd)pyrene	**0.98**	<0.0050
1- & 2-Methylnaphthalene	0.44	<0.0071
Naphthalene	<0.30	<0.0050
Phenanthrene	1.7	<0.0050
Pyrene	2.2	<0.0050

COCs	BH3-20 22/09/2020 0.76 - 1.37	BH3-20 22/09/2020 3.81 - 4.41
Acenaphthene	0.09	0.02
Acenaphthylene	**0.80**	0.07
Anthracene	**0.85**	0.09
Benzo(a)anthracene	**1.77**	0.25
Benzo(a)pyrene	**1.98**	**0.32**
Benzo(b)fluoranthene	**2.40**	0.37
Benzo(g,h,i)perylene	1.55	0.21
Benzo(k)fluoranthene	**1.31**	0.19
Chrysene	1.97	0.26
Dibenzo(a,h)anthracene	**0.41**	0.05
Fluoranthene	**3.90**	0.54
Indeno(1,2,3-cd)pyrene	**1.47**	0.20
1- & 2-Methylnaphthalene	0.10	0.06
Naphthalene	0.05	0.03
Phenanthrene	1.44	0.28
Pyrene	3.08	0.45

COCs	BH104 26/04/2021 2.29 - 3.05	BH104 26/04/2021 4.57 - 5.33
Acenaphthene	0.052	0.018
Acenaphthylene	**0.16**	<0.0050
Anthracene	0.21	0.0063
Benzo(a)anthracene	**0.97**	<0.0050
Benzo(a)pyrene	**1.3**	<0.0050
Benzo(b)fluoranthene	**1.8**	<0.0050
Benzo(g,h,i)perylene	1.1	<0.0050
Benzo(k)fluoranthene	0.66	<0.0050
Chrysene	0.86	<0.0050
Dibenzo(a,h)anthracene	**0.25**	<0.0050
Fluoranthene	**1.7**	0.012
Indeno(1,2,3-cd)pyrene	**1.1**	<0.0050
1- & 2-Methylnaphthalene	<0.071	<0.0071
Naphthalene	0.062	<0.0050
Phenanthrene	0.76	0.031
Pyrene	1.4	0.025

COCs	BH105 26/04/2021 0.75 - 1.50	BH105 26/04/2021 4.57 - 5.33
Acenaphthene	0.084	0.065
Acenaphthylene	0.076	<0.0050
Anthracene	0.29	<0.050
Benzo(a)anthracene	**1.2**	<0.0050
Benzo(a)pyrene	**1.2**	<0.0050
Benzo(b)fluoranthene	**1.4**	<0.0050
Benzo(g,h,i)perylene	0.7	<0.0050
Benzo(k)fluoranthene	0.55	<0.0050
Chrysene	1	<0.0050
Dibenzo(a,h)anthracene	**0.2**	<0.0050
Fluoranthene	**2**	0.02
Indeno(1,2,3-cd)pyrene	**0.7**	<0.0050
1- & 2-Methylnaphthalene	0.32	<0.011
Naphthalene	0.072	<0.010
Phenanthrene	1.5	<0.0050
Pyrene	2.3	0.069

COCs	BH5-20 23/09/2020 0.76 - 1.37
Acenaphthene	0.18
Acenaphthylene	**0.67**
Anthracene	**1.09**
Benzo(a)anthracene	**2.29**
Benzo(a)pyrene	**2.26**
Benzo(b)fluoranthene	**2.25**
Benzo(g,h,i)perylene	1.13
Benzo(k)fluoranthene	**1.09**
Chrysene	2.3
Dibenzo(a,h)anthracene	**0.35**
Fluoranthene	**5.15**
Indeno(1,2,3-cd)pyrene	**1.17**
1- & 2-Methylnaphthalene	0.29
Naphthalene	0.32
Phenanthrene	3.3
Pyrene	4.4

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppm PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Acenaphthene	7.9
Acenaphthylene	0.15
Anthracene	0.67
Benzo(a)anthracene	0.5
Benzo(a)pyrene	0.3
Benzo(b)fluoranthene	0.78
Benzo(g,h,i)perylene	6.6
Benzo(k)fluoranthene	0.78
Chrysene	7
Dibenzo(a,h)anthracene	0.1
Fluoranthene	0.69
Indeno(1,2,3-cd)pyrene	0.38
1- & 2-Methylnaphthalene	0.99
Naphthalene	0.6
Phenanthrene	6.2
Pyrene	78

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

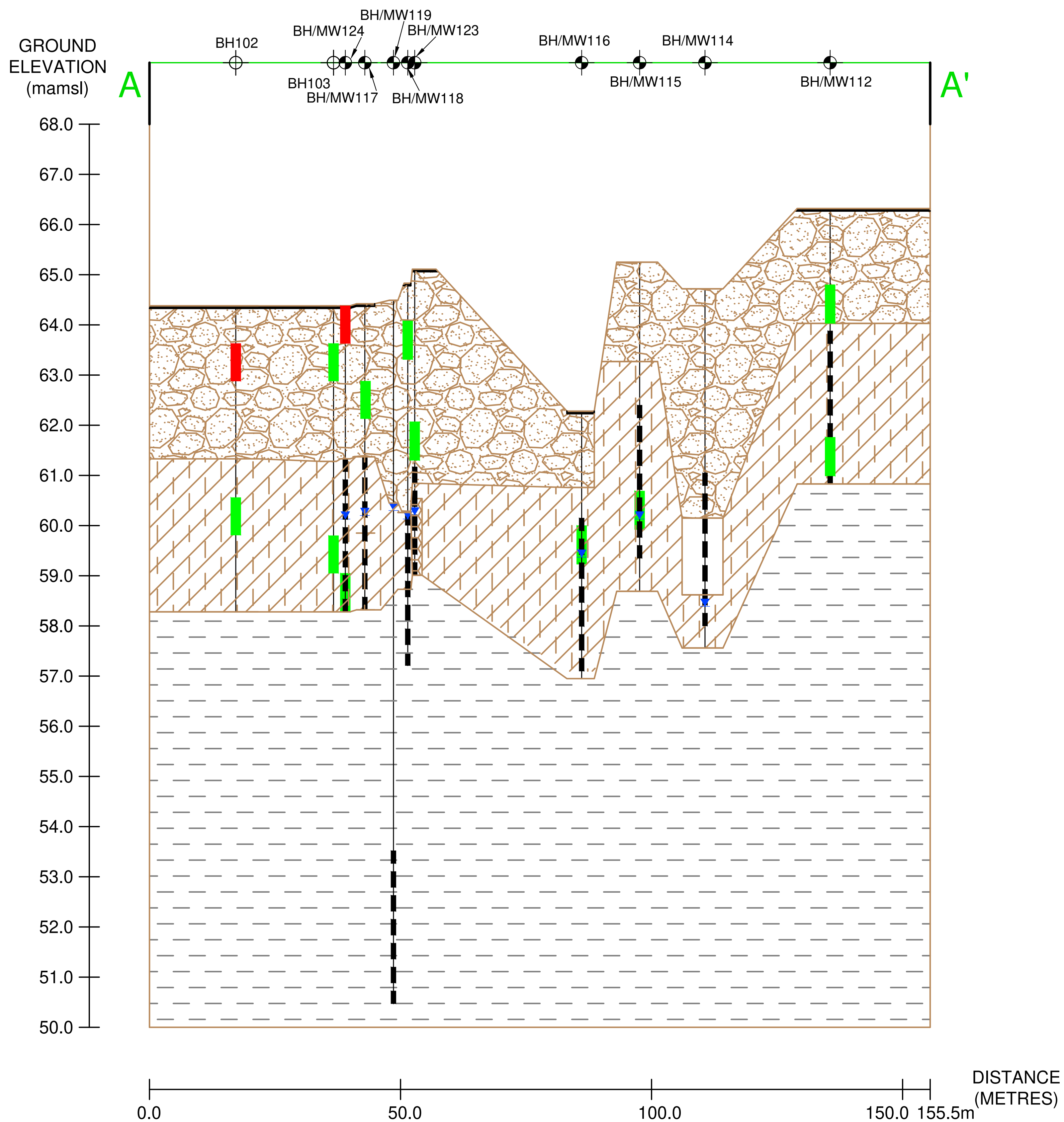
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: PAH EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 11A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

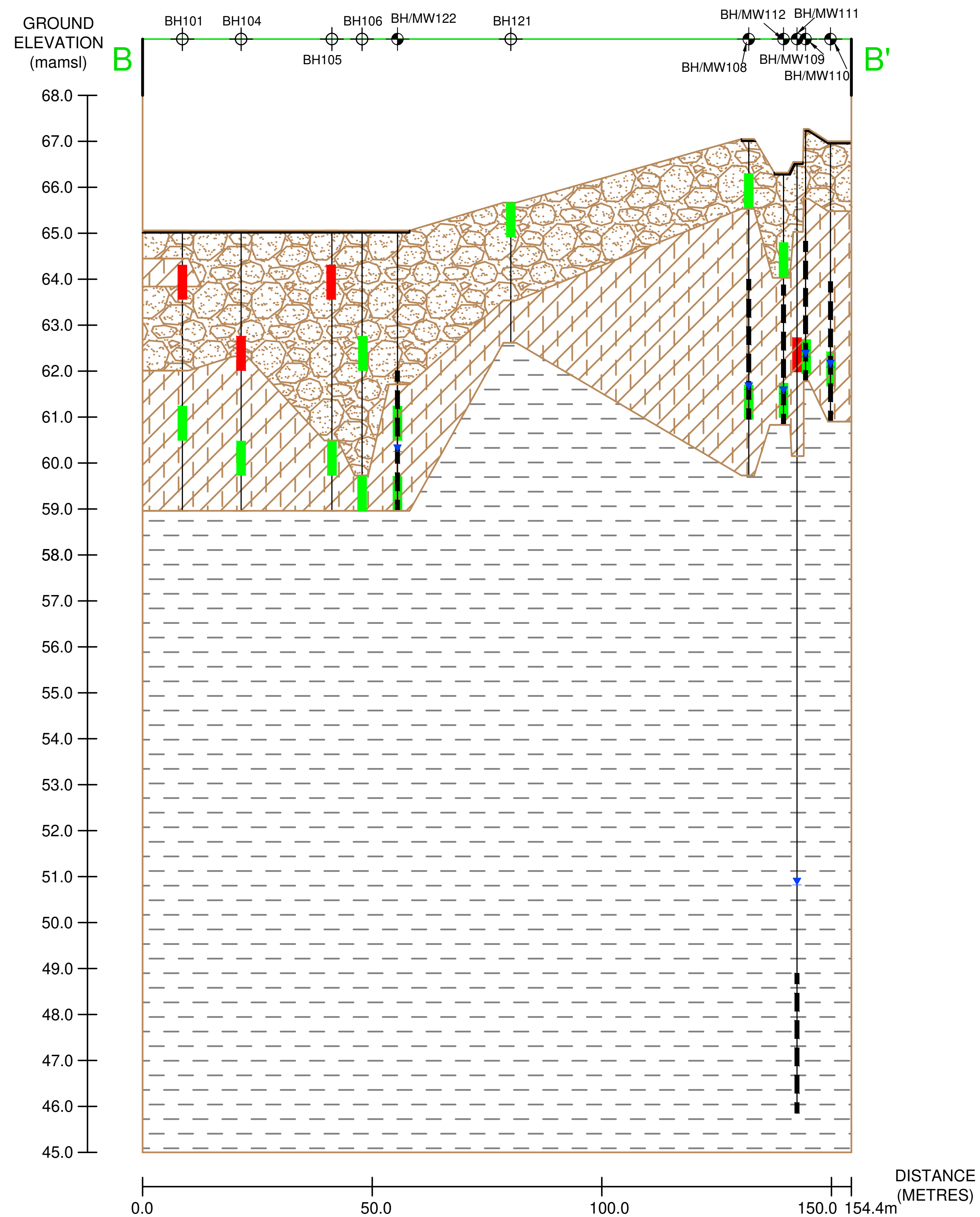
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: CROSS-SECTION A-A' WITH PAH EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 11B



LEGEND

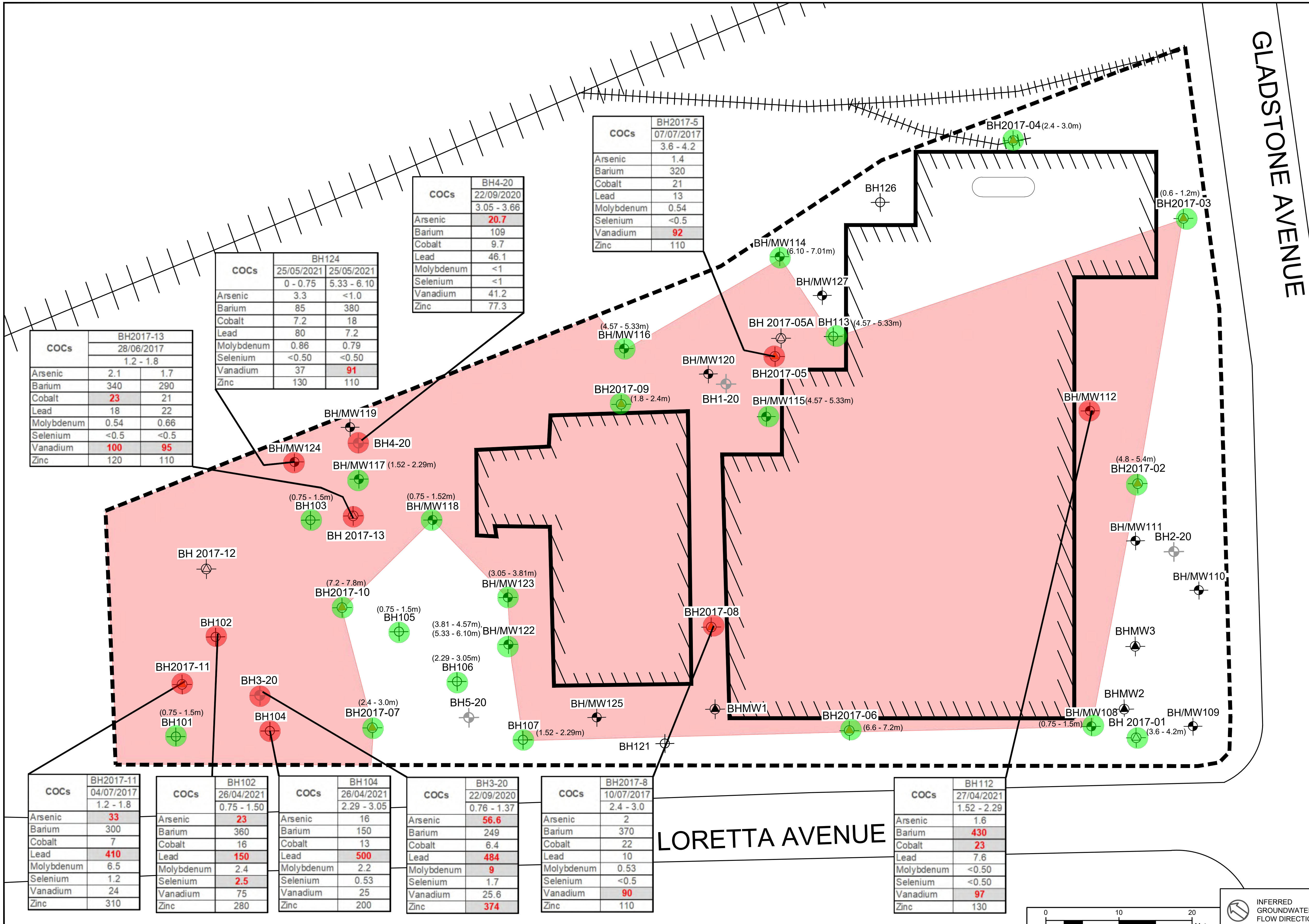
- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION B-B' WITH PAH EXCEEDANCES IN SOIL	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 11C



COCs	BH2017-5
	07/07/2017
	3.6 - 4.2
Arsenic	1.4
Barium	320
Cobalt	21
Lead	13
Molybdenum	0.54
Selenium	<0.5
Vanadium	**92**
Zinc	110

COCs	BH4-20
	22/09/2020
	3.05 - 3.66
Arsenic	**20.7**
Barium	109
Cobalt	9.7
Lead	46.1
Molybdenum	<1
Selenium	<1
Vanadium	41.2
Zinc	77.3

COCs	BH124	
	25/05/2021	25/05/2021
	0 - 0.75	5.33 - 6.10
Arsenic	3.3	<1.0
Barium	85	380
Cobalt	7.2	18
Lead	80	7.2
Molybdenum	0.86	0.79
Selenium	<0.50	<0.50
Vanadium	37	**91**
Zinc	130	110

COCs	BH2017-13	
	28/06/2017	
	1.2 - 1.8	
Arsenic	2.1	1.7
Barium	340	290
Cobalt	**23**	21
Lead	18	22
Molybdenum	0.54	0.66
Selenium	<0.5	<0.5
Vanadium	**100**	**95**
Zinc	120	110

COCs	BH2017-11
	04/07/2017
	1.2 - 1.8
Arsenic	**33**
Barium	300
Cobalt	7
Lead	**410**
Molybdenum	6.5
Selenium	1.2
Vanadium	24
Zinc	310

COCs	BH102
	26/04/2021
	0.75 - 1.50
Arsenic	**23**
Barium	360
Cobalt	16
Lead	**150**
Molybdenum	2.4
Selenium	**2.5**
Vanadium	75
Zinc	280

COCs	BH104
	26/04/2021
	2.29 - 3.05
Arsenic	16
Barium	150
Cobalt	13
Lead	**500**
Molybdenum	2.2
Selenium	0.53
Vanadium	25
Zinc	200

COCs	BH3-20
	22/09/2020
	0.76 - 1.37
Arsenic	**56.6**
Barium	249
Cobalt	6.4
Lead	**484**
Molybdenum	**9**
Selenium	1.7
Vanadium	25.6
Zinc	**374**

COCs	BH2017-8
	10/07/2017
	2.4 - 3.0
Arsenic	2
Barium	370
Cobalt	22
Lead	10
Molybdenum	0.53
Selenium	<0.5
Vanadium	**90**
Zinc	110

COCs	BH112
	27/04/2021
	1.52 - 2.29
Arsenic	1.6
Barium	**430**
Cobalt	**23**
Lead	7.6
Molybdenum	<0.50
Selenium	<0.50
Vanadium	**97**
Zinc	130

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppm PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Arsenic	18
Barium	390
Cobalt	22
Lead	120
Molybdenum	6.9
Selenium	2.4
Vanadium	86
Zinc	340

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

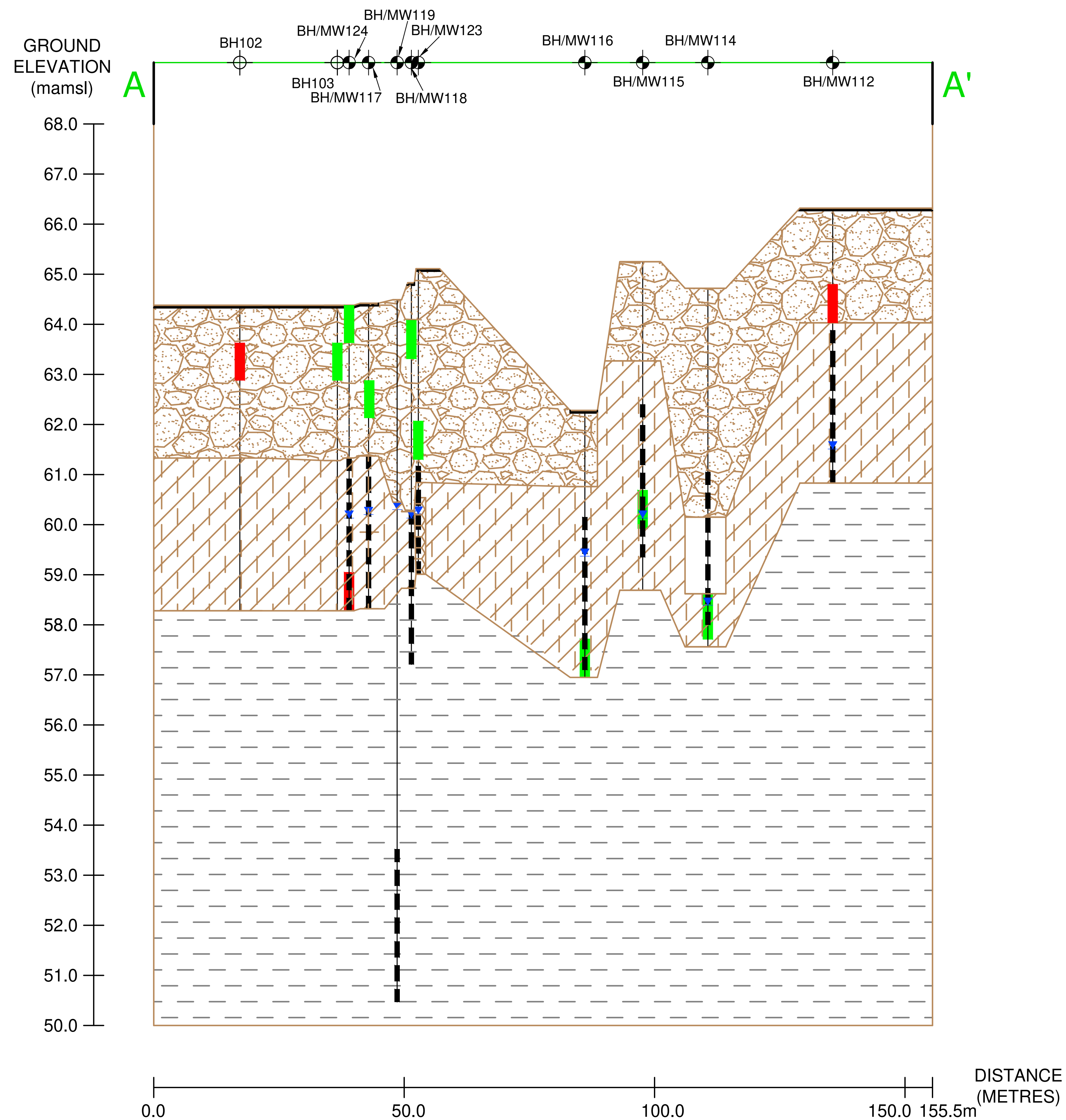
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: METAL EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 12A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

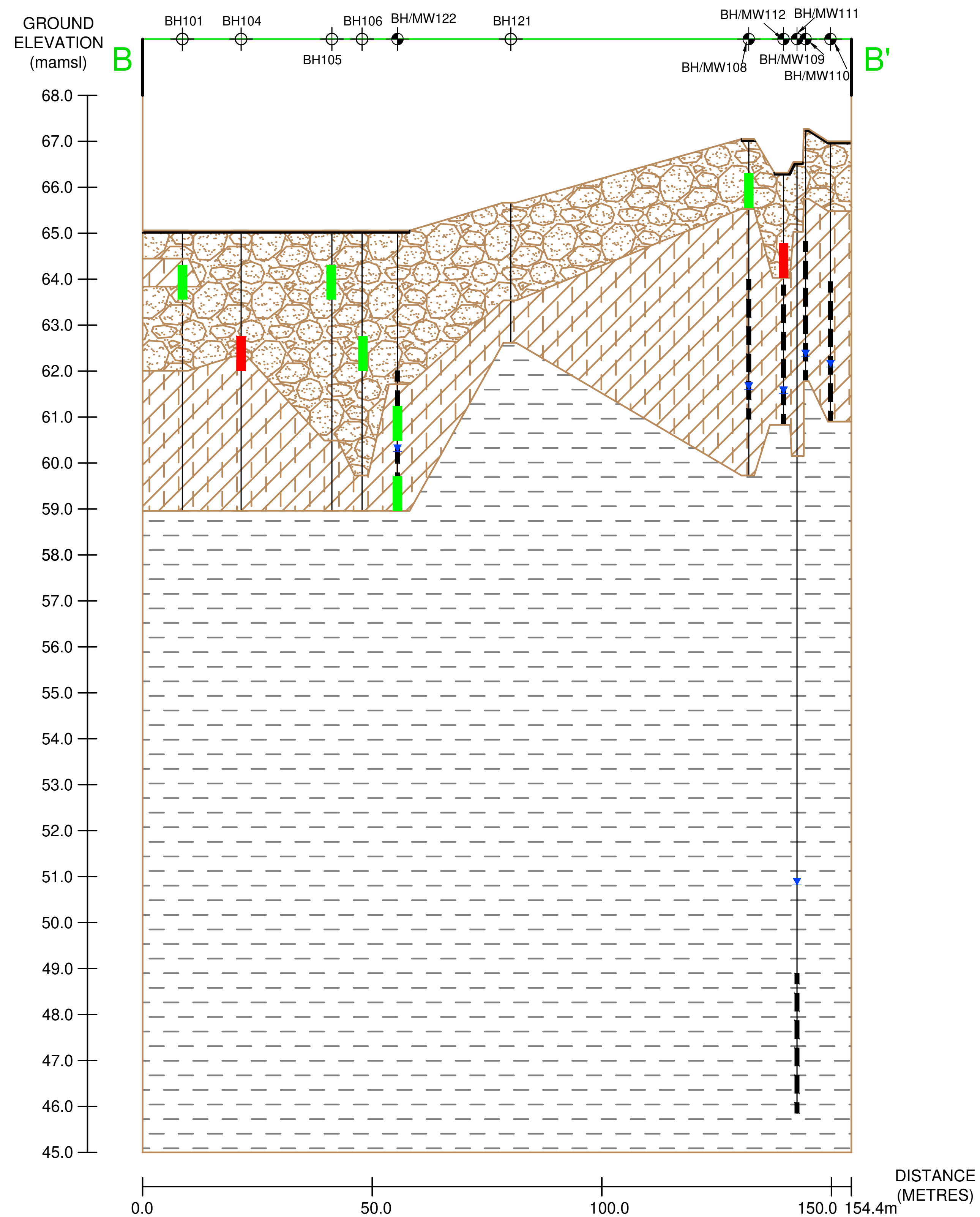
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: CROSS-SECTION A-A' WITH METAL EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 12B



LEGEND

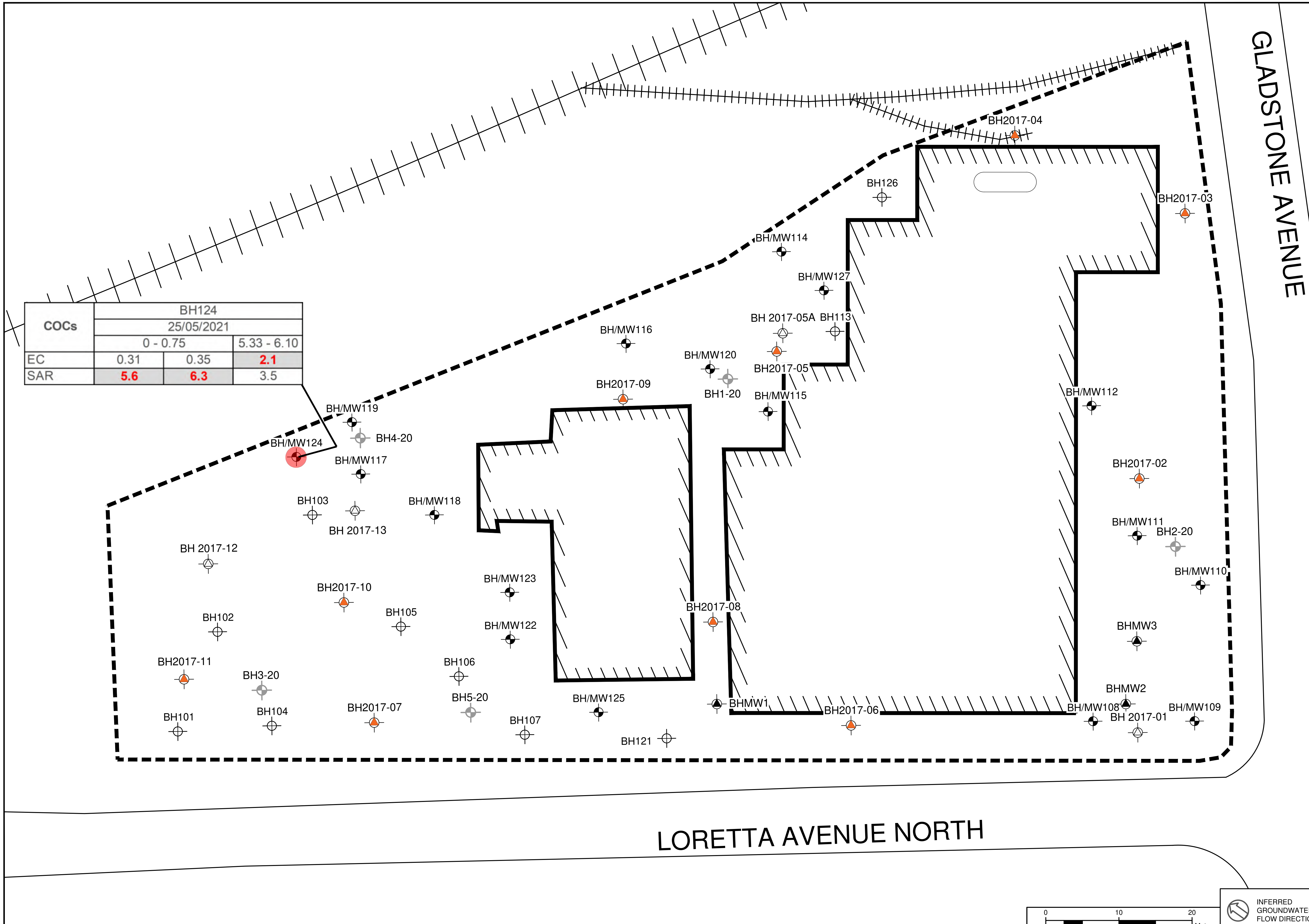
- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION B-B' WITH METAL EXCEEDANCES IN SOIL	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 12C



COCs	BH124		
	25/05/2021		
	0 - 0.75		5.33 - 6.10
EC	0.31	0.35	**2.1**
SAR	**5.6**	**6.3**	3.5

LEGEND

PHASE TWO PROPERTY BOUNDARY

SITE BUILDING

BOREHOLE (Pinchin 2021.)

MONITORING WELL (Pinchin 2021.)

MONITORING WELL (DST 2009.)

MONITORING WELL (DST 2017.)

BOREHOLE (DST 2017.)

BOREHOLE, MONITORING WELL (Patersongroup 2020.)

SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL

SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL

m METERS

mbgs METERS BELOW GROUND SURFACE

ppm PARTS PER MILLION BY VOLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Electrical Conductivity (EC, as mS/cm)	0.7
Sodium Adsorption Ratio (SAR, no Units)	5

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

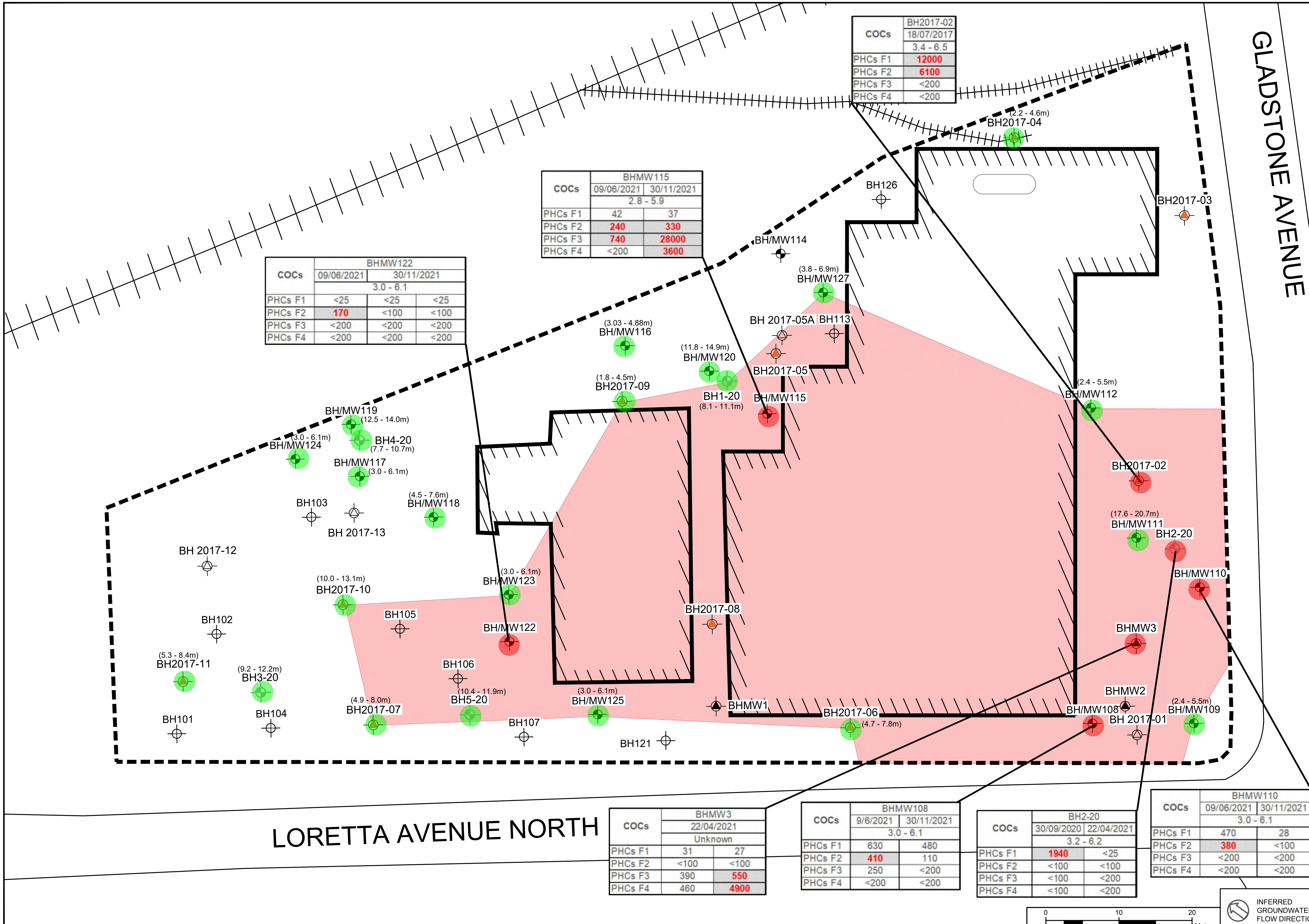
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: EC AND SAR EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 13



COCs	BH2017-02
	18/07/2017
	3.4 - 6.5
PHCs F1	**12000**
PHCs F2	**6100**
PHCs F3	<200
PHCs F4	<200

COCs	BHMW115	
	09/06/2021	30/11/2021
	2.8 - 5.9	
PHCs F1	42	37
PHCs F2	**240**	**330**
PHCs F3	**740**	**28000**
PHCs F4	<200	**3600**

COCs	BHMW122		
	09/06/2021	30/11/2021	
	3.0 - 6.1		
PHCs F1	<25	<25	<25
PHCs F2	**170**	<100	<100
PHCs F3	<200	<200	<200
PHCs F4	<200	<200	<200

COCs	BHMW3	
	22/04/2021	
	Unknown	
PHCs F1	31	27
PHCs F2	<100	<100
PHCs F3	390	**550**
PHCs F4	460	**4900**

COCs	BHMW108	
	9/6/2021	30/11/2021
	3.0 - 6.1	
PHCs F1	630	480
PHCs F2	**410**	110
PHCs F3	250	<200
PHCs F4	<200	<200

COCs	BH2-20	
	30/09/2020	22/04/2021
	3.2 - 6.2	
PHCs F1	**1940**	<25
PHCs F2	<100	<100
PHCs F3	<100	<200
PHCs F4	<100	<200

COCs	BHMW110	
	09/06/2021	30/11/2021
	3.0 - 6.1	
PHCs F1	470	28
PHCs F2	**380**	<100
PHCs F3	<200	<200
PHCs F4	<200	<200

LEGEND

PHASE TWO PROPERTY BOUNDARY
SITE BUILDING
BOREHOLE (Pinchin 2021.)
MONITORING WELL (Pinchin 2021.)
MONITORING WELL (DST 2009.)
MONITORING WELL (DST 2017.)
BOREHOLE (DST 2017.)
BOREHOLE, MONITORING WELL (Patersongroup 2020.)
SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
m METERS
mbgs METERS BELOW GROUND SURFACE
(#) WELL SCREEN INTERVAL
ppm PARTS PER MILLION BY VOLUME
GROUNDWATER IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
PHCs F1	750
PHCs F2	150
PHCs F3	500
PHCs F4	500

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD Exceeds SCS

Sample Location	MWXX
Sample Collection Date	dd/mm/yyyy
Well Depth Interval	mbgs
Parameter	Concentration (µg/L)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

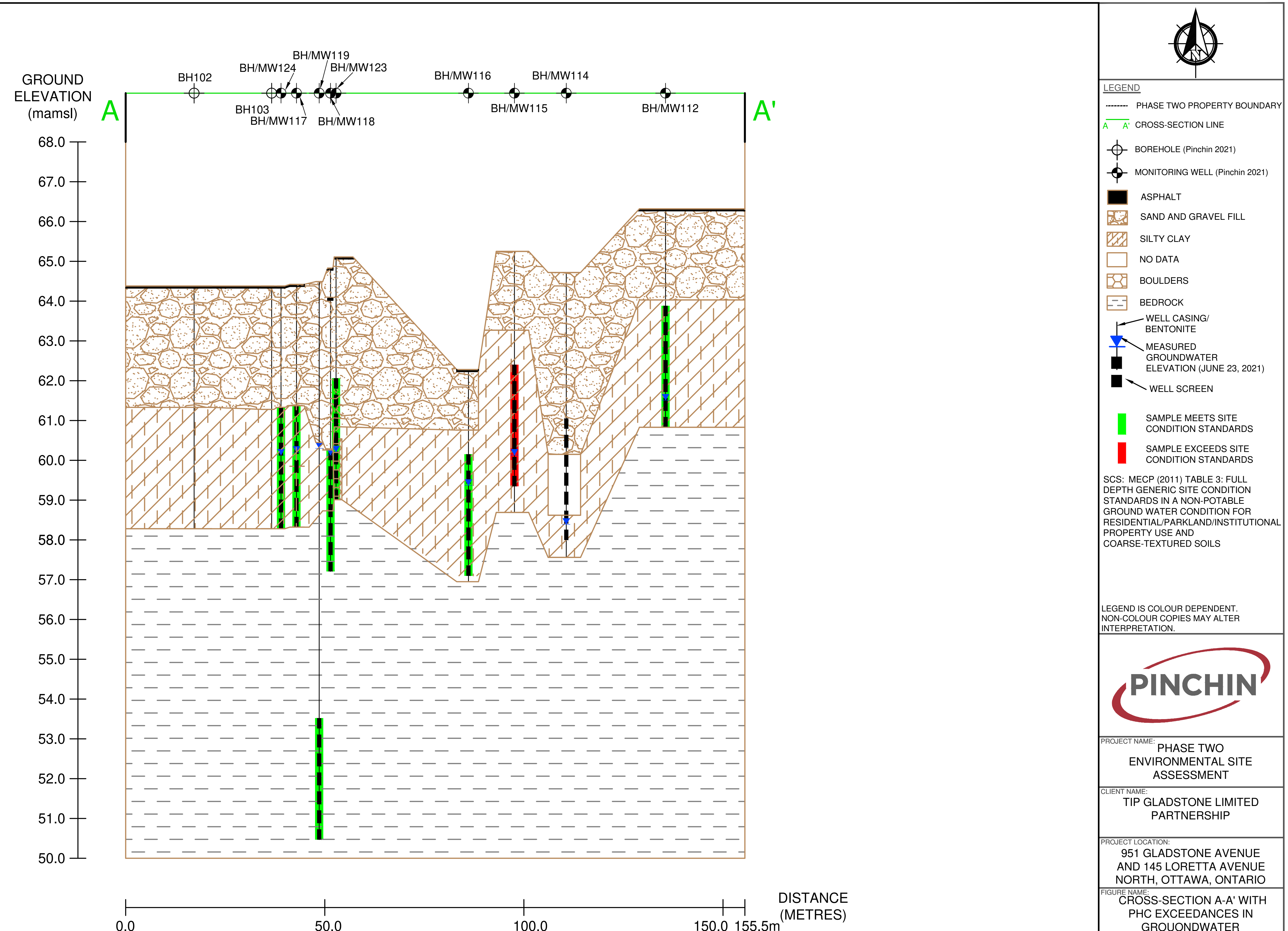
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

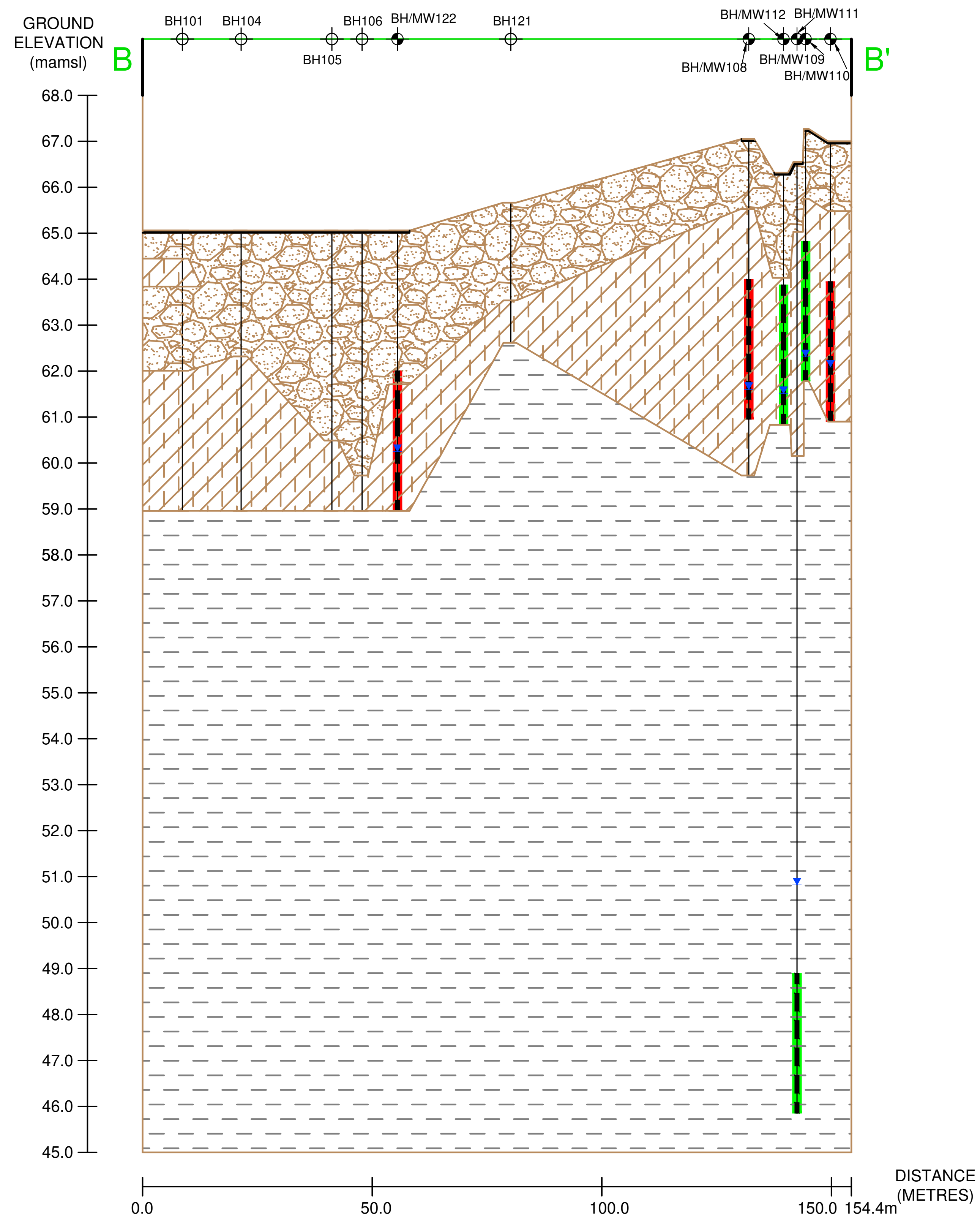
FIGURE NAME: PHC EXCEEDANCES IN GROUNDWATER

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 14A



PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION A-A' WITH PHC EXCEEDANCES IN GROUONDWATER	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 14B



LEGEND

PHASE TWO PROPERTY BOUNDARY

A A' CROSS-SECTION LINE

BOREHOLE (Pinchin 2021)

MONITORING WELL (Pinchin 2021)

ASPHALT

SAND AND GRAVEL FILL/SAND AND GRAVEL

SILTY CLAY

BEDROCK

WELL CASING/ BENTONITE

MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)

WELL SCREEN

SAMPLE MEETS SITE CONDITION STANDARDS

SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

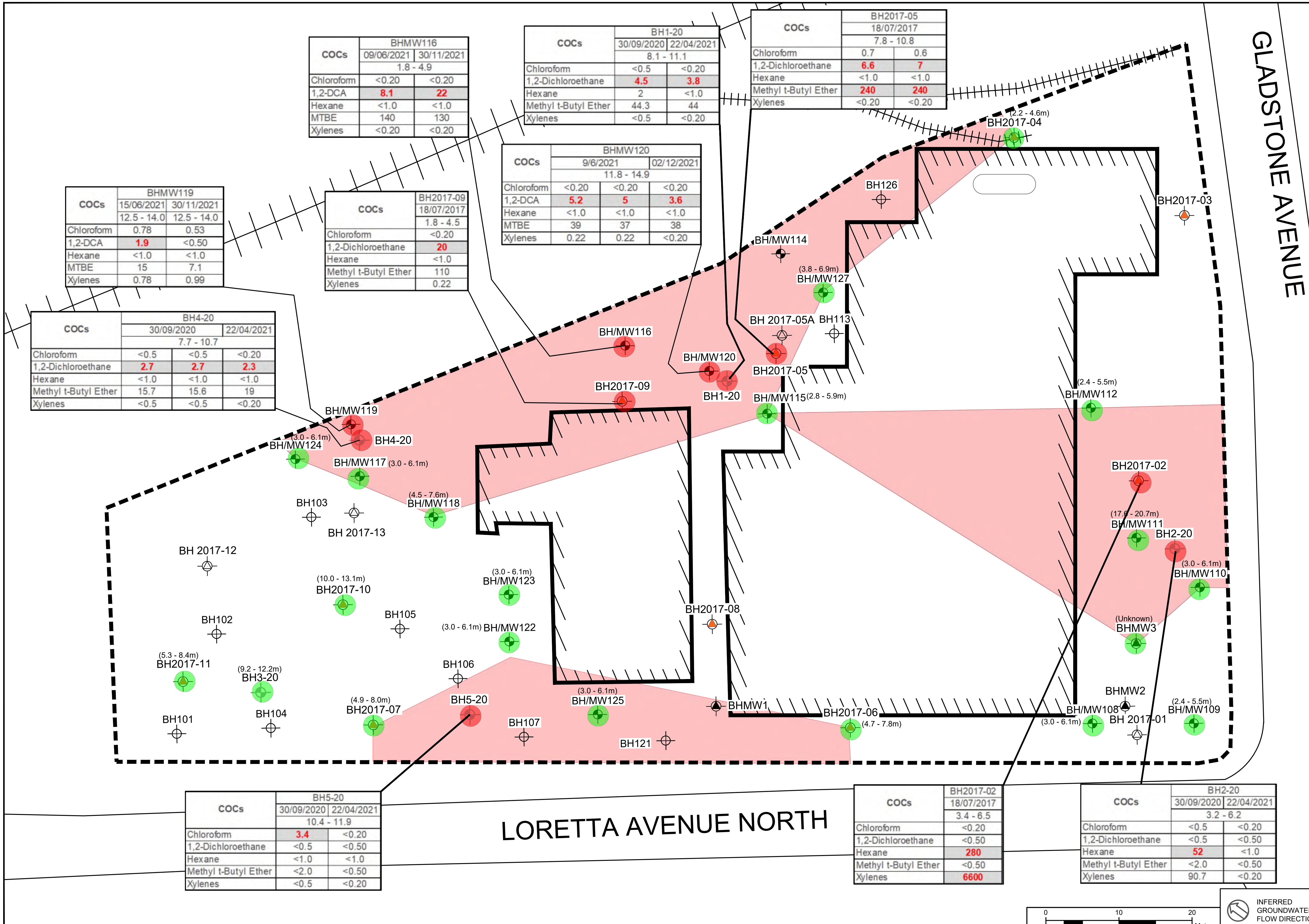
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: CROSS-SECTION B-B' WITH PHC EXCEEDANCES IN GROUNDWATER

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 14C



COCs	BHMW116	
	09/06/2021	30/11/2021
	1.8 - 4.9	
Chloroform	<0.20	<0.20
1,2-DCA	**8.1**	**22**
Hexane	<1.0	<1.0
MTBE	140	130
Xylenes	<0.20	<0.20

COCs	BH1-20	
	30/09/2020	22/04/2021
	8.1 - 11.1	
Chloroform	<0.5	<0.20
1,2-Dichloroethane	**4.5**	**3.8**
Hexane	2	<1.0
Methyl t-Butyl Ether	44.3	44
Xylenes	<0.5	<0.20

COCs	BH2017-05	
	18/07/2017	
	7.8 - 10.8	
Chloroform	0.7	0.6
1,2-Dichloroethane	**6.6**	**7**
Hexane	<1.0	<1.0
Methyl t-Butyl Ether	**240**	**240**
Xylenes	<0.20	<0.20

COCs	BHMW119	
	15/06/2021	30/11/2021
	12.5 - 14.0	12.5 - 14.0
Chloroform	0.78	0.53
1,2-DCA	**1.9**	<0.50
Hexane	<1.0	<1.0
MTBE	15	7.1
Xylenes	0.78	0.99

COCs	BH2017-09
	18/07/2017
	1.8 - 4.5
Chloroform	<0.20
1,2-Dichloroethane	**20**
Hexane	<1.0
Methyl t-Butyl Ether	110
Xylenes	0.22

COCs	BHMW120		
	9/6/2021		02/12/2021
	11.8 - 14.9		
Chloroform	<0.20	<0.20	<0.20
1,2-DCA	**5.2**	**5**	**3.6**
Hexane	<1.0	<1.0	<1.0
MTBE	39	37	38
Xylenes	0.22	0.22	<0.20

COCs	BH4-20		
	30/09/2020		22/04/2021
	7.7 - 10.7		
Chloroform	<0.5	<0.5	<0.20
1,2-Dichloroethane	**2.7**	**2.7**	**2.3**
Hexane	<1.0	<1.0	<1.0
Methyl t-Butyl Ether	15.7	15.6	19
Xylenes	<0.5	<0.5	<0.20

COCs	BH5-20	
	30/09/2020	22/04/2021
	10.4 - 11.9	
Chloroform	**3.4**	<0.20
1,2-Dichloroethane	<0.5	<0.50
Hexane	<1.0	<1.0
Methyl t-Butyl Ether	<2.0	<0.50
Xylenes	<0.5	<0.20

COCs	BH2017-02
	18/07/2017
	3.4 - 6.5
Chloroform	<0.20
1,2-Dichloroethane	<0.50
Hexane	**280**
Methyl t-Butyl Ether	<0.50
Xylenes	**6600**

COCs	BH2-20	
	30/09/2020	22/04/2021
	3.2 - 6.2	
Chloroform	<0.5	<0.20
1,2-Dichloroethane	<0.5	<0.50
Hexane	**52**	<1.0
Methyl t-Butyl Ether	<2.0	<0.50
Xylenes	90.7	<0.20

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- (#) WELL SCREEN INTERVAL
- ppm PARTS PER MILLION BY VOLUME
- GROUNDWATER IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Chloroform	2.4
1,2-Dichloroethane	1.6
Hexane	51
Methyl t-Butyl Ether	190
Xylenes	4200

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD Exceeds SCS

Sample Location	MWXX
Sample Collection Date	dd/mm/yyyy
Well Depth Interval	mbgs
Parameter	Concentration (µg/L)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

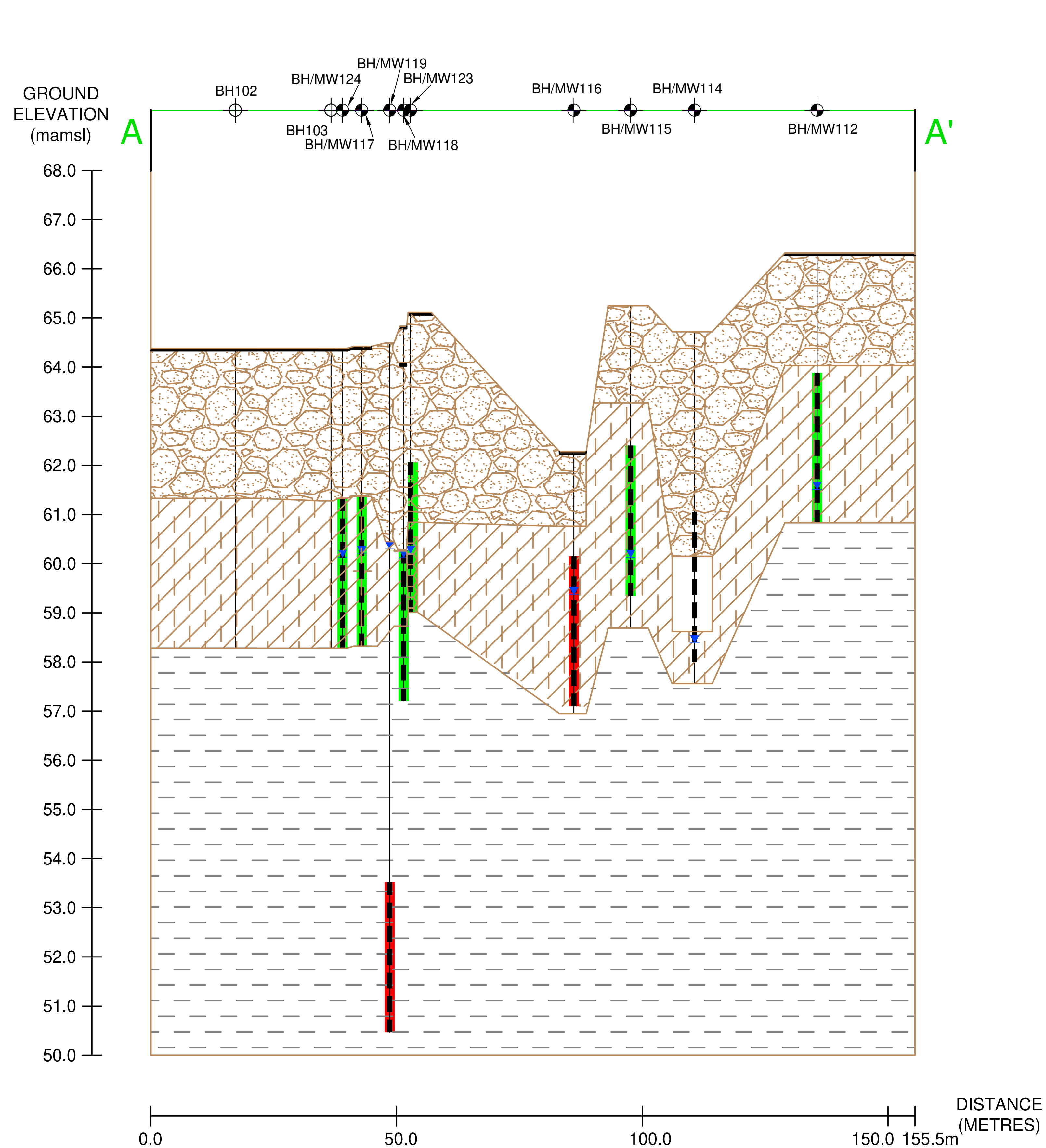
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: VOC EXCEEDANCES IN GROUNDWATER

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 15A



LEGEND

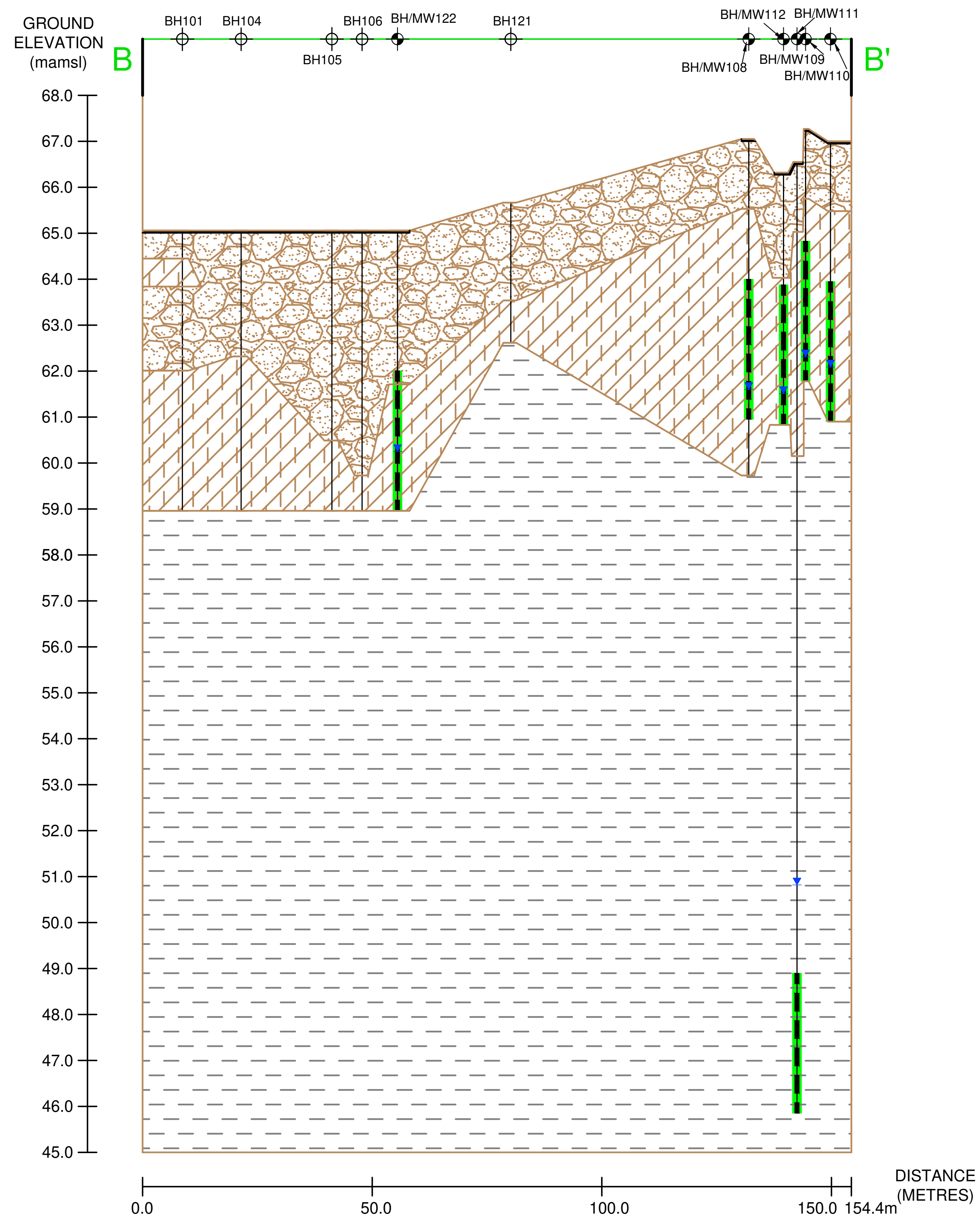
- PHASE TWO PROPERTY BOUNDARY
- CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION A-A' WITH VOC EXCEEDANCES IN GROUONDWATER	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 15B



LEGEND

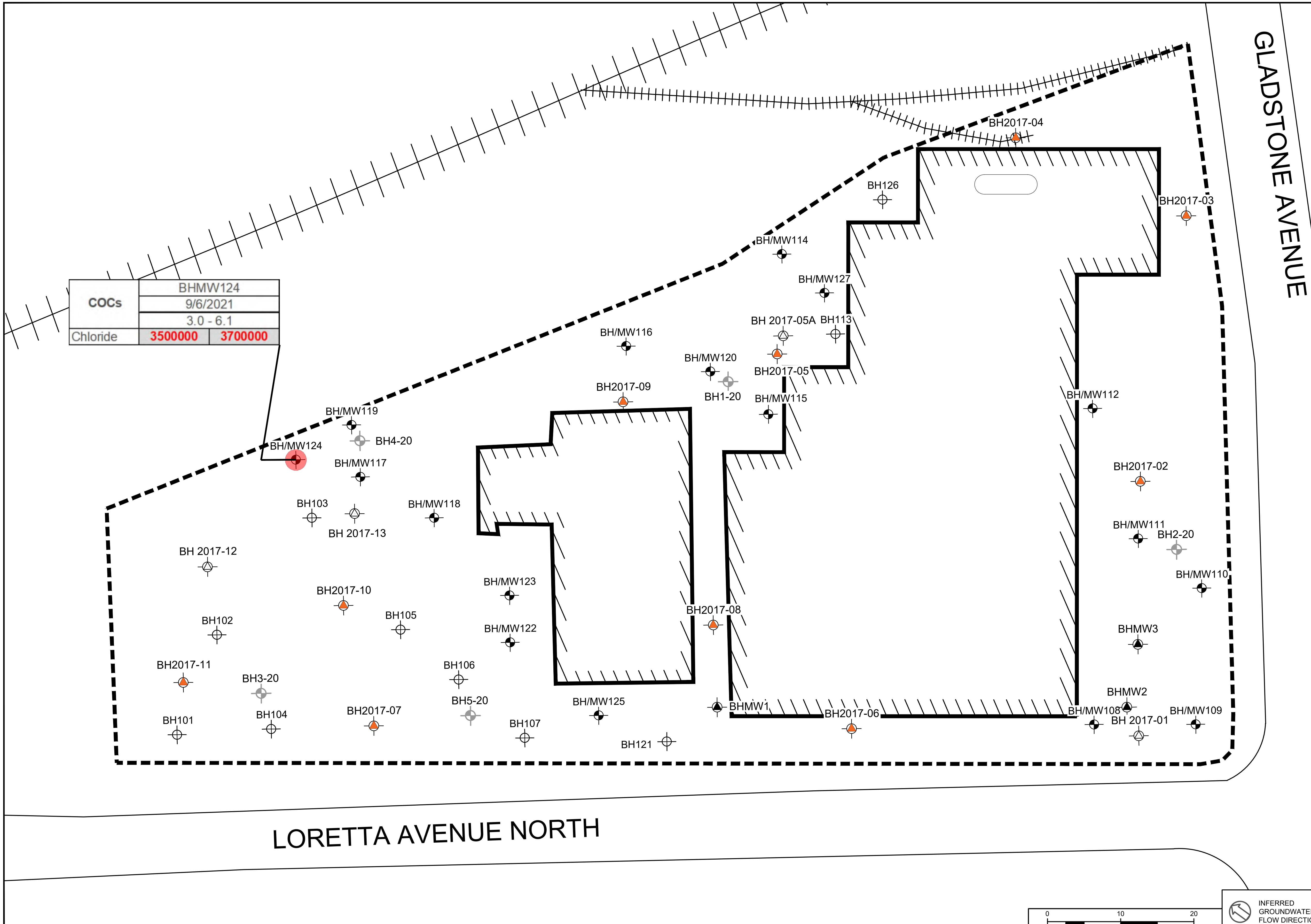
- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP	
PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO	
FIGURE NAME: CROSS-SECTION B-B' WITH VOC EXCEEDANCES IN GROUNDWATER	
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: OCTOBER 2022	FIGURE NUMBER: 15C



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- (#) WELL SCREEN INTERVAL
- ppm PARTS PER MILLION BY VOLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Chloride	2300000

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS

Sample Location	MWXX
Sample Collection Date	dd/mm/yyyy
Well Depth Interval	mbgs
Parameter	Concentration (µg/L)

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION: 951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME: CHLORIDE EXCEEDANCES IN GROUNDWATER

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: OCTOBER 2022	FIGURE NUMBER: 16

FIGURE 17: HUMAN HEALTH CONCEPTUAL SITE MODEL

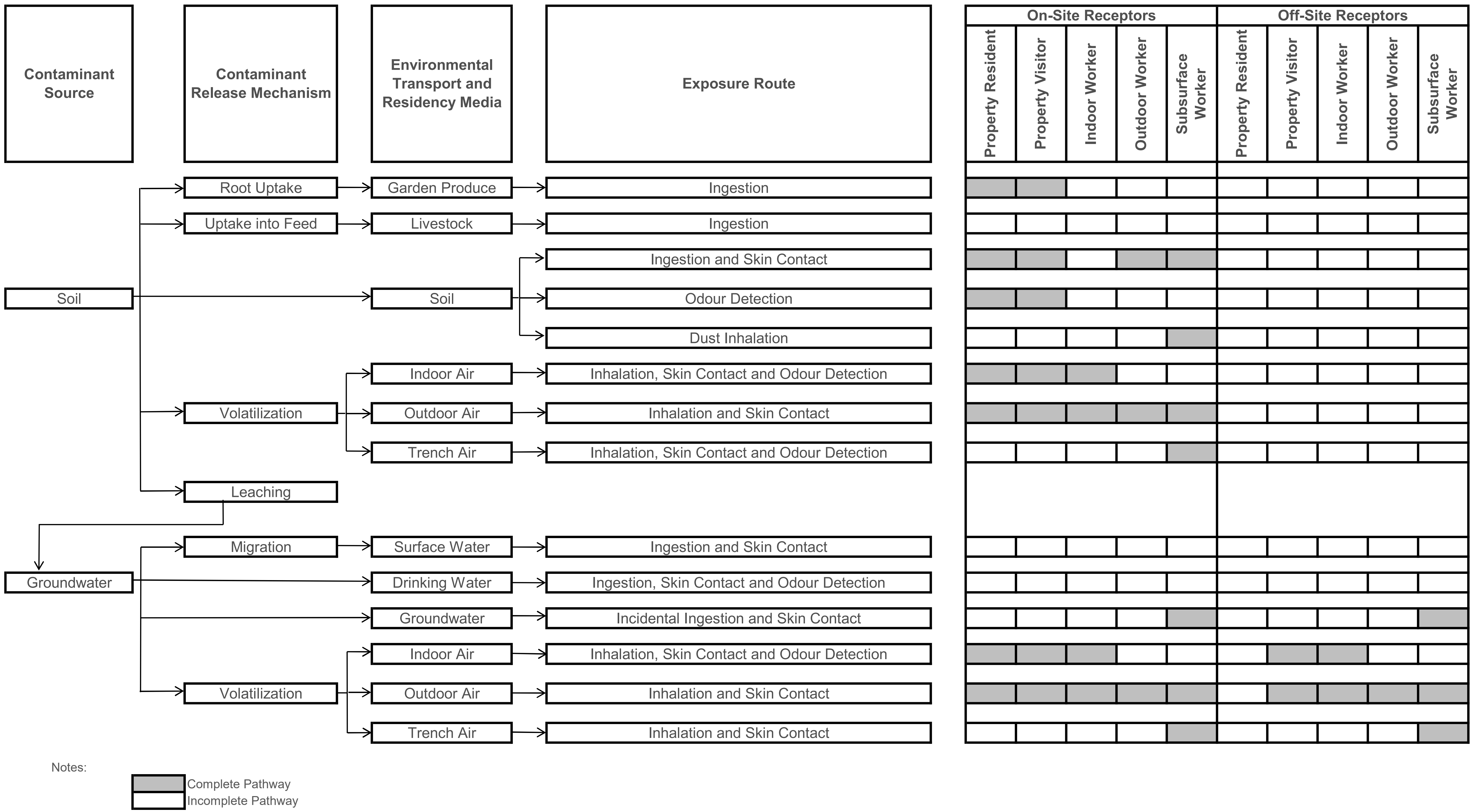
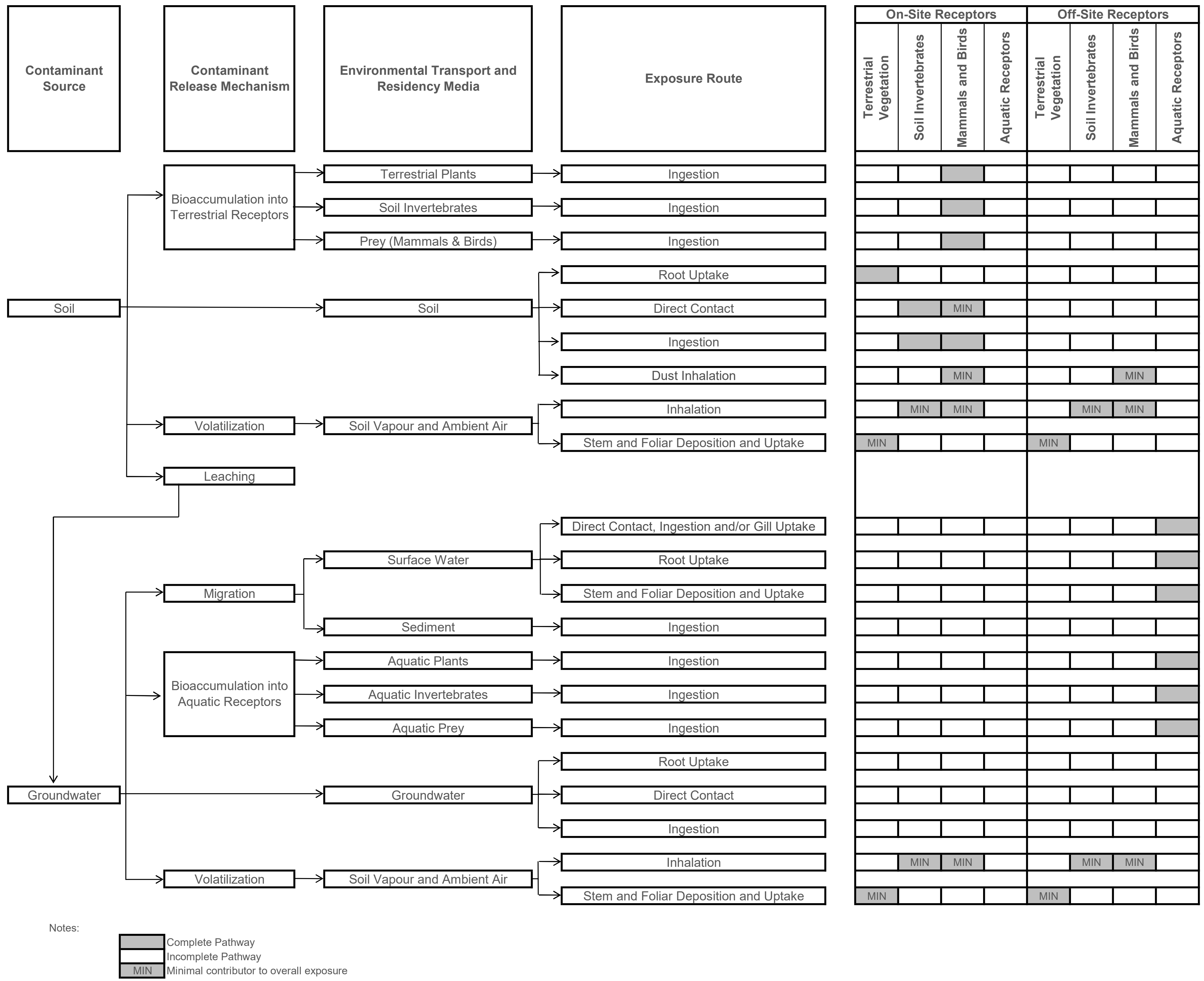


FIGURE 18: ECOLOGICAL HEALTH CONCEPTUAL SITE MODEL



PINCHIN

Table 1 - Table of Current and Past Uses of the Phase One Property

Year	Name of Owner	Description of Property Use	Property Use	Other Observations from Aerial Photographs, Fire Insurance Plans, etc.
951 & 971 Gladstone Avenue: PIN 04107-0292 (LT) (formerly PIN 04107-0276 (LT))				
Pre-1892	Crown	Agricultural or undeveloped land.	Agriculture or Other Use	Assumed undeveloped or agricultural based on title search.
1892 - 1830	David Rutherford	Agricultural or undeveloped land.	Agriculture or Other Use	
1830 - 1837	Francis Hardy	Agricultural or undeveloped land.	Agriculture or Other Use	
1837 - 1838	James Johnston	Agricultural or undeveloped land.	Agriculture or Other Use	
1838 - 1850	Joseph Hinton	Agricultural or undeveloped land.	Agriculture or Other Use	
1850 - 1875	Nicholas Sparks	Agricultural or undeveloped land.	Agriculture or Other Use	
1875 - 1903	Esther Slater	Agricultural or undeveloped land.	Agriculture or Other Use	
1903 - 1927	J. Oliver & Sons Ltd.	Agricultural or undeveloped land then developed for commercial use in the 1920s.	Commercial Use	The 1922 FIP indicated two building structured on the southwest portion of the Site. Based on the 1925 aerial photograph, two building structures are indicated at the Site partially located within the municipal address 951 Gladstone Avenue and a railway spur is located in the east portion of the Site.
1927 - 1928	George Morrison & Richard Lamothe	Commercial building for bread manufacturing.	Commercial Use	

PINCHIN

Year	Name of Owner	Description of Property Use	Property Use	Other Observations from Aerial Photographs, Fire Insurance Plans, etc.
1928 - 1963	Inter City Baking Co. Ltd.	Commercial building structure occupied by Standard Bread Co. Limited, a garage and a shipping and sorting facility.	Commercial Use	Based on the 1938 aerial photograph, two building structures are indicated at the Site and a railway spur is located in the east portion of the Site partially located within the municipal address 951 Gladstone Avenue. The 1958 aerial photograph and 1956 FIP indicate a building structure similar in size and configuration of the present-day Site Building. Based on a review of the 1956 FIP, the Site Building was occupied by Standard Bread Co. Limited, a garage and a shipping and sorting facility and heating was provided by fuel oil.
1963 - 1967	Harvey J. Hyde & Benjamin Rathwell (in trust)	Commercial building structure occupied by Standard Bread Co. Limited, a garage and a shipping and sorting facility.	Commercial Use	The 1965 aerial photograph indicate a building structure similar in size and configuration of the present-day Site Building.
1967 - 1969	Ottawa Rodney Investments Limited	Commercial building structure occupied by Standard Bread Co. Limited, a garage and a shipping and sorting facility.	Commercial Use	
1969 - 2009	Erawan House (International) Ltd.	Multi-tenant residential and commercial building structure occupied by various tenants including Love Printing Service Limited Printing, Enriched Bread Artists, Aboutface Drymounting.	Residential Use and Commercial Use	The 1971 through to 2007 city directories indicated the Site was occupied by various commercial tenants including Love Printing Service Limited Printing, Enriched Bread Artists, Aboutface Drymounting and residential tenants. The 1976, 1984, 1991, 1999 and 2005 aerial photograph indicate a building structure similar in size and configuration to the present-day Site Building.

Year	Name of Owner	Description of Property Use	Property Use	Other Observations from Aerial Photographs, Fire Insurance Plans, etc.
2009 - 2017	Gladstone Avenue Inc.	Commercial building structure occupied by Enriched Bread Artists Studios.	Commercial Use	The 2011 city directories indicate the Site was occupied by Enriched Bread Artists Studios. The 2014 and 2016 aerial photographs indicate a building structure similar in size and configuration of the present-day Site Building.
2017 - 2017	2561592 Ontario Inc. (Gladstone Limited Partnership)	Commercial building structure occupied by various commercial tenants including art studios, glass shops, woodworking facilities, battery storage and parts facility.	Commercial Use	Based on information collected during the Site reconnaissance, the Site Building was commercial use and occupied by various commercial tenants including art studios, glass shops, woodworking facilities, battery storage and parts facility.
2017 - Present	971 Gladstone Avenue Inc.	Commercial building structure occupied by various commercial tenants including art studios, glass shops, woodworking facilities, battery storage and parts facility.	Commercial Use	Based on information collected during the Site reconnaissance, the Site is currently commercial use and occupied by various commercial tenants including art studios, glass shops, woodworking facilities, battery storage and parts facility.
145 Loretta Avenue North: PIN 04107-0291 (LT) (formerly PIN 04107-0013 (LT))				
Pre-1892	Crown	Agricultural or undeveloped land.	Agriculture or Other Use	Assumed undeveloped or agricultural based on title search.
1892 - 1830	David Rutherford	Agricultural or undeveloped land.	Agriculture or Other Use	
1830 - 1837	Francis Hardy	Agricultural or undeveloped land.	Agriculture or Other Use	
1837 - 1838	James Johnston	Agricultural or undeveloped land.	Agriculture or Other Use	

Year	Name of Owner	Description of Property Use	Property Use	Other Observations from Aerial Photographs, Fire Insurance Plans, etc.
1838 - 1850	Joseph Hinton	Agricultural or undeveloped land.	Agriculture or Other Use	
1850 - 1875	Nicholas Sparks	Agricultural or undeveloped land.	Agriculture or Other Use	
1875 - 1892	Mary Sparks	Agricultural or undeveloped land.	Agriculture or Other Use	
1892 - 1906	Sarah Sparks	Agricultural or undeveloped land.	Agriculture or Other Use	
1906 - 1950	Robert Slater	Commercial building assumed for general use.	Commercial Use	Based on the 1925 and 1938 aerial photographs, two building structures are indicated at the Site partially located within the municipal address 145 Loretta Avenue North and a railway spur is located on the east portion of the Site.
1950 - 1954	Major Hill Realities Ltd.	Commercial building assumed for general use.	Commercial Use	
1954 - 1966	John S. Hall	Commercial building structure occupied by Bell Telephone Co. of Canada.	Commercial Use	The 1958 and 1965 aerial photographs and 1956 FIP indicate a building structure similar in size and configuration of the present-day Site Building. Based on review of the 1958 FIP, the Site Building was occupied by Bell Telephone Co. of Canada and a UST was located in the southwest portion of the Site Building.
1966 - 1970	C.A. Johannsen & Sons Ltd.	Commercial building structure occupied by Bell Telephone Co. of Canada.	Commercial Use	
1970 - 1973	South Woodward Developments Limited	Commercial building structure occupied by Chenevert Guy Limited Heating & Electrical Supplies.	Commercial Use	The city directories indicated the Site was occupied by Chenevert Guy Limited Heating & Electrical Supplies.

Year	Name of Owner	Description of Property Use	Property Use	Other Observations from Aerial Photographs, Fire Insurance Plans, etc.
1973 - 1976	Guy Chenevert Limited	Commercial building structure occupied by Chenevert Guy Limited Heating & Air Conditioning and National Grocers Co.	Commercial Use	The city directories indicated the Site was occupied by Chenevert Guy Limited Heating & Air Conditioning and National Grocers Co., in 1976. The 1976 aerial photograph indicates a building structure similar in size and configuration of the present-day Site Building.
1976 - 1979	Boone Plumbing Supply Ltd.	Commercial building structure occupied by Chenevert Guy Limited Heating & Air Conditioning and National Grocers Co.	Commercial Use	
1979 - 2001	British American Bank Note Company Limited (name change to Quebecor World Inc.)	Commercial building structure occupied by British American Bank Note Inc. and British American Security Research.	Commercial Use	The city directories indicated the Site was occupied by British American Security Research in 1981/1982 and British American Bank note Inc., in 1987. The 1984, 1991 and 1999 aerial photographs indicate a building structure similar in size and configuration of the present-day Site Building.
2001 - 2013	1470505 Ontario Inc.	Commercial building structure occupied by Digital Pre-Press Integration Inc., and Terrapro Corporation.	Commercial Use	The city directories indicated the Site was occupied by Terrapro Corporation in 2006/2007 and Digital Pre-Press Integration Inc., in 2011. The 2005 aerial photograph indicates a building structure similar in size and configuration of the present-day Site Building.
2013 - 2017	Loretta Avenue Inc.	Commercial building structure occupied by Digital Pre-Press Integration Inc., and Terrapro Corporation.	Commercial Use	The 2014 and 2016 aerial photographs indicate a building structure similar in size and configuration of the present-day Site Building.

Year	Name of Owner	Description of Property Use	Property Use	Other Observations from Aerial Photographs, Fire Insurance Plans, etc.
2017 - 2017	2561592 Ontario Inc.	Commercial building structure occupied by Digital Pre-Press Integration Inc., and Terrapro Corporation.	Commercial Use	Based on aerial photographs, a building structure similar in size and configuration of the present-day Site Building.
2017 - Present	971 Gladstone Avenue Inc.	Commercial building structure occupied by various commercial tenants including a brewery, commercial office space and a gym.	Commercial Use	Based on information collected during the Site reconnaissance, the Site is currently commercial use and occupied by various commercial tenants including a brewery, commercial office space and a gym.

Table 2 - Table of Potentially Contaminating Activities

PCA Designation	Location of Potentially Contaminating Activity	Potentially Contaminating Activity	Location of PCA (On-Site or Off-Site)	Distance from Phase One Property (metres)	Location Relative to Inferred Groundwater Flow Direction[1]	Contributing to an APEC at the Site (Yes/No)	Media Potentially Impacted (Ground Water, Soil and/or Sediment)
PCA-1	Parking areas and access routes located on the north and southwest portions of the Phase One Property	Item 30 - Importation of Fill Material of Unknown Quality	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil
PCA-2	Northeast portion of Phase One Property.	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil
PCA-3	Former on-Site RFO on the southwest portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil and Groundwater
PCA-4	Former on-Site UST on the west-central portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil and Groundwater
PCA-5	Former on-Site AST on the southeast portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil
PCA-6	Former on-Site automotive repair facility on the central portion of the Phase One Property	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil and Groundwater
PCA-7	Former on-Site printing facility on the southeast portion of the Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil and Groundwater
PCA-8	Former on-Site rail spur on the southeast portion of the Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil
PCA-9	One former UST associated with Hall Fuel Ltd., located on the north adjacent property, 131 Loretta Avenue North	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	5	Downgradient	Yes	Groundwater

PCA-10	Former railway tracks located on the east adjacent property (no civic address)	Item 46 - Rail Yards, Tracks and Spurs	Off-Site	25	Upgradient/ Transgradient	Yes	Groundwater
PCA-11	No. 26 Central Ordnance Depot historically located 50 m east of the Phase One Property (no civic address)	Item 38 - Ordnance Use	Off-Site	50	Upgradient/ Transgradient	Yes	Groundwater
PCA-12	Off-site PFO associated with the City of Ottawa's Traffic Operations, located at 175 Loretta Avenue North	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	35	Upgradient	Yes	Groundwater
PCA-13	Off-Site printing facility located at 975 Gladstone Avenue	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	20	Transgradient	Yes	Groundwater
PCA-14	Pad-mounted transformer on the west-central portion of the Phase One Property	Item 55 - Transformer Manufacturing, Processing and Use	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil
PCA-15	Former on-Site UST on the northwest portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil and Groundwater
PCA-16	On-Site bulk salt storage on the northeast portion of the Phase One Property	Item 48 - Salt Manufacturing, Processing and Bulk Storage	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil and Groundwater
PCA-17	Current on-Site UST located northeast of Site Building A	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil and Groundwater
PCA-18	One double-walled 2,275-litre steel AST located on the northeast portion of the Phase One Property, adjacent to the south elevation of the on-Site Quonset hut	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	NA – On-Site PCA	NA - On-Site PCA	Yes	Soil and Groundwater
PCA-19	Former RFO located at 284 Preston Street	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	205	Upgradient/ Transgradient	No	Not Applicable

PCA-20	Various historical automotive repair facilities located at 55 Breezehill Avenue North	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	On-Site	220	Transgradient	No	Not Applicable
PCA-21	Renters News, an inferred publisher/printing facility, was formerly located at 950 Gladstone Avenue	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	20	Upgradient	No	Not Applicable
PCA-22	Barrie Coal & Wood Yard was located at 53 Breezehill Avenue North	Item 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products	Off-Site	230	Downgradient	No	Not Applicable
PCA-23	Various metal sign manufacturers were historically located at 35 Laurel Street	Item 34 - Metal Fabrication	Off-Site	80	Downgradient	No	Not Applicable
PCA-24	Grant Trading Coal & Wood was located at 75 Breezehill Avenue North	Item 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products	Off-Site	185	Downgradient	No	Not Applicable
PCA-25	An automotive repair facility, Grandtech Auto, was historically located at 111 Breezehill Avenue North	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	Off-Site	120	Downgradient	No	Not Applicable
PCA-26	Buchanan Lighting, an inferred light bulb manufacturer and retailer, was historically located at 127 Loretta Avenue	Item 29 - Glass Manufacturing	Off-Site	30	Downgradient	No	Not Applicable
PCA-27	Mario's Dry Cleaning, an inferred dry-cleaning facility, was historically located at 280 Preston Street	Item 37 - Operation of Dry Cleaning Equipment (where chemicals are used)	Off-Site	200	Upgradient/ Transgradient	No	Not Applicable

Notes:

APEC – Area of Potential Environmental Concern

PCA – Potentially Contaminating Activity

1 – Location of PCA relative to the Phase One Property in relation to the inferred groundwater flow direction in the Phase One Study Area

TABLE 3

SOIL BULK ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	MECP Table 3 SCS	BH2017-1	BH2017-1	BH2017-2	BH2017-2	BH2017-3	BH2017-3	BH2017-4	BH2017-4	BH2017-5	BH2017-5	BH2017-5	BH2017-6
Sample Designation		BH2017-1 SS7	BH2017-1 SS12	BH2017-2 SS6	BH2017-2 SS9	BH2017-3 SS2	BH2017-3 SS11	BH2017-4 SS4	BH2017-4 SS5	BH2017-5A SS3	BH2017-5 SS7	BH2017-5 SS12	BH2017-6 SS12
Sample Collection Date (dd/mm/yyyy)		05/07/2017	05/07/2017	06/07/2017	06/07/2017	05/07/2017	05/07/2017	06/07/2017	06/07/2017	07/07/2017	07/07/2017	07/07/2017	07/07/2017
Laboratory Certificate No.		B7E2706	B7E2706	B7E2666	B7E2666	B7E2706	B7E2706	B7E2666	B7E2666	B7E5306	B7E5306	B7E5306	B7E5306
Date of Laboratory Analysis (dd/mm/yyyy)		11/07/2017-13/07/2021	11/07/2017-13/07/2021	07/072017-14/07/2017	07/072017-14/07/2017	11/07/2017-13/07/2021	11/07/2017-13/07/2021	07/072017-14/07/2017	07/072017-14/07/2017	13/07/2017-14/07/2017	13/07/2017-14/07/2017	13/07/2017-14/07/2017	13/07/2017-14/07/2017
Laboratory Sample No.		ERW223	ERW224	ERV883	ERV884	ERW225	ERW226	ERV885	ERV886	ESJ281	ESJ278	ESJ279	ESJ280
Sample Depth (mbgs)		3.6 - 4.2	6.6 - 7.2	3.0 - 3.6	4.8 - 5.4	0.6 - 1.2	6.0 - 6.4	1.8 - 2.4	2.4 - 3.0	1.2 - 1.8	3.6 - 4.2	6.6 - 7.2	6.6 - 7.2
Miscellaneous Parameters													
pH (pH Units)	NV	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons (PHCs)													
PHCs F1 (C_6 - C_{10})	55	**200**	**460**	<10	<10	<10	<10	33	30	<10	**60**	<10	<10
PHCs F2 (>C_{10} - C_{16})	98	78	**470**	<10	<10	23	16	55	<10	**260**	**160**	<10	<10
PHCs F3 (>C_{16} - C_{34})	300	<50	<50	<50	<50	170	<50	<50	<50	**2300**	**340**	<50	<50
PHCs F4 (>C_{34} - C_{50})	2800	<50	<50	<50	<50	630	<50	<50	<50	490	79	<50	<50
PHCs F4G (>C_{50})	2800	-	-	-	-	2400	-	-	-	-	-	-	-
Volatile Organic Compounds													
Acetone	16	-	<0.50	-	<0.50	-	-	-	<0.50	<0.50	<0.50	-	<0.50
Benzene	0.21	<0.020	**0.93**	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.039	<0.020	0.11	<0.020
Bromodichloromethane	13	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Bromoform	0.27	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Bromomethane	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Carbon Tetrachloride	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Chlorobenzene	2.4	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Chloroform	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Dibromochloromethane	9.4	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,2-Dichlorobenzene	3.4	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,3-Dichlorobenzene	4.8	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,4-Dichlorobenzene	0.083	-	**1.1**	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Dichlorodifluoromethane	16	-	3.8	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,1-Dichloroethane	3.5	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,2-Dichloroethane	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	**0.2**	<0.050	-	<0.050
1,1-Dichloroethylene	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
cis-1,2-Dichloroethylene	3.4	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
trans-1,2-Dichloroethylene	0.084	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,2-Dichloropropane	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,3-Dichloropropene (Total)	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Ethylbenzene	2	0.037	**8.1**	<0.020	0.33	<0.020	<0.020	<0.020	0.13	0.056	<0.020	<0.020	<0.020
Ethylene Dibromide	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Hexane	2.8	-	**11**	-	0.17	-	-	-	0.41	<0.050	<0.050	-	<0.050
Methyl Ethyl Ketone	16	-	<0.50	-	<0.50	-	-	-	<0.50	<0.50	<0.50	-	<0.50
Methyl Isobutyl Ketone	1.7	-	<0.50	-	<0.50	-	-	-	<0.50	<0.50	<0.50	-	<0.50
Methyl t-Butyl Ether (MTBE)	0.75	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Methylene Chloride	0.1	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Styrene	0.7	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,1,1,2-Tetrachloroethane	0.058	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,1,2,2-Tetrachloroethane	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Tetrachloroethylene	0.28	-	<0.050	-	<0.020	-	-	-	<0.020	<0.050	<0.050	-	<0.020
Toluene	2.3	0.042	**11**	<0.020	<0.050	<0.020	0.03	<0.020	<0.050	0.32	<0.020	<0.020	<0.050
1,1,1-Trichloroethane	0.38	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
1,1,2-Trichloroethane	0.05	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Trichloroethylene	0.061	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Trichlorofluoromethane	4	-	<0.050	-	<0.050	-	-	-	<0.050	<0.050	<0.050	-	<0.050
Vinyl Chloride	0.02	-	<0.020	-	<0.020	-	-	-	<0.020	<0.020	<0.020	-	<0.020
Xylenes (Total)	3.1	**4.9**	**41**	<0.040	0.59	<0.040	0.13	<0.040	<0.020	0.44	<0.020	<0.040	<0.020
Polycyclic Aromatic Hydrocarbons													
Acenaphthene	7.9	-	-	-	-	-	-	-	<0.0050	-	-	-	-
Acenaphthylene	0.15	-	-	-	-	-	-	-	<0.0050	-	-	-	-
Anthracene	0.67	-	-	-	-	-	-	-	0.014	-	-	-	-
Benzo(a)anthracene	0.5	-	-	-	-	-	-	-	<0.0050	-	-	-	-
Benzo(a)pyrene	0.3	-	-	-	-	-	-	-	<0.0050	-	-	-	-
Benzo(b)fluoranthene	0.78	-	-	-	-	-	-	-	<0.0050	-	-	-	-
Benzo(ghi)perylene	6.6	-	-	-	-	-	-	-	<0.0050	-	-	-	-
Benzo(k)fluoranthene	0.78	-	-	-	-	-	-	-	<0.0050	-	-	-	-
Chrysene	7	-	-	-	-	-	-	-	0.005	-	-	-	-
Dibenzo(a,h)anthracene	0.1	-	-	-	-	-	-	-	<0.0050	-	-	-	-
Fluoranthene	0.69	-	-	-	-	-	-	-	0.019	-	-	-	-
Fluorene	62	-	-	-	-	-	-	-	0.006	-	-	-	-
Indeno(1,2,3-cd)pyrene	0.38	-	-	-	-	-	-	-	<0.0050	-	-	-	-
1- & 2-Methylnaphthalene	0.99	-	-	-	-	-	-	-	0.0073	-	-	-	-
Naphthalene	0.6	-	-	-	-	-	-	-	<0.0050	-	-	-	-
Phenanthrene	6.2	-	-	-	-	-	-	-	0.022	-	-	-	-
Pyrene	78	-	-	-	-	-	-	-	0.014	-	-	-	-
Metals													
Antimony	7.5	<0.2	-	-	<0.2	0.45	-	-	<0.2	-	<0.2	-	<0.2
Arsenic	18	<0.1	-	-	<0.1	3.5	-	-	<1	-	1.4	-	<1
Barium	390	68	-	-	82	160	-	-	110	-	320	-	56
Beryllium	4	0.25	-	-	0.33	0.56	-	-	0.36	-	0.74	-	0.26
Boron (Total)	120	5.1	-	-	<5	8.1	-	-	5.8	-	8.1	-	6.4
Cadmium	1.2	<0.1	-	-	<0.1	0.22	-	-	<0.1	-	<0.1	-	<0.1
Chromium (Total)	160	14	-	-	18	40	-	-	21	-	100	-	15
Cobalt	22	6	-	-	6.7	10	-	-	8	-	21	-	5.4
Copper	140	11	-	-	14	35	-	-	15	-	48	-	11
Lead	120	5	-	-	4.7	38	-	-	4.8	-	13	-	4
Mercury	0.27	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	6.9	<0.5	-	-	<0.5	0.9	-	-	<0.5	-	0.54	-	0.55
Nickel	100	10	-	-	13	26	-	-	13	-	55	-	9.7
Selenium	2.4	<0.5	-	-	<0.5	<0.5	-	-	<0.5	-	<0.5	-	<0.5
Silver	20	<0.2	-	-	<0.2	<0.2	-	-	<0.2	-	<0.2	-	<0.2
Thallium	1	0.1	-	-	0.14	0.23	-	-	0.13	-	0.36	-	0.068
Uranium	23	0.42	-	-	0.53	0.82	-	-	0.57	-	0.66	-	0.9
Vanadium	86	25	-	-	32	56	-	-	34	-	**92**	-	23
Zinc	340	24	-	-	27	79	-	-	30	-	110	-	19
Inorganics													
Electrical Conductivity (mS/cm)	0.7	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Adsorption Ratio (No Units)	5	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls (PCBs)													
PCBs (Total)	0.35	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for Residential/Parkland/Institutional Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per gram, unless otherwise noted
mbgs	metres below ground surface
mS/cm	milliSiemens per centimetre

Input By: CT [22-Jul-2021]; EC [21-Oct-2021]

Checked By: EC [6-Aug-2021]

TABLE 3

SOIL BULK ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	MECP Table 3 SCS	BH2017-7	BH2017-7	BH2017-7	BH2017-8	BH2017-8	BH2017-9	BH2017-9	BH2017-10	BH2017-10	BH2017-10	BH2017-11	BH2017-11
Sample Designation		BH2017-7 SS5	BH2017-7 SS8	BH2017 -7 SS14	BH2017-8 SS5	BH2017-8 SS12	BH2017-9 SS4	BH2017-9 SS8	BH2017-10 SS10	BH2017-10 SS11	BH2017-10 SS13	BH2017-11 SS3	BH2017-11 SS11
Sample Collection Date (dd/mm/yyyy)		27/06/2017	27/06/2017	27/06/2017	10/07/2017	10/07/2017	06/07/2017	06/07/2017	27/06/2017	27/06/2017	27/06/2017	04/07/2017	04/07/2017
Laboratory Certificate No.		B7D5083	B7D5083	B7D5083	B7E5306	B7E5306	B7E2666	B7E2666	B7D5076	B7D5076	B7D5076	B7D9999	B7D9999
Date of Laboratory Analysis (dd/mm/yyyy)		30/06/2017-17/07/2017	30/06/2017-17/07/2017	30/06/2017-17/07/2017	13/07/2017-14/07/2017	13/07/2017-14/07/2017	07/072017-14/07/2017	07/072017-14/07/2017	30/06/2017-05/07/2017	30/06/2017-05/07/2017	30/06/2017-05/07/2017	07/07/2017-11/07/2017	07/07/2017-11/07/2017
Laboratory Sample No.		EQL314	EQL315	EQL313	ESJ282	ESJ283	ERV887	ERV888	EQX158	EQL302	EQL304	ERJ082	ERJ083
Sample Depth (mbgs)		2.4 - 3.0	4.2 - 4.8	7.8 - 8.0	2.4 - 3.0	6.6 - 7.2	1.8 - 2.4	4.2 - 4.5	5.4 - 6.0	6.0 - 6.6	7.2 - 7.8	1.2 - 1.8	6.0 - 6.6
Miscellaneous Parameters													
pH (pH Units)	NV	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons (PHCs)													
PHCs F1 (C_6 - C_{10})	55	-	<10	<10	<10	<10	<10	14	<10	<10	-	-	<10
PHCs F2 (>C_{10} - C_{16})	98	-	**310**	<10	<10	<10	<10	<10	<10	<10	-	-	<10
PHCs F3 (>C_{16} - C_{34})	300	-	**340**	<50	<50	<50	170	<50	<50	<50	-	-	<50
PHCs F4 (>C_{34} - C_{50})	2800	-	<50	<50	<50	<50	380	<50	<50	<50	-	-	<50
PHCs F4G (>C_{50})	2800	-	-	-	-	-	920	-	-	-	-	-	-
Volatile Organic Compounds													
Acetone	16	-	-	-	-	<0.50	<0.50	-	<0.50	-	-	-	-
Benzene	0.21	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-	-	<0.020
Bromodichloromethane	13	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Bromoform	0.27	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Bromomethane	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Carbon Tetrachloride	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Chlorobenzene	2.4	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Chloroform	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Dibromochloromethane	9.4	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,2-Dichlorobenzene	3.4	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,3-Dichlorobenzene	4.8	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,4-Dichlorobenzene	0.083	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Dichlorodifluoromethane	16	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,1-Dichloroethane	3.5	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,2-Dichloroethane	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,1-Dichloroethylene	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
cis-1,2-Dichloroethylene	3.4	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
trans-1,2-Dichloroethylene	0.084	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,2-Dichloropropane	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,3-Dichloropropene (Total)	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Ethylbenzene	2	-	<0.020	<0.020	<0.020	<0.020	<0.020	0.19	<0.020	<0.020	-	-	<0.020
Ethylene Dibromide	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Hexane	2.8	-	-	-	-	0.25	<0.050	-	<0.050	-	-	-	-
Methyl Ethyl Ketone	16	-	-	-	-	<0.50	<0.50	-	<0.50	-	-	-	-
Methyl Isobutyl Ketone	1.7	-	-	-	-	<0.50	<0.50	-	<0.50	-	-	-	-
Methyl t-Butyl Ether (MTBE)	0.75	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Methylene Chloride	0.1	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Styrene	0.7	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,1,1,2-Tetrachloroethane	0.058	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,1,2,2-Tetrachloroethane	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Tetrachloroethylene	0.28	-	-	-	-	<0.020	<0.020	-	<0.050	-	-	-	-
Toluene	2.3	-	<0.020	<0.020	<0.020	<0.050	<0.050	0.059	<0.020	<0.020	-	-	<0.020
1,1,1-Trichloroethane	0.38	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
1,1,2-Trichloroethane	0.05	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Trichloroethylene	0.061	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Trichlorofluoromethane	4	-	-	-	-	<0.050	<0.050	-	<0.050	-	-	-	-
Vinyl Chloride	0.02	-	-	-	-	<0.020	<0.020	-	<0.020	-	-	-	-
Xylenes (Total)	3.1	-	<0.040	0.10	<0.040	0.029	<0.020	0.87	<0.020	<0.040	-	-	<0.040
Polycyclic Aromatic Hydrocarbons													
Acenaphthene	7.9	-	<0.010	-	-	-	<0.050	-	-	-	-	0.26	-
Acenaphthylene	0.15	-	<0.0050	-	-	-	<0.050	-	-	-	-	**0.84**	-
Anthracene	0.67	-	<0.0050	-	-	-	<0.050	-	-	-	-	**0.73**	-
Benzo(a)anthracene	0.5	-	<0.0050	-	-	-	<0.050	-	-	-	-	**3.5**	-
Benzo(a)pyrene	0.3	-	<0.0050	-	-	-	<0.050	-	-	-	-	**3.2**	-
Benzo(b)fluoranthene	0.78	-	<0.0050	-	-	-	<0.050	-	-	-	-	**3.9**	-
Benzo(ghi)perylene	6.6	-	<0.0050	-	-	-	<0.050	-	-	-	-	2.1	-
Benzo(k)fluoranthene	0.78	-	<0.0050	-	-	-	<0.050	-	-	-	-	**1.4**	-
Chrysene	7	-	<0.0050	-	-	-	<0.050	-	-	-	-	2.9	-
Dibenzo(a,h)anthracene	0.1	-	<0.0050	-	-	-	<0.050	-	-	-	-	**0.51**	-
Fluoranthene	0.69	-	0.01	-	-	-	0.067	-	-	-	-	**7.0**	-
Fluorene	62	-	<0.0050	-	-	-	<0.050	-	-	-	-	0.46	-
Indeno(1,2,3-cd)pyrene	0.38	-	<0.0050	-	-	-	<0.050	-	-	-	-	**2.5**	-
1- & 2-Methylnaphthalene	0.99	-	<0.0071	-	-	-	<0.050	-	-	-	-	0.62	-
Naphthalene	0.6	-	<0.0050	-	-	-	<0.050	-	-	-	-	0.40	-
Phenanthrene	6.2	-	<0.0050	-	-	-	0.074	-	-	-	-	2.2	-
Pyrene	78	-	0.048	-	-	-	0.055	-	-	-	-	5.7	-
Metals													
Antimony	7.5	<0.2	-	-	0.21	-	<0.2	-	-	-	1.7	3.9	-
Arsenic	18	1.8	-	-	2	-	<1	-	-	-	4.7	**33**	-
Barium	390	40	-	-	370	-	190	-	-	-	170	300	-
Beryllium	4	0.22	-	-	0.78	-	0.56	-	-	-	0.46	0.44	-
Boron (Total)	120	<5	-	-	7.7	-	5.8	-	-	-	7.3	11	-
Cadmium	1.2	<0.1	-	-	0.1	-	<0.1	-	-	-	0.24	0.8	-
Chromium (Total)	160	14	-	-	120	-	42	-	-	-	36	31	-
Cobalt	22	4	-	-	22	-	12	-	-	-	9.5	7	-
Copper	140	7.9	-	-	54	-	24	-	-	-	30	100	-
Lead	120	7.7	-	-	10	-	5.9	-	-	-	70	**410**	-
Mercury	0.27	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	6.9	2.3	-	-	0.53	-	<0.5	-	-	-	1.6	6.5	-
Nickel	100	8.5	-	-	64	-	26	-	-	-	25	29	-
Selenium	2.4	<0.5	-	-	<0.5	-	<0.5	-	-	-	<0.5	1.2	-
Silver	20	<0.2	-	-	<0.2	-	<0.2	-	-	-	<0.2	0.37	-
Thallium	1	0.087	-	-	0.38	-	0.28	-	-	-	0.2	0.19	-
Uranium	23	0.46	-	-	0.57	-	0.58	-	-	-	0.65	1.2	-
Vanadium	86	18	-	-	**90**	-	62	-	-	-	40	24	-
Zinc	340	18	-	-	110	-	63	-	-	-	90	310	-
Inorganics													
Electrical Conductivity (mS/cm)	0.7	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Adsorption Ratio (No Units)	5	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls (PCBs)													
PCBs (Total)	0.35	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for Residential/Parkland/Institutional Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per gram, unless otherwise noted
mbgs	metres below ground surface
mS/cm	milliSiemens per centimetre

Input By: CT [22-Jul-2021]; EC [21-Oct-2021]

Checked By: EC [6-Aug-2021]

TABLE 3

SOIL BULK ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	**MECP Table 3 SCS**	BH2017-11	BH2017-13	BH2017-13	BH1-20	BH2-20	BH2-20	BH3-20	BH3-20	BH3-20	BH4-20	BH5-20	BH5-20
Sample Designation		BH2017-11 SS13	BH2017-13 SS3	BH2017-31 SS3	BH1-20-SS2/SS3	BH2-20-SS2	BH2-20-SS7	BH3-20-SS2	BH3-20-SS6	BH3-20-SS11	BH4-20-SS5	BH5-20-SS2	BH5-20-SS10
Sample Collection Date (dd/mm/yyyy)		04/07/2017	28/06/2017	28/06/2017	14/09/2020	14/09/2020	14/09/2020	22/09/2020	22/09/2020	22/09/2020	22/09/2020	23/09/2020	23/09/2020
Laboratory Certificate No.		B7D9999	B7D6393	B7D6393	2038458	2038458	2038458	2039462	2039462	2039462	2039462	2039597	2039597
Date of Laboratory Analysis (dd/mm/yyyy)		07/07/2017-11/07/2017	01/07/2017-07/07/2017	01/07/2017-07/07/2017	19/09/2020-22/09/2020	19/09/2020-22/09/2020	19/09/2020-22/09/2020	25/09/2020-28/09/2020	25/09/2020-28/09/2020	25/09/2020-28/09/2020	25/09/2020-28/09/2020	28/09/2020	28/09/2020
Laboratory Sample No.		ERJ084	EQR287	EQR289	2038458-01	2038458-02	2038458-03	2039462-01	2039462-02	2039462-03	2039462-04	2039597-01	2039597-02
Sample Depth (mbgs)		7.2 - 7.8	1.2 - 1.8	1.2 - 1.8	0.76 - 2.13	0.76 - 1.37	4.57 - 5.18	0.76 - 1.37	3.81 - 4.41	7.62 - 7.87	3.05 - 3.66	0.76 - 1.37	6.86 - 6.93
Miscellaneous Parameters													
pH (pH Units)	NV	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons (PHCs)													
PHCs F1 (C_6 - C_{10})	55	<10	<10	<10	-	-	<7	-	-	-	-	-	-
PHCs F2 (>C_{10} - C_{16})	98	<10	<10	<10	-	-	<4	-	-	-	-	-	-
PHCs F3 (>C_{16} - C_{34})	300	170	170	66	-	-	<8	-	-	-	-	-	-
PHCs F4 (>C_{34} - C_{50})	2800	370	370	180	-	-	<6	-	-	-	-	-	-
PHCs F4G (>C_{50})	2800	-	-	610	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds													
Acetone	16	-	-	<0.50	-	-	-	-	-	<0.5	-	-	<0.5
Benzene	0.21	<0.020	<0.020	<0.020	-	-	<0.020	-	-	<0.02	-	-	<0.02
Bromodichloromethane	13	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Bromoform	0.27	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Bromomethane	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Carbon Tetrachloride	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Chlorobenzene	2.4	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Chloroform	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Dibromochloromethane	9.4	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,2-Dichlorobenzene	3.4	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,3-Dichlorobenzene	4.8	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,4-Dichlorobenzene	0.083	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Dichlorodifluoromethane	16	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,1-Dichloroethane	3.5	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,2-Dichloroethane	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,1-Dichloroethylene	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
cis-1,2-Dichloroethylene	3.4	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
trans-1,2-Dichloroethylene	0.084	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,2-Dichloropropane	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,3-Dichloropropene (Total)	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Ethylbenzene	2	<0.020	<0.020	<0.020	-	-	<0.05	-	-	<0.05	-	-	<0.05
Ethylene Dibromide	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Hexane	2.8	-	-	0.084	-	-	-	-	-	<0.05	-	-	<0.05
Methyl Ethyl Ketone	16	-	-	<0.50	-	-	-	-	-	<0.05	-	-	<0.05
Methyl Isobutyl Ketone	1.7	-	-	<0.50	-	-	-	-	-	<0.05	-	-	<0.05
Methyl t-Butyl Ether (MTBE)	0.75	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Methylene Chloride	0.1	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Styrene	0.7	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,1,1,2-Tetrachloroethane	0.058	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,1,2,2-Tetrachloroethane	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Tetrachloroethylene	0.28	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Toluene	2.3	<0.020	<0.020	0.027	-	-	<0.05	-	-	<0.05	-	-	<0.05
1,1,1-Trichloroethane	0.38	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
1,1,2-Trichloroethane	0.05	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Trichloroethylene	0.061	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Trichlorofluoromethane	4	-	-	<0.050	-	-	-	-	-	<0.05	-	-	<0.05
Vinyl Chloride	0.02	-	-	<0.020	-	-	-	-	-	<0.02	-	-	<0.02
Xylenes (Total)	3.1	<0.040	<0.040	0.031	-	-	<0.05	-	-	<0.05	-	-	<0.05
Polycyclic Aromatic Hydrocarbons													
Acenaphthene	7.9	-	-	0.082	0.02	0.04	-	0.09	0.02	-	0.02	0.18	-
Acenaphthylene	0.15	-	-	0.072	0.07	**0.20**	-	**0.80**	0.07	-	<0.02	**0.67**	-
Anthracene	0.67	-	-	0.13	0.12	0.21	-	**0.85**	0.09	-	0.05	**1.09**	-
Benzo(a)anthracene	0.5	-	-	0.23	0.28	0.40	-	**1.77**	0.25	-	0.11	**2.29**	-
Benzo(a)pyrene	0.3	-	-	0.19	0.28	**0.57**	-	**1.98**	**0.32**	-	0.12	**2.26**	-
Benzo(b)fluoranthene	0.78	-	-	0.24	0.34	0.64	-	**2.40**	0.37	-	0.15	**2.25**	-
Benzo(ghi)perylene	6.6	-	-	0.11	0.18	0.32	-	1.55	0.21	-	0.06	1.13	-
Benzo(k)fluoranthene	0.78	-	-	0.085	0.18	0.37	-	**1.31**	0.19	-	0.08	**1.09**	-
Chrysene	7	-	-	0.190	0.26	0.51	-	1.97	0.26	-	0.11	2.30	-
Dibenzo(a,h)anthracene	0.1	-	-	<0.050	0.05	0.08	-	**0.41**	0.05	-	<0.02	**0.35**	-
Fluoranthene	0.69	-	-	0.52	0.54	**0.81**	-	**3.90**	0.54	-	0.23	**5.15**	-
Fluorene	62	-	-	0.15	0.02	0.03	-	0.14	0.03	-	<0.02	0.30	-
Indeno(1,2,3-cd)pyrene	0.38	-	-	0.11	0.17	0.29	-	**1.47**	0.20	-	0.07	**1.17**	-
1- & 2-Methylnaphthalene	0.99	-	-	0.30	0.26	0.08	-	0.10	0.06	-	<0.04	0.29	-
Naphthalene	0.6	-	-	0.18	0.10	0.03	-	0.05	0.03	-	<0.01	0.32	-
Phenanthrene	6.2	-	-	0.49	0.29	0.39	-	1.44	0.28	-	0.19	3.30	-
Pyrene	78	-	-	0.38	0.48	0.69	-	3.08	0.45	-	0.19	4.40	-
Metals													
Antimony	7.5	-	<0.2	0.34	-	-	-	5.9	-	-	<1	-	-
Arsenic	18	-	2.1	1.7	-	-	-	**56.6**	-	-	**20.7**	-	-
Barium	390	-	340	290	-	-	-	249	-	-	109	-	-
Beryllium	4	-	0.74	0.72	-	-	-	0.6	-	-	0.7	-	-
Boron (Total)	120	-	6.6	6.2	-	-	-	12	-	-	11.9	-	-
Cadmium	1.2	-	0.14	0.17	-	-	-	1.1	-	-	<0.5	-	-
Chromium (Total)	160	-	110	100	-	-	-	84	-	-	30.3	-	-
Cobalt	22	-	**23**	21	-	-	-	6.4	-	-	9.7	-	-
Copper	140	-	55	50	-	-	-	118	-	-	26.1	-	-
Lead	120	-	18	22	-	-	-	**484**	-	-	46.1	-	-
Mercury	0.27	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	6.9	-	0.54	0.66	-	-	-	**9**	-	-	<1	-	-
Nickel	100	-	62	59	-	-	-	28.2	-	-	20.8	-	-
Selenium	2.4	-	<0.5	<0.5	-	-	-	1.7	-	-	<1	-	-
Silver	20	-	<0.2	<0.2	-	-	-	0.8	-	-	<0.3	-	-
Thallium	1	-	0.41	0.36	-	-	-	<1	-	-	<1	-	-
Uranium	23	-	0.68	0.7	-	-	-	1.4	-	-	<1	-	-
Vanadium	86	-	**100**	**95**	-	-	-	25.6	-	-	41.2	-	-
Zinc	340	-	120	110	-	-	-	**374**	-	-	77.3	-	-
Inorganics													
Electrical Conductivity (mS/cm)	0.7	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Adsorption Ratio (No Units)	5	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls (PCBs)													
PCBs (Total)	0.35	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for Residential/Parkland/Institutional Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per gram, unless otherwise noted
mbgs	metres below ground surface
mS/cm	milliSiemens per centimetre

Input By: CT [22-Jul-2021]; EC [21-Oct-2021]

Checked By: EC [6-Aug-2021]

PINCHIN

TABLE 3

SOIL BULK ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	MECP Table 3 SCS	BH101	BH101	BH102	BH102	BH103	BH103	BH104	BH104	BH105	BH105	BH106	BH106
Sample Designation		BH101 SS2	BH101 SS6	BH102 SS2	BH102 SS6	BH103 SS2	BH103 SS7	BH104 SS4	BH104 SS7	BH105 SS2	BH105 SS7	BH106 SS4	BH106 SS8
Sample Collection Date (dd/mm/yyyy)		26/04/2021	26/04/2021	26/04/2021	26/04/2021	26/04/2021	26/04/2021	26/04/2021	26/04/2021	26/04/2021	26/04/2021	26/04/2021	26/04/2021
Laboratory Certificate No.		C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083
Date of Laboratory Analysis (dd/mm/yyyy)		30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021
Laboratory Sample No.		PLN551	PLN552	PLN553	PLN554	PLN555	PLN556	PLN557	PLN558	PLN559	PLN560	PLN575	PLN576
Sample Depth (mbgs)		0.75 - 1.50	3.81 - 4.57	0.75 - 1.50	3.81 - 4.57	0.75 - 1.50	4.57 - 5.33	2.29 - 3.05	4.57 - 5.33	0.75 - 1.50	4.57 - 5.33	2.29 - 3.05	5.33 - 6.10
Miscellaneous Parameters													
pH (pH Units)	NV	-	-	-	-	7.97	7.82	-	-	7.8	7.42	-	-
Petroleum Hydrocarbons (PHCs)													
PHCs F1 (C_6 - C_{10})	55	<10	<10	<10	<10	<10	<10	<10	<10	<10	11	<10	<10
PHCs F2 (>C_{10} - C_{16})	98	**550**	<10	<10	<10	<10	<10	<10	**130**	<10	**280**	<10	<10
PHCs F3 (>C_{16} - C_{34})	300	**690**	<50	82	<50	<50	<50	210	160	190	**340**	<50	<50
PHCs F4 (>C_{34} - C_{50})	2800	110	<50	54	<50	91	<50	170	<100	300	<50	<50	<50
PHCs F4G (>C_{50})	2800	-	-	-	-	-	-	-	-	1000	-	-	-
Volatile Organic Compounds													
Acetone	16	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	0.27	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	2.4	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	9.4	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	3.4	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	4.8	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	0.083	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	16	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	3.5	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	0.05	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethylene	0.05	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethylene	3.4	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethylene	0.084	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	0.05	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene (Total)	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Hexane	2.8	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	16	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	1.7	-	-	-	-	-	-	-	-	-	-	-	-
Methyl t-Butyl Ether (MTBE)	0.75	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	0.7	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	0.058	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	0.28	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	2.3	0.024	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	0.38	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	0.061	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	4	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.02	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes (Total)	3.1	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Polycyclic Aromatic Hydrocarbons													
Acenaphthene	7.9	0.43	<0.0050	0.046	0.018	<0.050	<0.0050	0.052	0.018	0.084	0.065	<0.0050	<0.0050
Acenaphthylene	0.15	**0.18**	<0.0050	0.073	<0.0050	<0.050	<0.0050	**0.16**	<0.0050	0.076	<0.0050	<0.0050	<0.0050
Anthracene	0.67	0.43	<0.0050	0.18	0.0085	<0.050	<0.0050	0.21	0.0063	0.29	<0.050	<0.0050	<0.0050
Benzo(a)anthracene	0.5	**1.2**	<0.0050	0.49	<0.0050	0.081	<0.0050	**0.97**	<0.0050	**1.2**	<0.0050	<0.0050	<0.0050
Benzo(a)pyrene	0.3	**1.3**	<0.0050	**0.5**	<0.0050	0.081	<0.0050	**1.3**	<0.0050	**1.2**	<0.0050	<0.0050	<0.0050
Benzo(b)fluoranthene	0.78	**1.8**	<0.0050	0.63	<0.0050	0.13	0.0053	**1.8**	<0.0050	**1.4**	<0.0050	<0.0050	<0.0050
Benzo(ghi)perylene	6.6	0.96	<0.0050	0.35	<0.0050	0.058	<0.0050	1.1	<0.0050	0.7	<0.0050	<0.0050	<0.0050
Benzo(k)fluoranthene	0.78	0.68	<0.0050	0.23	<0.0050	<0.050	<0.0050	0.66	<0.0050	0.55	<0.0050	<0.0050	<0.0050
Chrysene	7	1	<0.0050	0.43	<0.0050	0.077	<0.0050	0.86	<0.0050	1	<0.0050	<0.0050	<0.0050
Dibenzo(a,h)anthracene	0.1	**0.25**	<0.0050	0.089	<0.0050	<0.050	<0.0050	**0.25**	<0.0050	**0.2**	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	**2.6**	<0.0050	**1.1**	<0.0050	0.21	0.0093	**1.7**	0.012	**2**	0.02	<0.0050	<0.0050
Fluorene	62	0.35	<0.0050	0.11	0.031	<0.050	<0.0050	0.066	<0.0050	0.23	<0.020	<0.0050	<0.0050
Indeno(1,2,3-cd)pyrene	0.38	**0.98**	<0.0050	0.35	<0.0050	0.064	<0.0050	**1.1**	<0.0050	**0.7**	<0.0050	<0.0050	<0.0050
1- & 2-Methylnaphthalene	0.99	0.44	<0.0071	0.084	<0.0071	<0.071	<0.0071	<0.071	<0.0071	0.32	<0.011	<0.0071	<0.0071
Naphthalene	0.6	<0.30	<0.0050	0.026	<0.0050	<0.050	<0.0050	0.062	<0.0050	0.072	<0.010	<0.0050	<0.0050
Phenanthrene	6.2	1.7	<0.0050	0.75	0.022	0.11	0.0083	0.76	0.031	1.5	<0.0050	<0.0050	<0.0050
Pyrene	78	2.2	<0.0050	1	0.0076	0.17	0.0075	1.4	0.025	2.3	0.069	<0.0050	<0.0050
Metals													
Antimony	7.5	1	-	1.5	-	0.38	-	3.8	-	1.1	-	<0.20	-
Arsenic	18	12	-	**23**	-	5.1	-	16	-	7.9	-	1.8	-
Barium	390	300	-	360	-	40	-	150	-	100	-	43	-
Beryllium	4	0.71	-	1.3	-	0.33	-	0.33	-	0.39	-	0.25	-
Boron (Total)	120	7.7	-	11	-	11	-	12	-	9	-	7	-
Cadmium	1.2	0.61	-	0.48	-	0.15	-	0.76	-	0.15	-	<0.10	-
Chromium (Total)	160	84	-	77	-	30	-	26	-	19	-	11	-
Cobalt	22	17	-	16	-	6.8	-	13	-	6.6	-	3.6	-
Copper	140	120	-	66	-	16	-	130	-	19	-	11	-
Lead	120	90	-	**150**	-	51	-	**500**	-	45	-	4.3	-
Mercury	0.27	0.26	-	0.23	-	<0.050	-	0.18	-	0.079	-	<0.050	-
Molybdenum	6.9	1.6	-	2.4	-	2.8	-	2.2	-	0.92	-	1.1	-
Nickel	100	49	-	48	-	18	-	23	-	15	-	8.1	-
Selenium	2.4	0.96	-	**2.5**	-	<0.50	-	0.53	-	<0.50	-	<0.50	-
Silver	20	<0.20	-	0.2	-	<0.20	-	1.2	-	<0.20	-	<0.20	-
Thallium	1	0.36	-	0.53	-	0.33	-	0.11	-	0.15	-	0.075	-
Uranium	23	0.82	-	0.99	-	0.58	-	0.46	-	0.51	-	0.5	-
Vanadium	86	79	-	75	-	31	-	25	-	28	-	20	-
Zinc	340	210	-	280	-	65	-	200	-	56	-	16	-
Inorganics													
Electrical Conductivity (mS/cm)	0.7	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Adsorption Ratio (No Units)	5	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls (PCBs)													
PCBs (Total)	0.35	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for Residential/Parkland/Institutional Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per gram, unless otherwise noted
mbgs	metres below ground surface
mS/cm	milliSiemens per centimetre

Input By: CT [22-Jul-2021]; EC [21-Oct-2021]
Checked By: EC [6-Aug-2021]

TABLE 3

SOIL BULK ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	MECP Table 3 SCS	BH107	BH107	BH107	BH108	BH108	BH109	BH110	BH110	BH111	BH112	BH112	BH113
Sample Designation		BH107 SS3	DUP-1	BH107 SS7	BHMW108 SS2	BHMW108 SS8	BHMW109 SS7	BHMW110 SS7	DUP-2	BHMW111 SS6	BHMW112 SS3	BHMW112 SS7	BH113 SS3
Sample Collection Date (dd/mm/yyyy)		26/04/2021	26/04/2021	26/04/2021	26/04/2021	26/04/2021	27/04/2021	27/04/2021	27/04/2021	27/04/2021	27/04/2021	27/04/2021	28/04/2021
Laboratory Certificate No.		C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083	C1B6083
Date of Laboratory Analysis (dd/mm/yyyy)		30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021
Laboratory Sample No.		PLN577	PLN578	PLN579	PLN580	PLN581	PLN582	PLN583	PLN584	PLN636	PLN637	PLN638	PLN639
Sample Depth (mbgs)		1.52 - 2.29	1.52 - 2.29	4.57 - 5.33	0.75 - 1.50	5.33 - 6.10	4.57 - 5.33	4.57 - 5.33	4.57 - 5.33	3.81 - 4.57	1.52 - 2.29	4.57 - 5.33	1.52 - 2.29
Miscellaneous Parameters													
pH (pH Units)	NV	-	-	-	8.06	-	7.78	-	-	-	8.05	7.73	7.94
Petroleum Hydrocarbons (PHCs)													
PHCs F1 (C_6 - C_{10})	55	<10	<10	<10	-	**520**	15	**390**	**580**	**2600**	-	21	<10
PHCs F2 (>C_{10} - C_{16})	98	<10	<10	<10	-	27	<10	90	39	**400**	-	**120**	<10
PHCs F3 (>C_{16} - C_{34})	300	130	**320**	<50	-	<50	<50	<50	<50	<50	-	<50	<50
PHCs F4 (>C_{34} - C_{50})	2800	430	1100	<50	-	<50	<50	<50	<50	<50	-	<50	<50
PHCs F4G (>C_{50})	2800	1100	**3100**	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds													
Acetone	16	-	-	-	-	<0.50	<0.50	<1.0	<1.0	<3.5	-	<0.50	<0.50
Benzene	0.21	<0.020	<0.020	<0.020	-	**0.3**	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020
Bromodichloromethane	13	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Bromoform	0.27	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Bromomethane	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Carbon Tetrachloride	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Chlorobenzene	2.4	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Chloroform	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Dibromochloromethane	9.4	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
1,2-Dichlorobenzene	3.4	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
1,3-Dichlorobenzene	4.8	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
1,4-Dichlorobenzene	0.083	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Dichlorodifluoromethane	16	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
1,1-Dichloroethane	3.5	-	-	-	-	<0.080	<0.050	<0.050	<0.050	<0.10	-	<0.050	<0.050
1,2-Dichloroethane	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
1,1-Dichloroethylene	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
cis-1,2-Dichloroethylene	3.4	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
trans-1,2-Dichloroethylene	0.084	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
1,2-Dichloropropane	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
1,3-Dichloropropene (Total)	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Ethylbenzene	2	<0.020	<0.020	<0.020	-	**9.2**	<0.020	1.8	1.7	**49**	-	<0.020	<0.020
Ethylene Dibromide	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Hexane	2.8	-	-	-	-	**24**	1.2	**21**	**16**	**51**	-	<0.050	<0.050
Methyl Ethyl Ketone	16	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50
Methyl Isobutyl Ketone	1.7	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50
Methyl t-Butyl Ether (MTBE)	0.75	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Methylene Chloride	0.1	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Styrene	0.7	-	-	-	-	<0.20	<0.050	<0.050	<0.050	<0.40	-	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.058	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Tetrachloroethylene	0.28	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Toluene	2.3	<0.020	<0.020	<0.020	-	**12**	<0.020	<0.020	<0.020	**2.8**	-	<0.020	<0.020
1,1,1-Trichloroethane	0.38	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
1,1,2-Trichloroethane	0.05	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Trichloroethylene	0.061	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Trichlorofluoromethane	4	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050
Vinyl Chloride	0.02	-	-	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020
Xylenes (Total)	3.1	<0.040	<0.040	<0.040	-	**52**	0.093	3	2.5	**280**	-	<0.020	<0.020
Polycyclic Aromatic Hydrocarbons													
Acenaphthene	7.9	<0.050	<0.050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.039	<0.0050	<0.0050	-
Acenaphthylene	0.15	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	-
Anthracene	0.67	<0.050	<0.050	0.014	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	-
Benzo(a)anthracene	0.5	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
Benzo(a)pyrene	0.3	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
Benzo(b)fluoranthene	0.78	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	-
Benzo(ghi)perylene	6.6	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
Benzo(k)fluoranthene	0.78	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
Chrysene	7	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
Dibenzo(a,h)anthracene	0.1	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
Fluoranthene	0.69	<0.050	<0.050	0.01	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0096	<0.0050	0.01	-
Fluorene	62	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.042	<0.0050	<0.0050	-
Indeno(1,2,3-cd)pyrene	0.38	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
1- & 2-Methylnaphthalene	0.99	<0.071	<0.071	<0.0071	<0.0071	0.17	<0.0071	0.26	0.16	**8.4**	0.027	<0.0071	-
Naphthalene	0.6	<0.050	<0.050	<0.0050	<0.0050	0.23	<0.0050	0.049	0.028	**5.3**	0.0057	<0.0050	-
Phenanthrene	6.2	<0.050	<0.050	0.0071	<0.0050	<0.0050	0.0056	<0.0050	<0.0050	0.055	<0.0050	0.0064	-
Pyrene	78	<0.050	<0.050	0.017	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050	0.0087	-
Metals													
Antimony	7.5	<0.20	<0.20	-	<0.20	-	-	-	-	-	<0.20	-	-
Arsenic	18	2	1.5	-	<1.0	-	-	-	-	-	1.6	-	-
Barium	390	43	47	-	31	-	-	-	-	-	**430**	-	-
Beryllium	4	0.32	0.25	-	0.2	-	-	-	-	-	0.92	-	-
Boron (Total)	120	9.7	7.7	-	5.4	-	-	-	-	-	8.8	-	-
Cadmium	1.2	<0.10	<0.10	-	<0.10	-	-	-	-	-	0.11	-	-
Chromium (Total)	160	16	22	-	15	-	-	-	-	-	110	-	-
Cobalt	22	4.8	5.2	-	4.1	-	-	-	-	-	**23**	-	-
Copper	140	14	14	-	6	-	-	-	-	-	50	-	-
Lead	120	4	4.1	-	3.9	-	-	-	-	-	7.6	-	-
Mercury	0.27	<0.050	<0.050	-	<0.050	-	-	-	-	-	<0.050	-	-
Molybdenum	6.9	0.76	1.9	-	<0.50	-	-	-	-	-	<0.50	-	-
Nickel	100	11	12	-	8.3	-	-	-	-	-	63	-	-
Selenium	2.4	<0.50	<0.50	-	<0.50	-	-	-	-	-	<0.50	-	-
Silver	20	<0.20	<0.20	-	<0.20	-	-	-	-	-	<0.20	-	-
Thallium	1	0.11	0.096	-	0.081	-	-	-	-	-	0.43	-	-
Uranium	23	0.39	0.47	-	0.49	-	-	-	-	-	0.58	-	-
Vanadium	86	36	34	-	46	-	-	-	-	-	**97**	-	-
Zinc	340	21	19	-	19	-	-	-	-	-	130	-	-
Inorganics													
Electrical Conductivity (mS/cm)	0.7	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Adsorption Ratio (No Units)	5	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls (PCBs)													
PCBs (Total)	0.35	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for Residential/Parkland/Institutional Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per gram, unless otherwise noted
mbgs	metres below ground surface
mS/cm	milliSiemens per centimetre

Input By: CT [22-Jul-2021]; EC [21-Oct-2021]

Checked By: EC [6-Aug-2021]

TABLE 3

SOIL BULK ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	MECP Table 3 SCS	BH113	BH114	BH114	BH115	BH115	BH116	BH116	BH117	BH118	BH118	BH121	BH121
Sample Designation		BH113 SS7	BHMW114 SS3	BHMW114 SS9	BHMW115 SS3	BHMW115 SS7	BHMW116 SS4	BHMW116 SS7	BHMW117 SS3	BHMW118 SS2	DUP-3	BH121 SS1	DUP101
Sample Collection Date (dd/mm/yyyy)		28/04/2021	29/04/2021	29/04/2021	28/04/2021	28/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	30/04/2021	25/05/2021	25/05/2021
Laboratory Certificate No.		C1B6083	C1B8527	C1B8527	C1B6083	C1B6083	C1B8527	C1B8527	C1B8527	C1B8527	C1B8527	C1E5924	C1E5924
Date of Laboratory Analysis (dd/mm/yyyy)		30/04/2021-06/05/2021	05/05/2021-10/05/2021	05/05/2021-10/05/2021	30/04/2021-06/05/2021	30/04/2021-06/05/2021	05/05/2021-10/05/2021	05/05/2021-10/05/2021	05/05/2021-10/05/2021	05/05/2021-10/05/2021	05/05/2021-10/05/2021	31/05/2021-08/06/2021	31/05/2021-08/06/2021
Laboratory Sample No.		PLN640	PMA916	PMA917	PLN641	PLN642	PMA918	PMA919	PMA920	PMA921	PMA922	PRS144	PRS145
Sample Depth (mbgs)		4.57 - 5.33	1.52 - 2.29	6.10 - 7.01	1.52 - 2.29	4.57 - 5.33	2.29 - 3.05	4.57 - 5.33	1.52 - 2.29	0.75 - 1.52	0.75 - 1.52	0 - 0.75	0 - 0.75
Miscellaneous Parameters													
pH (pH Units)	NV	7.7	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons (PHCs)													
PHCs F1 (C_6 - C_{10})	55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PHCs F2 (>C_{10} - C_{16})	98	27	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10
PHCs F3 (>C_{16} - C_{34})	300	**1600**	260	<50	<50	**590**	61	<50	<50	<50	<50	<50	<50
PHCs F4 (>C_{34} - C_{50})	2800	170	<50	<50	<50	69	<50	<50	<50	<50	250	<50	<50
PHCs F4G (>C_{50})	2800	-	-	-	-	-	-	-	-	-	1000	-	-
Volatile Organic Compounds													
Acetone	16	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
Benzene	0.21	<0.020	<0.020	0.097	<0.020	0.021	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Bromoform	0.27	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Bromomethane	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Carbon Tetrachloride	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Chlorobenzene	2.4	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Chloroform	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Dibromochloromethane	9.4	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,2-Dichlorobenzene	3.4	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,3-Dichlorobenzene	4.8	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,4-Dichlorobenzene	0.083	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Dichlorodifluoromethane	16	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,1-Dichloroethane	3.5	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,2-Dichloroethane	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,1-Dichloroethylene	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
cis-1,2-Dichloroethylene	3.4	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
trans-1,2-Dichloroethylene	0.084	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,2-Dichloropropane	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,3-Dichloropropene (Total)	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Hexane	2.8	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Methyl Ethyl Ketone	16	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
Methyl Isobutyl Ketone	1.7	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
Methyl t-Butyl Ether (MTBE)	0.75	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Methylene Chloride	0.1	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Styrene	0.7	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,1,1,2-Tetrachloroethane	0.058	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
1,1,2,2-Tetrachloroethane	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Tetrachloroethylene	0.28	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Toluene	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	0.38	<0.050	<0.050	-	<0.050	<0.050	<0.050		<0.050	<0.050	<0.050		
1,1,2-Trichloroethane	0.05	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Trichloroethylene	0.061	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Trichlorofluoromethane	4	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-
Vinyl Chloride	0.02	<0.020	<0.020	-	<0.020	<0.020	<0.020	-	<0.020	<0.020	<0.020	-	-
Xylenes (Total)	3.1	<0.020	<0.020	<0.040	<0.020	<0.020	<0.020	<0.040	<0.020	<0.020	<0.020	<0.040	<0.040
Polycyclic Aromatic Hydrocarbons													
Acenaphthene	7.9	<0.0050	-	-	-	<0.0050	<0.0050	-	0.007	0.018	<0.050	<0.0050	<0.0050
Acenaphthylene	0.15	<0.0050	-	-	-	<0.0050	<0.0050	-	0.0061	0.019	<0.050	<0.0050	<0.0050
Anthracene	0.67	<0.0050	-	-	-	<0.0050	<0.0050	-	0.028	0.079	<0.050	0.0051	<0.0050
Benzo(a)anthracene	0.5	<0.0050	-	-	-	<0.0050	<0.0050	-	0.094	0.23	<0.050	0.029	0.019
Benzo(a)pyrene	0.3	<0.0050	-	-	-	<0.0050	<0.0050	-	0.092	0.21	<0.050	0.029	0.021
Benzo(b)fluoranthene	0.78	<0.0050	-	-	-	<0.0050	<0.0050	-	0.12	0.25	<0.050	0.038	0.026
Benzo(ghi)perylene	6.6	<0.0050	-	-	-	<0.0050	<0.0050	-	0.055	0.13	<0.050	0.017	0.013
Benzo(k)fluoranthene	0.78	<0.0050	-	-	-	<0.0050	<0.0050	-	0.047	0.091	<0.050	0.013	0.0091
Chrysene	7	<0.0050	-	-	-	<0.0050	<0.0050	-	0.083	0.21	<0.050	0.026	0.017
Dibenzo(a,h)anthracene	0.1	<0.0050	-	-	-	<0.0050	<0.0050	-	0.014	0.037	<0.050	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	-	-	-	<0.0050	<0.0050	-	0.21	0.42	0.059	0.058	0.036
Fluorene	62	<0.0050	-	-	-	<0.0050	<0.0050	-	0.008	0.053	<0.050	<0.0050	<0.0050
Indeno(1,2,3-cd)pyrene	0.38	<0.0050	-	-	-	<0.0050	<0.0050	-	0.056	0.13	<0.050	0.02	0.014
1- & 2-Methylnaphthalene	0.99	<0.0071	-	-	-	<0.0071	<0.0071	-	<0.0071	0.042	<0.071	<0.0071	<0.0071
Naphthalene	0.6	<0.0050	-	-	-	<0.0050	<0.0050	-	<0.0050	0.0053	<0.050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	-	-	-	0.0094	<0.0050	-	0.099	0.36	<0.050	0.024	0.015
Pyrene	78	<0.0050	-	-	-	0.0093	<0.0050	-	0.17	0.56	0.075	0.049	0.035
Metals													
Antimony	7.5	<0.20	-	<0.20	-	<0.20	-	<0.20	1.4	0.28	<0.20	-	-
Arsenic	18	<1.0	-	<1.0	-	<1.0	-	<1.0	4.5	3.1	1.9	-	-
Barium	390	140	-	38	-	180	-	41	220	320	240	-	-
Beryllium	4	0.57	-	<0.20	-	0.57	-	<0.20	0.55	0.66	0.24	-	-
Boron (Total)	120	6.5	-	<5.0	-	5.5	-	<5.0	6.3	7	7.2	-	-
Cadmium	1.2	<0.10	-	<0.10	-	<0.10	-	<0.10	0.13	0.18	<0.10	-	-
Chromium (Total)	160	33	-	9.4	-	40	-	9.7	49	72	10	-	-
Cobalt	22	9.8	-	3.5	-	11	-	3.6	12	16	3.9	-	-
Copper	140	25	-	7.1	-	24	-	8.1	31	40	9.2	-	-
Lead	120	5	-	2	-	6.3	-	2.4	21	90	21	-	-
Mercury	0.27	<0.050	-	<0.050	-	<0.050	-	<0.050	0.054	0.26	<0.050	-	-
Molybdenum	6.9	<0.50	-	0.54	-	<0.50	-	<0.50	0.5	0.88	1.2	-	-
Nickel	100	23	-	6.4	-	24	-	7	33	44	11	-	-
Selenium	2.4	<0.50	-	<0.50	-	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	-
Silver	20	<0.20	-	<0.20	-	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	-
Thallium	1	0.23	-	0.055	-	0.26	-	0.062	0.25	0.38	0.14	-	-
Uranium	23	0.53	-	0.64	-	0.57	-	0.66	0.55	0.64	0.4	-	-
Vanadium	86	56	-	18	-	64	-	19	56	70	15	-	-
Zinc	340	52	-	12	-	66	-	13	84	120	22	-	-
Inorganics													
Electrical Conductivity (mS/cm)	0.7	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Adsorption Ratio (No Units)	5	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls (PCBs)													
PCBs (Total)	0.35	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for Residential/Parkland/Institutional Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per gram, unless otherwise noted
mbgs	metres below ground surface
mS/cm	milliSiemens per centimetre

Input By: CT [22-Jul-2021]; EC [21-Oct-2021]

Checked By: EC [6-Aug-2021]

TABLE 3

SOIL BULK ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	MECP Table 3 SCS	BH122	BH122	BH123	BH124	BH124	BH124	BH125	BH126	BH127
Sample Designation		BHMW122 SS6	BHMW122 SS8	BHMW123 SS5	BHMW124 SS1	DUP102	BHMW124 SS8	BHMW125 SS-7	BHMW126 SS-1	BHMW127 SS-6
Sample Collection Date (dd/mm/yyyy)		25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021	06/10/2021	06/10/2021	06/10/2021
Laboratory Certificate No.		C1E5924	C1E5924	C1E5924	C1E5924	C1E5924	C1E5924	C1T8290	C1T8290	C1T8290
Date of Laboratory Analysis (dd/mm/yyyy)		31/05/2021-08/06/2021	31/05/2021-08/06/2021	31/05/2021-08/06/2021	31/05/2021-08/06/2021	31/05/2021-08/06/2021	31/05/2021-08/06/2021	15/10/2021-20/10/2021	15/10/2021-20/10/2021	15/10/2021-20/10/2021
Laboratory Sample No.		PRS146	PRS147	PRS148	PRS149/PTN419	PRS151	PRS150	QXT935	QXT936	QXT937
Sample Depth (mbgs)		3.81 - 4.57	5.33 - 6.10	3.05 - 3.81	0 - 0.75	0 - 0.75	5.33 - 6.10	4.57 - 5.33	0 - 0.75	3.81 - 4.57
Miscellaneous Parameters										
pH (pH Units)	NV	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons (PHCs)										
PHCs F1 (C_6 - C_{10})	55	<10	<10	<10	<10	-	<10	<10	<10	<10
PHCs F2 (>C_{10} - C_{16})	98	**180**	<10	<10	<10	-	<10	<10	**290**	<10
PHCs F3 (>C_{16} - C_{34})	300	220	<50	59	150	-	<50	<50	**6200**	<50
PHCs F4 (>C_{34} - C_{50})	2800	<50	<50	<50	100	-	<50	<50	1400	<50
PHCs F4G (>C_{50})	2800	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds										
Acetone	16	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.49	<0.49	<0.49
Benzene	0.21	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.0060	0.0085	<0.0060
Bromodichloromethane	13	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Bromoform	0.27	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Bromomethane	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Carbon Tetrachloride	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Chlorobenzene	2.4	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Chloroform	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Dibromochloromethane	9.4	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,2-Dichlorobenzene	3.4	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,3-Dichlorobenzene	4.8	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,4-Dichlorobenzene	0.083	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Dichlorodifluoromethane	16	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,1-Dichloroethane	3.5	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,2-Dichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.049	<0.049	<0.049
1,1-Dichloroethylene	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
cis-1,2-Dichloroethylene	3.4	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	0.057	<0.040
trans-1,2-Dichloroethylene	0.084	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,2-Dichloropropane	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,3-Dichloropropene (Total)	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	2	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.010	0.017	<0.010
Ethylene Dibromide	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Hexane	2.8	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	0.058	<0.040
Methyl Ethyl Ketone	16	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.40	<0.40	<0.40
Methyl Isobutyl Ketone	1.7	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.40	<0.40	<0.40
Methyl t-Butyl Ether (MTBE)	0.75	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Methylene Chloride	0.1	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.049	<0.049	<0.049
Styrene	0.7	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,1,1,2-Tetrachloroethane	0.058	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,1,2,2-Tetrachloroethane	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Tetrachloroethylene	0.28	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Toluene	2.3	<0.020	<0.020	<0.020	0.052	-	<0.020	<0.020	0.053	<0.020
1,1,1-Trichloroethane	0.38	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
1,1,2-Trichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Trichloroethylene	0.061	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.010	0.023	<0.010
Trichlorofluoromethane	4	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.040	<0.040	<0.040
Vinyl Chloride	0.02	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.019	<0.019	<0.019
Xylenes (Total)	3.1	<0.020	<0.020	<0.020	0.061	-	<0.020	<0.020	0.14	<0.020
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	7.9	0.085	<0.0050	<0.0050	0.042	-	<0.0050	<0.0050	**39**	<0.0050
Acenaphthylene	0.15	<0.010	<0.0050	<0.0050	0.034	-	<0.0050	<0.0050	**0.77**	<0.0050
Anthracene	0.67	0.032	<0.0050	<0.0050	0.13	-	<0.0050	<0.0050	**110**	<0.0050
Benzo(a)anthracene	0.5	<0.0050	<0.0050	<0.0050	0.45	-	<0.0050	<0.0050	**180**	<0.0050
Benzo(a)pyrene	0.3	<0.0050	<0.0050	<0.0050	**0.42**	-	<0.0050	<0.0050	**120**	<0.0050
Benzo(b)fluoranthene	0.78	<0.0050	<0.0050	<0.0050	0.56	-	<0.0050	<0.0050	**200**	<0.0050
Benzo(ghi)perylene	6.6	<0.0050	<0.0050	<0.0050	0.29	-	<0.0050	<0.0050	**57**	<0.0050
Benzo(k)fluoranthene	0.78	<0.0050	<0.0050	<0.0050	0.2	-	<0.0050	<0.0050	**65**	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	0.39	-	<0.0050	<0.0050	**140**	<0.0050
Dibenzo(a,h)anthracene	0.1	<0.0050	<0.0050	<0.0050	0.071	-	<0.0050	<0.0050	**18**	<0.0050
Fluoranthene	0.69	0.014	<0.0050	<0.0050	**0.84**	-	<0.0050	<0.0050	**450**	0.0079
Fluorene	62	<0.030	<0.0050	<0.0050	0.048	-	<0.0050	<0.0050	54	<0.0050
Indeno(1,2,3-cd)pyrene	0.38	<0.0050	<0.0050	<0.0050	0.32	-	<0.0050	<0.0050	**62**	<0.0050
1- & 2-Methylnaphthalene	0.99	<0.0071	<0.0071	<0.0071	0.073	-	<0.0071	<0.0071	**17**	<0.0071
Naphthalene	0.6	<0.030	<0.0050	<0.0050	0.041	-	<0.0050	<0.0050	**12**	<0.0050
Phenanthrene	6.2	0.038	<0.0050	<0.0050	0.53	-	<0.0050	<0.0050	**430**	0.0087
Pyrene	78	0.018	<0.0050	<0.0050	0.72	-	<0.0050	<0.0050	**330**	0.0057
Metals										
Antimony	7.5	<0.20	<0.20	<0.20	0.68	-	<0.20	-	-	-
Arsenic	18	<1.0	<1.0	<1.0	3.3	-	<1.0	-	-	-
Barium	390	290	54	51	85	-	380	-	-	-
Beryllium	4	0.8	<0.20	0.21	0.37	-	0.8	-	-	-
Boron (Total)	120	7.9	<5.0	<5.0	7.4	-	10	-	-	-
Cadmium	1.2	0.11	<0.10	<0.10	0.61	-	0.18	-	-	-
Chromium (Total)	160	57	11	21	21	-	70	-	-	-
Cobalt	22	16	4.3	6.6	7.2	-	18	-	-	-
Copper	140	33	9.2	13	23	-	38	-	-	-
Lead	120	6.5	2.7	2.7	80	-	7.2	-	-	-
Mercury	0.27	<0.050	<0.050	<0.050	0.066	-	<0.050	-	-	-
Molybdenum	6.9	<0.50	<0.50	<0.50	0.86	-	0.79	-	-	-
Nickel	100	34	7.2	15	18	-	40	-	-	-
Selenium	2.4	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	-	-
Silver	20	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	-	-
Thallium	1	0.35	0.064	0.15	0.2	-	0.45	-	-	-
Uranium	23	0.63	0.77	0.61	0.54	-	0.97	-	-	-
Vanadium	86	81	21	57	37	-	**91**	-	-	-
Zinc	340	93	13	40	130	-	110	-	-	-
Inorganics										
Electrical Conductivity (mS/cm)	0.7	-	-	-	0.31	0.35	**2.1**	-	-	-
Sodium Adsorption Ratio (No Units)	5	-	-	-	**5.6**	**6.3**	3.5	-	-	-
Polychlorinated Biphenyls (PCBs)										
PCBs (Total)	0.35	-	-	-	-	-	-	-	-	-

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for Residential/Parkland/Institutional Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per gram, unless otherwise noted
mbgs	metres below ground surface
mS/cm	milliSiemens per centimetre

Input By: CT [22-Jul-2021]; EC [21-Oct-2021]
Checked By: EC [6-Aug-2021]

TABLE 4

MAXIMUM CONCENTRATIONS IN SOIL

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Parameter	Maximum Concentration	MECP Table 3 SCS	Sample Designation	Sample Location	Sample Depth (mbgs)
Petroleum Hydrocarbons (PHCs)					
PHCs F1 (C_6 - C_{10})	**2600**	55	BHMW111 SS6	BH111	3.81 - 4.57
PHCs F2 (>C_{10} - C_{16})	**550**	98	BH101 SS2	BH101	0.75 - 1.50
PHCs F3 (>C_{16} - C_{34})	**6200**	300	BHMW126 SS-1	BH126	0 - 0.75
PHCs F4 (>C_{34} - C_{50})	1400	2800	BHMW126 SS-1	BH126	0 - 0.75
PHCs F4G (>C_{50})	**3100**	2800	DUP-1	BH107	1.52 - 2.29
Volatile Organic Compounds					
Acetone	<3.5	16	BHMW111 SS6	BH111	3.81 - 4.57
Benzene	**0.93**	0.21	BH2017-1 SS12	BH2017-1	6.6 - 7.2
Bromodichloromethane	<0.05	13	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Bromoform	<0.05	0.27	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Bromomethane	<0.05	0.05	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Carbon Tetrachloride	<0.05	0.05	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Chlorobenzene	<0.05	2.4	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Chloroform	<0.05	0.05	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Dibromochloromethane	<0.05	9.4	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
1,2-Dichlorobenzene	<0.05	3.4	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
1,3-Dichlorobenzene	<0.05	4.8	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
1,4-Dichlorobenzene	**1.1**	0.083	BH2017-1 SS12	BH2017-1	6.6 - 7.2
Dichlorodifluoromethane	3.8	16	BH2017-1 SS12	BH2017-1	6.6 - 7.2
1,1-Dichloroethane	<0.1	3.5	Several	Several	Several
1,2-Dichloroethane	**0.2**	0.05	BH2017-5A SS3	BH2017-5	1.2 - 1.8
1,1-Dichloroethylene	<0.05	0.05	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
cis-1,2-Dichloroethylene	0.057	3.4	BHMW126 SS-1	BH126	0 - 0.75
trans-1,2-Dichloroethylene	<0.05	0.084	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
1,2-Dichloropropane	<0.05	0.05	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
1,3-Dichloropropene (Total)	<0.05	0.05	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Ethylbenzene	**49**	2	BHMW111 SS6	BH111	3.81 - 4.57
Ethylene Dibromide	<0.05	0.05	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Hexane	**51**	2.8	BHMW111 SS6	BH111	3.81 - 4.57
Methyl Ethyl Ketone	<0.5	16	Several	Several	Several
Methyl Isobutyl Ketone	<0.5	1.7	Several	Several	Several
Methyl t-Butyl Ether (MTBE)	<0.05	0.75	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Methylene Chloride	<0.05	0.1	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Styrene	<0.4	0.7			
1,1,1,2-Tetrachloroethane	<0.05	0.058	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
1,1,2,2-Tetrachloroethane	<0.05	0.05	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Tetrachloroethylene	<0.05	0.28	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Toluene	**12**	2.3	BHMW108 SS8	BH108	5.33 - 6.10
1,1,1-Trichloroethane	<0.05	0.38	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
1,1,2-Trichloroethane	<0.05	0.05	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Trichloroethylene	<0.05	0.061	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Trichlorofluoromethane	<0.05	4	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Vinyl Chloride	<0.02	0.02	BH3-20-SS11, BH5-20-SS10	BH3-20, BH5-20	7.62 - 7.87, 6.86 - 6.93
Xylenes (Total)	**280**	3.1	BHMW111 SS6	BH111	3.81 - 4.57
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	**39**	7.9	BHMW126 SS-1	BH126	0 - 0.75
Acenaphthylene	**0.84**	0.15	BH2017-11 SS3	BH2017-11	1.2 - 1.8
Anthracene	**110**	0.67	BHMW126 SS-1	BH126	0 - 0.75
Benzo(a)anthracene	**180**	0.5	BHMW126 SS-1	BH126	0 - 0.75
Benzo(a)pyrene	**120**	0.3	BHMW126 SS-1	BH126	0 - 0.75
Benzo(b)fluoranthene	**200**	0.78	BHMW126 SS-1	BH126	0 - 0.75
Benzo(ghi)perylene	**57**	6.6	BHMW126 SS-1	BH126	0 - 0.75
Benzo(k)fluoranthene	**65**	0.78	BHMW126 SS-1	BH126	0 - 0.75
Chrysene	**140**	7	BHMW126 SS-1	BH126	0 - 0.75
Dibenzo(a,h)anthracene	**18**	0.1	BHMW126 SS-1	BH126	0 - 0.75
Fluoranthene	**450**	0.69	BHMW126 SS-1	BH126	0 - 0.75
Fluorene	54	62	BHMW126 SS-1	BH126	0 - 0.75
Indeno(1,2,3-cd)pyrene	**62**	0.38	BHMW126 SS-1	BH126	0 - 0.75
1- & 2-Methylnaphthalene	**17**	0.99	BHMW126 SS-1	BH126	0 - 0.75
Naphthalene	**12**	0.6	BHMW126 SS-1	BH126	0 - 0.75
Phenanthrene	**430**	6.2	BHMW126 SS-1	BH126	0 - 0.75
Pyrene	**330**	78	BHMW126 SS-1	BH126	0 - 0.75
Metals					
Antimony	5.9	7.5	BH3-20-SS2	BH3-20	0.76 - 1.37
Arsenic	**56.6**	18	BH3-20-SS2	BH3-20	0.76 - 1.37
Barium	**430**	390	BHMW112 SS3	BH112	1.52 - 2.29
Beryllium	1.3	4	BH102 SS2	BH102	0.75 - 1.50
Boron (Total)	12	120	BH3-20-SS2, BH104 SS4	BH3-20, BH104	0.76 - 1.37, 2.29 - 3.05
Cadmium	1.1	1.2	BH3-20-SS2	BH3-20	0.76 - 1.37
Chromium (Total)	120	160	BH2017-8 SS5	BH2017-8	2.4 - 3.0
Cobalt	**23**	22	BH2017-13 SS3, BHMW112 SS3	BH2017-13, BH112	1.2 - 1.8, 1.52 - 2.29
Copper	130	140	BH104 SS4	BH104	2.29 - 3.05
Lead	**500**	120	BH104 SS4	BH104	2.29 - 3.05
Molybdenum	**9**	6.9	BH3-20-SS2	BH3-20	0.76 - 1.37
Nickel	64	100	BH2017-8 SS5	BH2017-8	2.4 - 3.0
Selenium	**2.5**	2.4	BH102 SS2	BH102	0.75 - 1.50
Silver	1.2	20	BH104 SS4	BH104	2.29 - 3.05
Thallium	<1	1	BH3-20-SS2, BH4-20-SS5	BH3-20, BH4-20	0.76 - 1.37, 3.05 - 3.66
Uranium	1.4	23	BH3-20-SS2	BH3-20	0.76 - 1.37
Vanadium	**100**	86	BH2017-13 SS3	BH2017-13	1.2 - 1.8
Zinc	**374**	340	BH3-20-SS2	BH3-20	0.76 - 1.37
Inorganics					
Electrical Conductivity (mS/cm)	**2.1**	0.7	BHMW124 SS8	BH124	5.33 - 6.10
Sodium Adsorption Ratio (No Units)	**6.3**	5	DUP102	BH124	0 - 0.75
Polychlorinated Biphenyls (PCBs)					
PCBs (Total)	<0.01	0.35	Several	Several	Several

Notes:

Units	All units in micrograms per gram, unless otherwise noted
mbgs	metres below ground surface
mS/cm	milliSiemens per centimetre
BOLD	Exceeds SCS

Input By: CT [22-Jul-2021]

Checked By: EC [6-Aug-2021]

TABLE 5

GROUNDWATER MONITORING WELL CONSTRUCTION DETAILS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Monitoring Well	Top of Pipe Elevation (mamsl)	Ground Surface Elevation (mamsl)	Well Construction Details						
			Total Well Depth (mbgs)	Stick-Up Height (metres)	Well Diameter (centimetres)	Screen Slot Size	Monitoring Well Screen Interval (mbgs)	Screen length (metres)	Sealant thickness (metres)
BH2017-02	-	66.43	6.5	-	5.1	010	3.4 - 6.5	3.1	0 - 3.0
BH2017-03	-	65.63	10.3	-	5.1	010	7.3 - 10.3	3.1	0 - 7.0
BH2017-04	-	62.93	4.6	-	5.1	010	2.2 - 4.6	2.4	0 - 1.8
BH2017-05	-	64.93	10.8	-	5.1	010	7.8 - 10.8	3.1	0 - 7.5
BH2017-06	-	66.53	7.8	-	5.1	010	4.7 - 7.8	3.1	0 - 4.4
BH2017-07	-	64.63	8.0	-	5.1	010	4.9 - 8.0	3.1	0 - 4.6
BH2017-08	-	66.13	10.7	-	5.1	010	7.8 - 10.7	3.1	0 - 7.2
BH2017-09	-	61.83	4.5	-	5.1	010	1.8 - 4.5	2.7	0 - 1.5
BH2017-10	64.46	64.53	13.1	-0.07	5.1	010	10.0 - 13.1	3.1	0 - 9.6
BH2017-11	-	64.33	8.4	-	5.1	010	5.3 - 8.4	3.1	0 - 5.0
BHMW3	66.65	66.77	-	-0.12	3.8	-	-	-	-
BH1-20	64.88	64.96	11.07	-0.08	3.2	010	8.1 - 11.1	3.1	0.2 - 6.4
BH2-20	66.69	66.78	6.17	-0.09	3.2	010	3.2 - 6.2	3.1	0.2 - 2.4
BH3-20	64.14	64.21	12.24	-0.07	3.2	010	9.2 - 12.2	3.1	0.2 - 9.0
BH4-20	64.34	64.46	10.67	-0.12	3.2	010	7.7 - 10.7	3.1	0.2 - 7.3
BH5-20	64.86	64.92	11.91	-0.06	3.2	010	10.4 - 11.9	3.1	0.2 - 10.1
BHMW108	66.98	67.05	6.1	-0.07	5.1	010	3.0 - 6.1	3.1	0 - 2.0
BHMW109	67.14	67.27	5.5	-0.13	5.1	010	2.4 - 5.5	3.1	0 - 1.8
BHMW110	66.88	66.97	6.1	-0.09	5.1	010	3.0 - 6.1	3.1	0 - 2.4
BHMW111	66.45	66.55	20.7	-0.10	5.1	010	17.6 - 20.7	3.1	0 - 17.6
BHMW112	66.23	66.32	5.5	-0.09	5.1	010	2.4 - 5.5	3.1	0 - 1.8
BHMW115	65.16	65.25	5.9	-0.09	5.1	010	2.8 - 5.9	3.1	0 - 2.2
BHMW116	62.14	62.28	4.9	-0.14	5.1	010	1.8 - 4.9	3.1	0 - 1.2
BHMW117	64.30	64.42	6.1	-0.12	5.1	010	3.0 - 6.1	3.1	0 - 2.0
BHMW118	64.66	64.83	7.6	-0.17	5.1	010	4.5 - 7.6	3.1	0 - 3.9
BHMW119	64.40	64.49	14.0	-0.09	5.1	010	12.5 - 14.0	1.5	0 - 11.5
BHMW120	64.92	65.02	14.9	-0.10	5.1	010	11.8 - 14.9	3.1	0 - 11.5
BHMW122	64.95	65.06	6.1	-0.11	5.1	010	3.0 - 6.1	3.1	0 - 2.4
BHMW123	64.98	65.11	6.10	-0.13	5.10	010	3.0 - 6.1	3.1	0 - 2.4
BHMW124	64.30	64.38	6.10	-0.08	5.10	010	3.0 - 6.1	3.1	0 - 2.4
BHMW125	65.62	65.74	6.10	-0.12	5.10	010	3.8 - 6.9	3.1	0 - 3.5
BHMW127	64.82	64.92	6.10	-0.10	5.10	010	3.0 - 6.1	3.1	0 - 2.4

Notes:

mamsl metres above mean sea level
mbgs metres below ground surface

Input By: CT [22-Jul-2021]
Checked By: EC [6-Aug-2021]

TABLE 6

GROUNDWATER MONITORING DATA

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

					July 17, 2017			September 30, 2020		April 21-22, 2021				June 9-15, 2021				12-Oct-21			
Monitoring Well	Monitoring Well Screen Interval (mbgs)	Top of Pipe Elevation (mamsl)	Ground Surface Elevation (mamsl)	Stick-Up Height (metres)	Calculated Depth to Groundwater from Surface (mbgs)	Groundwater Elevation (mags)	Visual / Olfactory Observations	Calculated Depth to Groundwater from Surface (mbgs)	Groundwater Elevation (mags)	Measured Depth to Groundwater from Top of Pipe (mbtop)	Calculated Depth to Groundwater from Surface (mbgs)	Groundwater Elevation (mamsl)	Visual / Olfactory Observations	Measured Depth to Groundwater from Top of Pipe (mbtop)	Calculated Depth to Groundwater from Surface (mbgs)	Groundwater Elevation (mamsl)	Visual / Olfactory Observations	Measured Depth to Groundwater from Top of Pipe (mbtop)	Calculated Depth to Groundwater from Surface (mbgs)	Groundwater Elevation (mamsl)	Visual / Olfactory Observations
BH2017-02	3.4 - 6.5	-	66.43	-	4.4	62.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2017-03	7.3 - 10.3	-	65.63	-	4.9	60.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2017-04	2.2 - 4.6	-	62.93	-	4.6	58.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2017-05	7.8 - 10.8	-	64.93	-	3.3	61.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2017-06	4.7 - 7.8	-	66.53	-	6.0	60.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2017-07	4.9 - 8.0	-	64.63	-	7.6	57.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2017-08	7.8 - 10.7	-	66.13	-	5.6	60.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2017-09	1.8 - 4.5	-	61.83	-	4.4	57.4	Petroleum odours	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2017-10	10.0 - 13.1	64.46	64.53	-0.07	4.1	60.5	-	-	-	4.20	4.27	60.26	Cloudy, slight organic odours	-	-	-	-	-	-	-	-
BH2017-11	5.3 - 8.4	-	64.33	-	4.0	60.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BHMW3	-	66.65	66.77	-0.12	-	-	-	-	-	3.29	3.41	63.36	Cloudy, slight PHC odours	-	-	-	-	-	-	-	-
BH1-20	8.1 - 11.1	64.88	64.96	-0.08	-	-	-	5.03	59.93	4.71	4.79	60.17	Cloudy, slight organic odours	-	-	-	-	-	-	-	-
BH2-20	3.2 - 6.2	66.69	66.78	-0.09	-	-	-	5.05	61.73	3.52	3.61	63.17	Clear, no odours	-	-	-	-	-	-	-	-
BH3-20	9.2 - 12.2	64.14	64.21	-0.07	-	-	-	4.18	60.03	3.85	3.92	60.29	Clear, slight organic odours	-	-	-	-	-	-	-	-
BH4-20	7.7 - 10.7	64.34	64.46	-0.12	-	-	-	4.60	59.86	4.39	4.51	59.95	Cloudy, no odours	-	-	-	-	-	-	-	-
BH5-20	10.4 - 11.9	64.86	64.92	-0.06	-	-	-	4.82	60.10	4.67	4.73	60.19	Clear, slight organic odours	-	-	-	-	-	-	-	-
BHMW108	3.0 - 6.1	66.98	67.05	-0.07	-	-	-	-	-	-	-	-	-	5.47	5.54	61.51	Cloudy, slight PHC odours	-	-	-	-
BHMW109	2.4 - 5.5	67.14	67.27	-0.13	-	-	-	-	-	-	-	-	-	5.23	5.36	61.91	Cloudy, no odours	-	-	-	-
BHMW110	3.0 - 6.1	66.88	66.97	-0.09	-	-	-	-	-	-	-3.02	-	-	4.79	4.88	62.09	Cloudy, no odours	-	-	-	-
BHMW111	17.6 - 20.7	66.45	66.55	-0.1	-	-	-	-	-	-	-	-	-	17.00	17.10	49.45	Cloudy, no odours	-	-	-	-
BHMW112	2.4 - 5.5	66.23	66.32	-0.09	-	-	-	-	-	-	-	-	-	4.63	4.72	61.60	Cloudy, no odours	-	-	-	-
BHMW115	2.8 - 5.9	65.16	65.25	-0.09	-	-	-	-	-	-	-	-	-	5.02	5.11	60.14	Cloudy, no odours	-	-	-	-
BHMW116	1.8 - 4.9	62.14	62.28	-0.14	-	-	-	-	-	-	-	-	-	2.88	3.02	59.26	Cloudy, no odours	-	-	-	-
BHMW117	3.0 - 6.1	64.3	64.42	-0.12	-	-	-	-	-	-	-	-	-	4.12	4.24	60.18	Clear, no odours	-	-	-	-
BHMW118	4.5 - 7.6	64.66	64.83	-0.17	-	-	-	-	-	-	-	-	-	4.63	4.80	60.03	Clear, no odours	-	-	-	-
BHMW119	12.5 - 14.0	64.4	64.49	-0.09	-	-	-	-	-	-	-	-	-	7.75	7.84	56.65	Clear, no odours	-	-	-	-
BHMW120	11.8 - 14.9	64.92	65.02	-0.1	-	-	-	-	-	-	-	-	-	4.88	4.98	60.04	Clear, no odours	-	-	-	-
BHMW122	3.0 - 6.1	64.95	65.06	-0.11	-	-	-	-	-	-	-	-	-	4.70	4.81	60.25	Cloudy, no odours	-	-	-	-
BHMW123	3.0 - 6.1	64.98	65.11	-0.13	-	-	-	-	-	-	-	-	-	4.77	4.90	60.21	Cloudy, no odours	-	-	-	-
BHMW124	3.0 - 6.1	64.3	64.38	-0.08	-	-	-	-	-	-	-	-	-	4.60	4.68	59.70	Clear, no odours	-	-	-	-
BHMW125	3.0 - 6.1	65.62	65.74	-0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	4.90	5.02	60.72	Clear, no odours
BHMW127	3.8 - 6.9	64.82	64.92	-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	4.97	5.07	59.85	Clear, no odours
				Minimum =	3.3	57.1		4.18	59.86	Minimum =	-3.02	59.95		Minimum =	3.02	49.45		Minimum =	5.02	59.85	
				Maximum =	7.6	62.1		5.05	61.73	Maximum =	4.79	63.36		Maximum =	17.10	62.09		Maximum =	5.07	60.72	

Notes:

mamsl metres above mean sea level
mbgs metres below ground surface
mbtop metres below top of pipe
NM Not Measured

Input By: CT [22-Jul-2021]
Checked By: EC [6-Aug-2021]

TABLE 7

GROUNDWATER ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	MECP Table 3 SCS	BH2017-02	BH2017-04	BH2017-05	BH2017-05	BH2017-06	BH2017-06	BH2017-07	BH2017-09	BH2017-10	BH2017-11	BH1-20
Sample Designation		BH2017-02	BH2017-04	BH2017-05	BHMW-D	BH2017-06	BH2017-14	BH2017-07	BH2017-09	BH2017-10	BH2017-11	BH1-20-GW1
Sample Collection Date (dd/mm/yyyy)		18/07/2017	18/07/2017	18/07/2017	18/07/2017	18/07/2017	26/07/2017	18/07/2017	18/07/2017	22/04/2021	18/07/2017	30/09/2020
Laboratory Certificate No.		B7F4125	B7F4125	DST Report	B7F4125	DST Report	DST Report	B7F4125	B7F4125	C1A7975	B7F4125	2040558
Date of Laboratory Analysis (dd/mm/yyyy)		25/07/2017-26/07/2017	25/07/2017-26/07/2017	Unknown	25/07/2017-26/07/2017	Unknown	Unknown	25/07/2017-26/07/2017	25/07/2017-26/07/2017	23/04/2021-26/04/2021	25/07/2017-26/07/2017	02/10/2020-06/10/2020
Laboratory Sample No.		EUA319	EUA317	Unknown	EUA322	Unknown	Unknown	EUA321	EUA316	PJV381	EUA320	2040558-01
Well Screen Depth Interval (mbgs)		3.4 - 6.5	2.2 - 4.6	7.8 - 10.8	7.8 - 10.8	4.7 - 7.8	4.7 - 7.8	4.9 - 8.0	1.8 - 4.5	10.0 - 13.1	5.3 - 8.4	8.1 - 11.1
Petroleum Hydrocarbons (PHCs)												
PHCs F1 (C_6 - C_{10})	750	**12000**	<25	<25	<25	<25	<25	<25	28	<25	<25	-
PHCs F2 (>C_{10} - C_{16})	150	**6100**	<100	-	-	<100	<100	<100	<100	<100	<100	-
PHCs F3 (>C_{16} - C_{34})	500	<200	<200	-	-	<200	<200	<200	<200	<200	<200	-
PHCs F4 (>C_{34} - C_{50})	500	<200	<200	-	-	<200	<200	<200	<200	<200	<200	-
PHCs F4G (>C_{50})	500	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds												
Acetone	130000	<500	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	44	11	0.23	0.34	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	16.1
Bromodichloromethane	85000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Bromoform	380	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
Bromomethane	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Carbon Tetrachloride	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2
Chlorobenzene	630	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5
Chloroform	2.4	<0.20	<0.20	0.7	0.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5
Dibromochloromethane	82000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
1,2-Dichlorobenzene	4600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
1,4-Dichlorobenzene	8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Dichlorodifluoromethane	4400	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	320	<0.20	<0.20	0.24	0.23	<0.20	<0.20	<0.20	0.49	<0.20	<0.20	<0.5
1,2-Dichloroethane	1.6	<0.50	<0.50	**6.6**	**7**	<0.50	<0.50	<0.50	**20**	<0.50	1.3	**4.5**
1,1-Dichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5
cis-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
trans-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
1,2-Dichloropropane	16	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5
1,3-Dichloropropene (Total)	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Ethylbenzene	2300	1500	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5
Ethylene Dibromide	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2
Hexane	51	**280**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2
Methyl Ethyl Ketone	470000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
Methyl Isobutyl Ketone	140000	<250	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl t-Butyl Ether (MTBE)	190	<0.50	24	**240**	**240**	<0.50	<0.50	<2.5	110	3.7	16	44.3
Methylene Chloride	610	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0
Styrene	1300	<2.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
1,1,1,2-Tetrachloroethane	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
1,1,2,2-Tetrachloroethane	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Tetrachloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5
Toluene	18000	41	<0.20	<0.20	<0.20	<0.20	<0.20	0.53	<0.20	<0.20	<0.20	<0.5
1,1,1-Trichloroethane	640	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5
1,1,2-Trichloroethane	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Trichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5
Trichlorofluoromethane	2500	<25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5
Xylenes (Total)	4200	**6600**	0.22	<0.20	<0.20	<0.20	<0.20	0.49	0.22	<0.20	<0.20	<0.5
Polycyclic Aromatic Hydrocarbons												
Acenaphthene	600	-	-	-	-	-	-	-	-	<0.050	-	-
Acenaphthylene	1.8	-	-	-	-	-	-	-	-	<0.050	-	-
Anthracene	2.4	-	-	-	-	-	-	-	-	<0.050	-	-
Benzo(a)anthracene	4.7	-	-	-	-	-	-	-	-	<0.050	-	-
Benzo(a)pyrene	0.81	-	-	-	-	-	-	-	-	<0.0090	-	-
Benzo(b)fluoranthene	0.75	-	-	-	-	-	-	-	-	<0.050	-	-
Benzo(ghi)perylene	0.2	-	-	-	-	-	-	-	-	<0.050	-	-
Benzo(k)fluoranthene	0.4	-	-	-	-	-	-	-	-	<0.050	-	-
Chrysene	1	-	-	-	-	-	-	-	-	<0.050	-	-
Dibenzo(a,h)anthracene	0.52	-	-	-	-	-	-	-	-	<0.050	-	-
Fluoranthene	130	-	-	-	-	-	-	-	-	<0.050	-	-
Fluorene	400	-	-	-	-	-	-	-	-	<0.050	-	-
Indeno(1,2,3-cd)pyrene	0.2	-	-	-	-	-	-	-	-	<0.050	-	-
1- & 2-Methylnaphthalene	1800	-	-	-	-	-	-	-	-	<0.071	-	-
Naphthalene	1400	-	-	-	-	-	-	-	-	<0.050	-	-
Phenanthrene	580	-	-	-	-	-	-	-	-	<0.030	-	-
Pyrene	68	-	-	-	-	-	-	-	-	<0.050	-	-
Metals												
Antimony	20000	<0.50	<0.50	0.71	0.67	<0.50	<0.50	<0.50	<0.50	-	-	-
Arsenic	1900	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-
Barium	29000	3800	130	370	370	98	97	110	140	-	-	-
Beryllium	67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-
Boron (Total)	45000	74	69	180	180	67	67	76	150	-	-	-
Cadmium	2.7	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	-	-
Chromium (Total)	810	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	-	-
Chromium (Hexavalent)	140	-	-	-	-	-	-	-	-	-	-	-
Cobalt	66	6.6	1.4	<0.50	<0.50	2.5	2.6	0.59	0.78	-	-	-
Copper	87	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.3	-	-	-
Lead	25	13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.52	-	-	-
Mercury	0.29	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	9200	0.56	1.6	4.5	4.4	1	1	9.6	1.1	-	-	-
Nickel	490	11	4.9	4.4	4.2	6.9	6.9	3.1	11	-	-	-
Selenium	63	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	-
Silver	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	-	-
Thallium	510	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	-
Uranium	420	1.2	3.9	0.38	0.37	6.9	6.8	1.5	0.44	-	-	-
Vanadium	250	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-
Zinc	1100	<5.0	<5.0	<5.0	<5.0	5.2	5.2	<5.0	6	-	-	-
Inorganics												
Chloride	2300000	-	-	-	-	-	-	-	-	-	-	-
Sodium	2300000	680000	250000	98000	97000	120000	120000	460000	500000	-	-	-

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for All Types of Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per litre, unless otherwise noted
mbgs	metres below ground surface
NA	Not Applicable
NV	No Value
TEQ	Toxic Equivalency Quotient

Input By: CT [22-Jul-2021]

Checked By: EC [6-Aug-2021]

PINCHIN

TABLE 7

GROUNDWATER ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	**MECP Table 3 SCS**	BH1-20	BH2-20	BH2-20	BH3-20	BH3-20	BH4-20	BH4-20	BH4-20	BH5-20	BH5-20	BHMW3
Sample Designation		BH1-20	BH2-20-GW1	BH2-20	BH3-20-GW1	BH3-20	BH4-20-GW1	DUP	BH4-20	BH5-20-GW1	BH5-20	BHMW3
Sample Collection Date (dd/mm/yyyy)		22/04/2021	30/09/2020	22/04/2021	30/09/2020	22/04/2021	30/09/2020	30/09/2020	22/04/2021	30/09/2020	22/04/2021	22/04/2021
Laboratory Certificate No.		C1A7975	2040558	C1A7975	2040558	C1A7975	2040558	2040558	C1A7975	2040558	C1A7975	C1A7975
Date of Laboratory Analysis (dd/mm/yyyy)		23/04/2021-26/04/2021	02/10/2020-06/10/2020	23/04/2021-26/04/2021	02/10/2020-06/10/2020	23/04/2021-26/04/2021	02/10/2020-06/10/2020	02/10/2020-06/10/2020	23/04/2021-26/04/2021	02/10/2020-06/10/2020	23/04/2021-26/04/2021	23/04/2021-26/04/2021
Laboratory Sample No.		PJV377	2040558-02	PJV374	2040558-03	PJV378	2040558-04	2040558-06	PJV379	2040558-05	PJV380	PJV375
Well Screen Depth Interval (mbgs)		8.1 - 11.1	3.2 - 6.2	3.2 - 6.2	9.2 - 12.2	9.2 - 12.2	7.7 - 10.7	7.7 - 10.7	7.7 - 10.7	10.4 - 11.9	10.4 - 11.9	Unknown
Petroleum Hydrocarbons (PHCs)												
PHCs F1 (C_6 - C_{10})	750	<25	**1940**	<25	<25	<25	<25	-	<25	-	<25	31
PHCs F2 (>C_{10} - C_{16})	150	<100	<100	<100	<100	<100	<100	-	<100	-	<100	<100
PHCs F3 (>C_{16} - C_{34})	500	<200	<100	<200	<100	<200	<100	-	<200	-	<200	390
PHCs F4 (>C_{34} - C_{50})	500	<200	<100	<200	<100	<200	<100	-	<200	-	<200	460
PHCs F4G (>C_{50})	500	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds												
Acetone	130000	<10	<5.0	<10	<5.0	<10	<5.0	<5.0	<10	<5.0	<10	<10
Benzene	44	<0.20	<0.5	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	1.1
Bromodichloromethane	85000	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
Bromoform	380	<1.0	<0.5	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<1.0	<1.0
Bromomethane	5.6	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.20	<0.2	<0.20	<0.2	<0.20	<0.2	<0.2	<0.20	<0.2	<0.20	<0.20
Chlorobenzene	630	<0.20	<0.5	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	<0.20
Chloroform	2.4	<0.20	<0.5	<0.20	1.8	<0.20	<0.5	<0.5	<0.20	**3.4**	<0.20	<0.20
Dibromochloromethane	82000	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
1,2-Dichlorobenzene	4600	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
1,4-Dichlorobenzene	8	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
Dichlorodifluoromethane	4400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	320	<0.20	<0.5	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	<0.20
1,2-Dichloroethane	1.6	**3.8**	<0.5	<0.50	<0.5	<0.50	**2.7**	**2.7**	**2.3**	<0.5	<0.50	<0.50
1,1-Dichloroethylene	1.6	<0.20	<0.5	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	<0.20
cis-1,2-Dichloroethylene	1.6	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
trans-1,2-Dichloroethylene	1.6	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
1,2-Dichloropropane	16	<0.20	<0.5	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	<0.20
1,3-Dichloropropene (Total)	5.2	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
Ethylbenzene	2300	<0.20	325	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	0.34
Ethylene Dibromide	0.25	<0.20	<0.2	<0.20	<0.2	<0.20	<0.2	<0.2	<0.20	<0.2	<0.20	<0.20
Hexane	51	<1.0	**52**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1
Methyl Ethyl Ketone	470000	<10	<5.0	<10	<5.0	<10	<5.0	<5.0	<10	<5.0	<10	<10
Methyl Isobutyl Ketone	140000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl t-Butyl Ether (MTBE)	190	44	<2.0	<0.50	5.5	3.1	15.7	15.6	19	<2.0	<0.50	<0.50
Methylene Chloride	610	<2.0	<5.0	<2.0	<5.0	<2.0	<5.0	<5.0	<2.0	<5.0	<2.0	<2.0
Styrene	1300	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
1,1,1,2-Tetrachloroethane	3.3	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
1,1,2,2-Tetrachloroethane	3.2	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
Tetrachloroethylene	1.6	<0.20	<0.5	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	<0.20
Toluene	18000	<0.20	8.8	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	<0.20
1,1,1-Trichloroethane	640	<0.20	<0.5	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	<0.20
1,1,2-Trichloroethane	4.7	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50
Trichloroethylene	1.6	<0.20	<0.5	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	<0.20
Trichlorofluoromethane	2500	<0.50	<1	<0.50	<1	<0.50	<1	<1	<0.50	<1	<0.50	<0.50
Vinyl Chloride	0.5	<0.20	<0.5	<0.20	<0.5	<0.20	<0.5	<0.5	<0.20	<0.5	<0.20	<0.20
Xylenes (Total)	4200	<0.20	90.7	<0.20	<0.5	0.47	<0.5	<0.5	<0.20	<0.5	<0.20	0.41
Polycyclic Aromatic Hydrocarbons												
Acenaphthene	600	<0.050	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	<0.050
Acenaphthylene	1.8	<0.050	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	<0.050
Anthracene	2.4	<0.050	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	<0.050
Benzo(a)anthracene	4.7	0.054	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	<0.050
Benzo(a)pyrene	0.81	0.055	-	<0.0090	-	<0.0090	-	-	<0.0090	-	0.014	0.043
Benzo(b)fluoranthene	0.75	0.076	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	0.064
Benzo(ghi)perylene	0.2	<0.050	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	0.052
Benzo(k)fluoranthene	0.4	<0.050	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	<0.050
Chrysene	1	0.055	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	<0.050
Dibenzo(a,h)anthracene	0.52	<0.050	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	<0.050
Fluoranthene	130	0.11	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	0.11
Fluorene	400	<0.050	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.2	<0.050	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	<0.050
1- & 2-Methylnaphthalene	1800	<0.1	-	0.13	-	<0.071	-	-	<0.071	-	<0.071	0.19
Naphthalene	1400	<0.050	-	0.095	-	<0.050	-	-	<0.050	-	<0.050	0.14
Phenanthrene	580	0.055	-	<0.030	-	<0.030	-	-	<0.030	-	<0.030	0.099
Pyrene	68	0.096	-	<0.050	-	<0.050	-	-	<0.050	-	<0.050	0.12
Metals												
Antimony	20000	-	-	-	-	-	-	-	-	-	-	-
Arsenic	1900	-	-	-	-	-	-	-	-	-	-	-
Barium	29000	-	-	-	-	-	-	-	-	-	-	-
Beryllium	67	-	-	-	-	-	-	-	-	-	-	-
Boron (Total)	45000	-	-	-	-	-	-	-	-	-	-	-
Cadmium	2.7	-	-	-	-	-	-	-	-	-	-	-
Chromium (Total)	810	-	-	-	-	-	-	-	-	-	-	-
Chromium (Hexavalent)	140	-	-	-	-	-	-	-	-	-	-	-
Cobalt	66	-	-	-	-	-	-	-	-	-	-	-
Copper	87	-	-	-	-	-	-	-	-	-	-	-
Lead	25	-	-	-	-	-	-	-	-	-	-	-
Mercury	0.29	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	9200	-	-	-	-	-	-	-	-	-	-	-
Nickel	490	-	-	-	-	-	-	-	-	-	-	-
Selenium	63	-	-	-	-	-	-	-	-	-	-	-
Silver	1.5	-	-	-	-	-	-	-	-	-	-	-
Thallium	510	-	-	-	-	-	-	-	-	-	-	-
Uranium	420	-	-	-	-	-	-	-	-	-	-	-
Vanadium	250	-	-	-	-	-	-	-	-	-	-	-
Zinc	1100	-	-	-	-	-	-	-	-	-	-	-
Inorganics												
Chloride	2300000	-	-	-	-	-	-	-	-	-	-	-
Sodium	2300000	-	-	-	-	-	-	-	-	-	-	-

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for All Types of Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per litre, unless otherwise noted
mbgs	metres below ground surface
NA	Not Applicable
NV	No Value
TEQ	Toxic Equivalency Quotient

Input By: CT [22-Jul-2021]

Checked By: EC [6-Aug-2021]

TABLE 7

GROUNDWATER ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	MECP Table 3 SCS	BHMW3	BHMW108	BHMW109	BHMW110	BHMW111	BHMW112	BHMW115	BHMW116	BHMW117	BHMW118	BHMW119
Sample Designation		DUP-1	BHMW108	BHMW109	BHMW110	BHMW111	BHMW112	BHMW115	BHMW116	BHMW117	BHMW118	BHMW119
Sample Collection Date (dd/mm/yyyy)		22/04/2021	9/6/2021	9/6/2021	9/6/2021	15/06/2021	9/6/2021	9/6/2021	9/6/2021	9/6/2021	9/6/2021	15/06/2021
Laboratory Certificate No.		C1A7975	C1G1158	C1G1158	C1G1158	C1G6182	C1G1158	C1G1158	C1G1158	C1G1158	C1G1158	C1G6182
Date of Laboratory Analysis (dd/mm/yyyy)		23/04/2021-26/04/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	22/06/2021-23/06/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	22/06/2021-23/06/2021
Laboratory Sample No.		PJV376	PUW561	PUW562	PUW563	PVY848	PUW564	PUW565	PUW566	PUW567	PUW568	PVY849
Well Screen Depth Interval (mbgs)		Unknown	3.0 - 6.1	2.4 - 5.5	3.0 - 6.1	17.6 - 20.7	2.4 - 5.5	2.8 - 5.9	1.8 - 4.9	3.0 - 6.1	4.5 - 7.6	12.5 - 14.0
Petroleum Hydrocarbons (PHCs)												
PHCs F1 (C_6 - C_{10})	750	27	630	<25	470	<25	<25	42	<25	<25	<25	<25
PHCs F2 (>C_{10} - C_{16})	150	<100	**410**	<100	**380**	<100	<100	**240**	120	<100	<100	<100
PHCs F3 (>C_{16} - C_{34})	500	**550**	250	<200	<200	<200	<200	**740**	320	<200	220	<200
PHCs F4 (>C_{34} - C_{50})	500	**740**	<200	<200	<200	<200	<200	<200	240	<200	<200	<200
PHCs F4G (>C_{50})	500	**4900**	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds												
Acetone	130000	<10	160	28	59	<10	<10	<10	<10	<10	<10	<15
Benzene	44	1.1	37	<0.20	0.24	<0.20	<0.20	8.1	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	85000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	380	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	2.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.78
Dibromochloromethane	82000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	4600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	4400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	320	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	1.6	<0.50	<0.50	<0.50	0.55	<0.50	<0.50	<0.50	**8.1**	<0.50	<0.50	**1.9**
1,1-Dichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	16	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichloropropene (Total)	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	2300	0.36	16	<0.20	12	<0.20	<0.20	0.26	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane	51	1.1	3.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone	470000	<10	24	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	140000	<5.0	7.8	<5.0	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl t-Butyl Ether (MTBE)	190	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	5.8	140	<0.50	2.4	15
Methylene Chloride	610	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Styrene	1300	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	18000	<0.20	250	<0.20	<0.20	0.29	<0.20	0.43	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	640	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	2500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes (Total)	4200	0.44	280	<0.20	13	0.6	<0.20	<0.20	<0.20	<0.20	<0.20	0.78
Polycyclic Aromatic Hydrocarbons												
Acenaphthene	600	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.20	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	1.8	<0.050	<0.050	-	<0.050	<0.050	<0.050	0.13	<0.050	<0.050	<0.050	<0.050
Anthracene	2.4	<0.050	<0.050	-	<0.050	<0.050	<0.050	0.067	<0.050	<0.050	<0.050	<0.050
Benzo(a)anthracene	4.7	<0.050	<0.050	-	<0.050	<0.050	<0.050	0.14	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	0.81	0.058	0.011	-	<0.0090	<0.0090	<0.0090	0.12	<0.0090	0.013	0.01	<0.0090
Benzo(b)fluoranthene	0.75	0.088	<0.050	-	<0.050	<0.050	<0.050	0.2	<0.050	<0.050	<0.050	<0.050
Benzo(ghi)perylene	0.2	0.075	<0.050	-	<0.050	<0.050	<0.050	0.076	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	0.4	<0.050	<0.050	-	<0.050	<0.050	<0.050	0.06	<0.050	<0.050	<0.050	<0.050
Chrysene	1	0.057	<0.050	-	<0.050	<0.050	<0.050	0.13	<0.050	<0.050	<0.050	<0.050
Dibenzo(a,h)anthracene	0.52	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	130	0.14	<0.050	-	<0.050	<0.050	<0.050	0.37	0.08	<0.050	<0.050	<0.050
Fluorene	400	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.2	<0.050	<0.050	-	<0.050	<0.050	<0.050	0.071	<0.050	<0.050	<0.050	<0.050
1- & 2-Methylnaphthalene	1800	0.18	2.3	-	1.8	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071
Naphthalene	1400	0.14	5.5	-	1.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	580	0.12	<0.030	-	<0.030	<0.030	<0.030	0.27	0.16	0.054	0.031	<0.030
Pyrene	68	0.15	<0.050	-	<0.050	<0.050	<0.050	0.29	0.058	<0.050	<0.050	<0.050
Metals												
Antimony	20000	-	-	-	-	-	-	-	-	-	-	-
Arsenic	1900	-	-	-	-	-	-	-	-	-	-	-
Barium	29000	-	-	-	-	-	-	-	-	-	-	-
Beryllium	67	-	-	-	-	-	-	-	-	-	-	-
Boron (Total)	45000	-	-	-	-	-	-	-	-	-	-	-
Cadmium	2.7	-	-	-	-	-	-	-	-	-	-	-
Chromium (Total)	810	-	-	-	-	-	-	-	-	-	-	-
Chromium (Hexavalent)	140	-	-	-	-	-	-	-	-	-	-	-
Cobalt	66	-	-	-	-	-	-	-	-	-	-	-
Copper	87	-	-	-	-	-	-	-	-	-	-	-
Lead	25	-	-	-	-	-	-	-	-	-	-	-
Mercury	0.29	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	9200	-	-	-	-	-	-	-	-	-	-	-
Nickel	490	-	-	-	-	-	-	-	-	-	-	-
Selenium	63	-	-	-	-	-	-	-	-	-	-	-
Silver	1.5	-	-	-	-	-	-	-	-	-	-	-
Thallium	510	-	-	-	-	-	-	-	-	-	-	-
Uranium	420	-	-	-	-	-	-	-	-	-	-	-
Vanadium	250	-	-	-	-	-	-	-	-	-	-	-
Zinc	1100	-	-	-	-	-	-	-	-	-	-	-
Inorganics												
Chloride	2300000	-	-	-	-	-	-	-	-	-	-	-
Sodium	2300000	-	-	-	-	-	-	-	-	-	-	-

Notes:
MECP Table 3 SCS:
Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for All Types of Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per litre, unless otherwise noted
mbgs	metres below ground surface
NA	Not Applicable
NV	No Value
TEQ	Toxic Equivalency Quotient

Input By: CT [22-Jul-2021]
Checked By: EC [6-Aug-2021]

PINCHIN

TABLE 7

GROUNDWATER ANALYTICAL RESULTS

CLV Group Developments Inc.

951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Sample Location	**MECP Table 3 SCS**	BHMW120	BHMW120	BHMW122	BHMW123	BHMW124	BHMW124	BHMW125	BHMW127
Sample Designation		BHMW120	GWDUP-1	BHMW122	BHMW123	BHMW124	GWDUP-2	BHMW125	BHM127
Sample Collection Date (dd/mm/yyyy)		9/6/2021	9/6/2021	9/6/2021	9/6/2021	9/6/2021	9/6/2021	12/10/2021	12/10/2021
Laboratory Certificate No.		C1G1158	C1G1158	C1G1158	C1G1158	C1G1158	C1G1158	C1T8290	C1T8290
Date of Laboratory Analysis (dd/mm/yyyy)		15/06/2021-18/06/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	15/06/2021-18/06/2021	19/10/2021-20/10/2021	19/10/2021-20/10/2021
Laboratory Sample No.		PUW569	PUW570	PUW584	PUW585	PUW586	PUW587	QXT938	QXT939
Well Screen Depth Interval (mbgs)		11.8 - 14.9	11.8 - 14.9	3.0 - 6.1	3.0 - 6.1	3.0 - 6.1	3.0 - 6.1	3.0 - 6.1	3.8 - 6.9
Petroleum Hydrocarbons (PHCs)									
PHCs F1 (C_6 - C_{10})	750	34	<25	<25	<25	<25	<25	<25	<25
PHCs F2 (>C_{10} - C_{16})	150	<100	<100	**170**	120	<100	130	<100	<100
PHCs F3 (>C_{16} - C_{34})	500	<200	220	<200	250	<200	240	<200	<200
PHCs F4 (>C_{34} - C_{50})	500	<200	<200	<200	<200	<200	<200	<200	<200
PHCs F4G (>C_{50})	500	-	-	-	-	-	-	-	-
Volatile Organic Compounds									
Acetone	130000	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	44	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.17	0.47
Bromodichloromethane	85000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	380	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	2.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	82000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	4600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	4400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	320	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.48
1,2-Dichloroethane	1.6	**5.2**	**5**	<0.50	<0.50	<0.50	<0.50	<0.50	1.1
1,1-Dichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	16	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichloropropene (Total)	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	2300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane	51	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone	470000	<10	<10	<10	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	140000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl t-Butyl Ether (MTBE)	190	39	37	<0.50	<0.50	<0.50	<0.50	<0.50	46
Methylene Chloride	610	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Styrene	1300	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	18000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	640	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	2500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes (Total)	4200	0.22	0.22	0.86	<0.20	<0.20	<0.20	<0.20	<0.20
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	600	<0.050	<0.050	0.14	<0.050	<0.050	<0.050	<0.050	0.1
Acenaphthylene	1.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	2.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)anthracene	4.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	0.81	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	0.04
Benzo(b)fluoranthene	0.75	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(ghi)perylene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	0.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.057
Dibenzo(a,h)anthracene	0.52	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	130	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.14
Fluorene	400	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.076
Indeno(1,2,3-cd)pyrene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1- & 2-Methylnaphthalene	1800	<0.071	<0.071	0.084	<0.071	<0.071	<0.071	<0.071	<0.071
Naphthalene	1400	<0.050	<0.050	0.072	<0.050	<0.050	<0.050	<0.050	0.053
Phenanthrene	580	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.25
Pyrene	68	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.11
Metals									
Antimony	20000	-	-	-	-	<2.5	<2.5		
Arsenic	1900	-	-	-	-	<5.0	<5.0		
Barium	29000	-	-	-	-	310	320		
Beryllium	67	-	-	-	-	<2.0	<2.0		
Boron (Total)	45000	-	-	-	-	82	82		
Cadmium	2.7	-	-	-	-	<0.45	<0.45		
Chromium (Total)	810	-	-	-	-	<25	<25		
Chromium (Hexavalent)	140	-	-	-	-				
Cobalt	66	-	-	-	-	<2.5	<2.5		
Copper	87	-	-	-	-	<4.5	<4.5		
Lead	25	-	-	-	-	<2.5	<2.5		
Mercury	0.29	-	-	-	-				
Molybdenum	9200	-	-	-	-	7.1	6.9		
Nickel	490	-	-	-	-	14	13		
Selenium	63	-	-	-	-	<10	<10		
Silver	1.5	-	-	-	-	<0.45	<0.45		
Thallium	510	-	-	-	-	<0.25	<0.25		
Uranium	420	-	-	-	-	8.9	9.1		
Vanadium	250	-	-	-	-	<2.5	<2.5		
Zinc	1100	-	-	-	-	<25	<25		
Inorganics									
Chloride	2300000	-	-	-	-	**3500000**	**3700000**		
Sodium	2300000	-	-	-	-	1300000	1400000		

Notes:

MECP Table 3 SCS:

Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for All Types of Property Use and Coarse-Textured Soils

BOLD	Exceeds SCS
BOLD	Reportable Detection Limit Exceeds SCS
Units	All units in micrograms per litre, unless otherwise noted
mbgs	metres below ground surface
NA	Not Applicable
NV	No Value
TEQ	Toxic Equivalency Quotient

Input By: CT [22-Jul-2021]
Checked By: EC [6-Aug-2021]

PINCHIN

TABLE 8
MAXIMUM CONCENTRATIONS IN GROUNDWATER
CLV Group Developments Inc.
951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Parameter	Maximum Concentration	MECP Table 3 SCS	Sample Designation	Sample Location	Sample Depth (mbgs)
Petroleum Hydrocarbons (PHCs)					
PHCs F1 (C_6 - C_{10})	**12000**	750	BH2017-02	BH2017-02	3.4 - 6.5
PHCs F2 (>C_{10} - C_{16})	**6100**	150	BH2017-02	BH2017-02	3.4 - 6.5
PHCs F3 (>C_{16} - C_{34})	**740**	500	BHMW115	BHMW115	2.8 - 5.9
PHCs F4 (>C_{34} - C_{50})	**740**	500	DUP-1	BHMW3	Unknown
PHCs F4G (>C_{50})	**4900**	500	DUP-1	BHMW3	Unknown
Volatile Organic Compounds					
Acetone	<500	130000	BH2017-02	BH2017-02	3.4 - 6.5
Benzene	37	44	BHMW108	BHMW108	3.0 - 6.1
Bromodichloromethane	<0.5	85000	Several	Several	Several
Bromoform	<1	380	Several	Several	Several
Bromomethane	<0.5	5.6	Several	Several	Several
Carbon Tetrachloride	<0.2	0.79	Several	Several	Several
Chlorobenzene	<0.5	630	Several	Several	Several
Chloroform	**3.4**	2.4	BH5-20-GW1	BH5-20	10.4 - 11.9
Dibromochloromethane	<0.5	82000	Several	Several	Several
1,2-Dichlorobenzene	<0.5	4600	Several	Several	Several
1,3-Dichlorobenzene	<0.5	9600	Several	Several	Several
1,4-Dichlorobenzene	<0.5	8	Several	Several	Several
Dichlorodifluoromethane	<50	4400	Several	Several	Several
1,1-Dichloroethane	<0.5	320	Several	Several	Several
1,2-Dichloroethane	**20**	1.6	BH2017-09	BH2017-09	1.8 - 4.5
1,1-Dichloroethylene	<0.5	1.6	Several	Several	Several
cis-1,2-Dichloroethylene	<0.5	1.6	Several	Several	Several
trans-1,2-Dichloroethylene	<0.5	1.6	Several	Several	Several
1,2-Dichloropropane	<0.5	16	Several	Several	Several
1,3-Dichloropropene (Total)	<0.5	5.2	Several	Several	Several
Ethylbenzene	1500	2300	BH2017-02	BH2017-02	3.4 - 6.5
Ethylene Dibromide	<0.2	0.25	Several	Several	Several
Hexane	**280**	51	BH2017-02	BH2017-02	3.4 - 6.5
Methyl Ethyl Ketone	24	470000	BHMW108	BHMW108	3.0 - 6.1
Methyl Isobutyl Ketone	<250	140000	BH2017-02	BH2017-02	3.4 - 6.5
Methyl t-Butyl Ether (MTBE)	**240**	190	BH2017-05, BHMW-D	BH2017-05, BH2017-05	7.8 - 10.8, 7.8 - 10.8
Methylene Chloride	<5	610	Several	Several	Several
Styrene	<2.1	1300	Several	Several	Several
1,1,1,2-Tetrachloroethane	<0.5	3.3	Several	Several	Several
1,1,2,2-Tetrachloroethane	<0.5	3.2	Several	Several	Several
Tetrachloroethylene	<0.5	1.6	Several	Several	Several
Toluene	250	18000	BHMW108	BHMW108	3.0 - 6.1
1,1,1-Trichloroethane	<0.5	640	Several	Several	Several
1,1,2-Trichloroethane	<0.5	4.7	Several	Several	Several
Trichloroethylene	<0.5	1.6	Several	Several	Several
Trichlorofluoromethane	<25	2500	Several	Several	Several
Vinyl Chloride	<0.5	0.5	Several	Several	Several
Xylenes (Total)	**6600**	4200	BH2017-02	BH2017-02	3.4 - 6.5
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	<0.2	600	Several	Several	Several
Acenaphthylene	0.13	1.8	BHMW115	BHMW115	2.8 - 5.9
Anthracene	0.067	2.4	BHMW115	BHMW115	2.8 - 5.9
Benzo(a)anthracene	0.14	4.7	BHMW115	BHMW115	2.8 - 5.9
Benzo(a)pyrene	0.12	0.81	BHMW115	BHMW115	2.8 - 5.9
Benzo(b)fluoranthene	0.2	0.75	BHMW115	BHMW115	2.8 - 5.9
Benzo(ghi)perylene	0.076	0.2	BHMW115	BHMW115	2.8 - 5.9
Benzo(k)fluoranthene	0.06	0.4	BHMW115	BHMW115	2.8 - 5.9
Chrysene	0.13	1	BHMW115	BHMW115	2.8 - 5.9
Dibenzo(a,h)anthracene	<0.05	0.52	Several	Several	Several
Fluoranthene	0.37	130	BHMW115	BHMW115	2.8 - 5.9
Fluorene	0.076	400	Several	Several	Several
Indeno(1,2,3-cd)pyrene	0.071	0.2	BHMW115	BHMW115	2.8 - 5.9
Methylnaphthalene 2-(1-)	2.3	1800	BHMW108	BHMW108	3.0 - 6.1
Naphthalene	5.5	1400	BHMW108	BHMW108	3.0 - 6.1
Phenanthrene	0.27	580	BHMW115	BHMW115	2.8 - 5.9
Pyrene	0.29	68	BHMW115	BHMW115	2.8 - 5.9
Metals					
Antimony	<2.5	20000	BHMW124, GWDUP-2	BHMW124, BHMW124	3.0 - 6.1, 3.0 - 6.1
Arsenic	<5	1900	Several	Several	Several
Barium	3800	29000	BH2017-02	BH2017-02	3.4 - 6.5
Beryllium	<2	67	Several	Several	Several
Boron	180	45000	BH2017-05, BHMW-D	BH2017-05, BH2017-05	7.8 - 10.8, 7.8 - 10.8
Cadmium	<0.45	2.7	BHMW124, GWDUP-2	BHMW124, BHMW124	3.0 - 6.1, 3.0 - 6.1
Chromium (Total)	<25	810	BHMW124, GWDUP-2	BHMW124, BHMW124	3.0 - 6.1, 3.0 - 6.1
Cobalt	6.6	66	BH2017-02	BH2017-02	3.4 - 6.5
Copper	<4.5	87	BHMW124, GWDUP-2	BHMW124, BHMW124	3.0 - 6.1, 3.0 - 6.1
Lead	13	25	BH2017-02	BH2017-02	3.4 - 6.5
Molybdenum	9.6	9200	BH2017-07	BH2017-07	4.9 - 8.0
Nickel	14	490	BHMW124	BHMW124	3.0 - 6.1
Selenium	<10	63	BHMW124, GWDUP-2	BHMW124, BHMW124	3.0 - 6.1, 3.0 - 6.1
Silver	<0.45	1.5	BHMW124, GWDUP-2	BHMW124, BHMW124	3.0 - 6.1, 3.0 - 6.1
Thallium	<0.25	510	BHMW124, GWDUP-2	BHMW124, BHMW124	3.0 - 6.1, 3.0 - 6.1
Uranium	9.1	420	GWDUP-2	BHMW124	3.0 - 6.1
Vanadium	<2.5	250	BHMW124, GWDUP-2	BHMW124, BHMW124	3.0 - 6.1, 3.0 - 6.1
Zinc	<25	1100	BHMW124, GWDUP-2	BHMW124, BHMW124	3.0 - 6.1, 3.0 - 6.1
Inorganics					
Chloride	**3700000**	2300000	GWDUP-2	BHMW124	3.0 - 6.1
Sodium	1400000	2300000	GWDUP-2	BHMW124	3.0 - 6.1

Notes:

Units — All units in micrograms per litre, unless otherwise noted
mbgs — metres below ground surface

Input By: CT [22-Jul-2021]
Checked By: EC [6-Aug-2021]

TABLE 9
SOIL QA/QC ANALYSIS
CLV Group Developments Inc.
951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

PARAMETER	Lowest RDL	PQL	Units	Relative Percent Difference (RPD) Performance Standard (%)[1]	BH107 SS3			BHMW110 SS7			BHMW118 SS2			BH121 SS1			BHMW124 SS1		
					BH107 SS3	DUP-1	RPD (%)[2]	BHMW110 SS7	DUP-2	RPD (%)[2]	BHMW118 SS2	DUP-3	RPD (%)[2]	BH121 SS1	DUP101	RPD (%)[2]	BHMW124 SS1	DUP102	RPD (%)[2]
					26/04/2021	26/04/2021		27/04/2021	27/04/2021		30/04/2021	30/04/2021		25/05/2021	25/05/2021		25/05/2021	25/05/2021	
					C1B6083	C1B6083		C1B6083	C1B6083		C1B8527	C1B8527		C1E5924	C1E5924		C1E5924	C1E5924	
					30/04/2021-06/05/2021	30/04/2021-06/05/2021		30/04/2021-06/05/2021	30/04/2021-06/05/2021		05/05/2021-10/05/2021	05/05/2021-10/05/2021		31/05/2021-08/06/2021	31/05/2021-08/06/2021		31/05/2021-08/06/2021	31/05/2021-08/06/2021	
					PLN577	PLN578		PLN583	PLN584		PMA921	PMA922		PRS144	PRS145		PRS149/PTN419	PRS151	
					1.52 - 2.29	1.52 - 2.29		4.57 - 5.33	4.57 - 5.33		0.75 - 1.52	0.75 - 1.52		0 - 0.75	0 - 0.75		0 - 0.75	0 - 0.75	
Miscellaneous Parameters																			
pH	NA	NA	pH units	0.3 units	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons (PHCs)																			
PHC F1 (C_6-C_{10})-BTEX[2]	10	50	µg/g	30%	<10	<10	NC	390	580	**39%**	<10	<10	NC	<10	<10	NC	<10	-	NC
PHC F2 (C_{10}-C_{16})	10	50	µg/g	30%	<10	<10	NC	90	39	NA	<10	<10	NC	<10	<10	NC	<10	-	NC
PHC F3 (C_{16}-C_{34})	10	50	µg/g	30%	130	320	**84%**	<50	<50	NC	<50	<50	NC	<50	<50	NC	150	-	NC
PHC F4 (C_{34}-C_{50})	10	50	µg/g	30%	430	1100	**88%**	<50	<50	NC	<50	250	NC	<50	<50	NC	100	-	NC
PHC F4G (>C_{50})	10	50	µg/g	30%	1100	3100	**95%**	-	-	NC	-	1000	NC	-	-	NC	-	-	NC
Volatile Organic Compounds (VOCs)																			
Acetone	0.5	2.5	µg/g	50%	-	-	NC	<1.0	<1.0	NC	<0.50	<0.50	NC	-	-	NC	<0.50	-	NC
Benzene	0.02	0.1	µg/g	50%	<0.020	<0.020	NC	<0.020	<0.020	NC	<0.020	<0.020	NC	<0.020	<0.020	NC	<0.020	-	NC
Bromodichloromethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Bromoform	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Bromomethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Carbon Tetrachloride	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Chlorobenzene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Chloroform	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Dibromochloromethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,2-Dichlorobenzene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,3-Dichlorobenzene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,4-Dichlorobenzene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Dichlorodifluoromethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,1-Dichloroethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,2-Dichloroethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,1-Dichloroethylene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Cis-1,2-Dichloroethylene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Trans-1,2-Dichloroethylene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,2-Dichloropropane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,3-Dichloropropene[3]	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Ethylbenzene	0.02	0.1	µg/g	50%	<0.020	<0.020	NC	1.8	1.7	6%	<0.020	<0.020	NC	<0.020	<0.020	NC	<0.020	-	NC
Ethylene Dibromide	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Hexane(n)	0.05	0.25	µg/g	50%	-	-	NC	21	16	27%	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Methyl Ethyl Ketone	0.5	2.5	µg/g	50%	-	-	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	-	-	NC	<0.50	-	NC
Methyl Isobutyl Ketone	0.5	2.5	µg/g	50%	-	-	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	-	-	NC	<0.50	-	NC
Methyl-t-Butyl Ether	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Methylene Chloride	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Styrene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,1,1,2-Tetrachloroethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
1,1,2,2-Tetrachloroethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Tetrachloroethylene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Toluene	0.02	0.1	µg/g	50%	<0.020	<0.020	NC	<0.020	<0.020	NC	<0.020	<0.020	NC	<0.020	<0.020	NC	0.052	-	NA
1,1,1-Trichloroethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC			NA	<0.050	-	NC
1,1,2-Trichloroethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Trichloroethylene	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Trichlorofluoromethane	0.05	0.25	µg/g	50%	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	-	-	NC	<0.050	-	NC
Vinyl Chloride	0.02	0.1	µg/g	50%	-	-	NC	<0.020	<0.020	NC	<0.020	<0.020	NC	-	-	NC	<0.020	-	NC
Xylene Mixture[4]	0.02	0.1	µg/g	50%	<0.040	<0.040	NC	3	2.5	18%	<0.020	<0.020	NC	<0.040	<0.040	NC	0.061	-	NA
Polycyclic Aromatic Hydrocarbons (PAHs)																			
Acenaphthene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.018	<0.050	NA	<0.0050	<0.0050	NC	0.042	-	NC
Acenaphthylene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.019	<0.050	NA	<0.0050	<0.0050	NC	0.034	-	NC
Anthracene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.079	<0.050	NC	0.0051	<0.0050	NA	0.13	-	NC
Benz(a)anthracene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.23	<0.050	NC	0.029	0.019	NA	0.45	-	NC
Benzo(a)pyrene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.21	<0.050	NC	0.029	0.021	NA	0.42	-	NC
Benzo(b)fluoranthene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.25	<0.050	NC	0.038	0.026	38%	0.56	-	NC
Benzo(g,h,i)perylene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.13	<0.050	NC	0.017	0.013	NA	0.29	-	NC
Benzo(k)fluoranthene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.091	<0.050	NC	0.013	0.0091	NA	0.2	-	NC
Chrysene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.21	<0.050	NC	0.026	0.017	NA	0.39	-	NC
Dibenz(a,h)anthracene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.037	<0.050	NC	<0.0050	<0.0050	NC	0.071	-	NC
Fluoranthene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.42	0.059	**151%**	0.058	0.036	**47%**	0.84	-	NC
Fluorene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.053	<0.050	NC	<0.0050	<0.0050	NC	0.048	-	NC
Indeno(1,2,3-cd)pyrene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.13	<0.050	NC	0.02	0.014	NA	0.32	-	NC
Methylnaphthalene, total[5]	0.005	0.025	µg/g	40%	<0.071	<0.071	NC	0.26	0.16	**48%**	0.042	<0.071	NC	<0.0071	<0.0071	NC	0.073	-	NC
Naphthalene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	0.049	0.028	**55%**	0.0053	<0.050	NA	<0.0050	<0.0050	NC	0.041	-	NC
Phenanthrene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.36	<0.050	NC	0.024	0.015	NA	0.53	-	NC
Pyrene	0.005	0.025	µg/g	40%	<0.050	<0.050	NC	<0.0050	<0.0050	NC	0.56	0.075	**153%**	0.049	0.035	33%	0.72	-	NC
Metals and Inorganics																			
Antimony	0.2	1	µg/g	30%	<0.20	<0.20	NC	-	-	NC	0.28	<0.20	NA	-	-	NC	0.68	-	NA
Arsenic	1	5	µg/g	30%	2	1.5	NA	-	-	NC	3.1	1.9	NA	-	-	NC	3.3	-	NA
Barium	0.5	2.5	µg/g	30%	43	47	9%	-	-	NC	320	240	29%	-	-	NC	85	-	NC
Beryllium	0.2	1	µg/g	30%	0.32	0.25	NA	-	-	NC	0.66	0.24	NA	-	-	NC	0.37	-	NA
Boron (total)	5	25	µg/g	30%	9.7	7.7	NA	-	-	NC	7	7.2	NA	-	-	NC	7.4	-	NA
Cadmium	0.1	0.5	µg/g	30%	<0.10	<0.10	NC	-	-	NC	0.18	<0.10	NA	-	-	NC	0.61	-	NC
Chromium (total)	1	5	µg/g	30%	16	22	**32%**	-	-	NC	72	10	**151%**	-	-	NC	21	-	NC
Cobalt	0.1	0.5	µg/g	30%	4.8	5.2	8%	-	-	NC	16	3.9	**122%**	-	-	NC	7.2	-	NC
Copper	0.5	2.5	µg/g	30%	14	14	0%	-	-	NC	40	9.2	**125%**	-	-	NC	23	-	NC
Lead	1	5	µg/g	30%	4	4.1	NA	-	-	NC	90	21	**124%**	-	-	NC	80	-	NC
Mercury	0.05	0.25	µg/g	30%	<0.050	<0.050	NC	-	-	NC	0.26	<0.050	NC	-	-	NC	0.066	-	NA
Molybdenum	0.5	2.5	µg/g	30%	0.76	1.9	NA	-	-	NC	0.88	1.2	NA	-	-	NC	0.86	-	NA
Nickel	0.5	2.5	µg/g	30%	11	12	9%	-	-	NC	44	11	**120%**	-	-	NC	18	-	NC
Selenium	0.5	2.5	µg/g	30%	<0.50	<0.50	NC	-	-	NC	<0.50	<0.50	NC	-	-	NC	<0.50	-	NC
Silver	0.2	1	µg/g	30%	<0.20	<0.20	NC	-	-	NC	<0.20	<0.20	NC	-	-	NC	<0.20	-	NC
Thallium	0.05	0.25	µg/g	30%	0.11	0.096	NA	-	-	NC	0.38	0.14	NA	-	-	NC	0.2	-	NA
Uranium	0.05	0.25	µg/g	30%	0.39	0.47	19%	-	-	NC	0.64	0.4	**46%**	-	-	NC	0.54	-	NC
Vanadium	5	25	µg/g	30%	36	34	6%	-	-	NC	70	15	NA	-	-	NC	37	-	NC
Zinc	5	25	µg/g	30%	21	19	NA	-	-	NC	120	22	NA	-	-	NC	130	-	NC
Inorganics																			
Electrical Conductivity	0.002	0.01	mS/cm	10%	-	-	NC	-	-	NC	-	-	NC	-	-	NC	0.31	0.35	**12%**
Sodium Adsorption Ratio	NA	NA	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	5.6	6.3	NA
Polychlorinated Biphenyls (PCBs)																			
PCBs (Total)	0.3	1.5	µg/g	40%	-	-	NC	-	-	NC	-	-	NC	<0.010	<0.010	NC	-	-	NC

Notes:

1 RPD Performance Standards Based on Values Provided in "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", dated March 9, 2004, amended as of July 1, 2011.

2 RPD (%) = ABS(Original Concentration – Duplicate Concentration)
(Original Concentration + Duplicate Concentration)/2

Shaded Values - RPD % exceeds performance standard
NA - Not Applicable. Original or duplicate sample not above PQL.
NC - Not Calculated. One or both samples below RDL or not reported.

Input By: CT [22-Jul-2021]
Checked By: EC [6-Aug-2021]

PINCHIN

TABLE 10
GROUNDWATER QA/QC ANALYSIS
CLV Group Developments Inc.
951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

PARAMETER	*Lowest RDL*	*PQL*	Units	Relative Percent Difference (RPD) Performance Standard (%)[1]	BH2017-05		RPD (%)[2]	BH4-20		RPD (%)[2]	BHMW3		RPD (%)[2]	BHMW120		RPD (%)[2]	BHMW124		RPD (%)[2]
					BH2017-05	BHMW-D		BH4-20-GW1	DUP		BHMW3	DUP-1		BHMW120	GWDUP-1		BHMW124	GWDUP-2	
					18/07/2017	18/07/2017		30/09/2020	30/09/2020		22/04/2021	22/04/2021		06/09/2021	06/09/2021		06/09/2021	06/09/2021	
					DST Report	B7F4125		2040558	2040558		C1A7975	C1A7975		C1G1158	C1G1158		C1G1158	C1G1158	
					Unknown	25/07/2017-26/07/2017		02/10/2020-06/10/2020	02/10/2020-06/10/2020		23/04/2021-26/04/2021	23/04/2021-26/04/2021		15/06/2021-18/06/2021	15/06/2021-18/06/2021		15/06/2021-18/06/2021	15/06/2021-18/06/2021	
					Unknown	EUA322		2040558-04	2040558-06		PJV375	PJV376		PUW569	PUW570		PUW586	PUW587	
					7.80 - 10.80	7.80 - 10.80		7.67 - 10.67	7.67 - 10.67		Unknown	Unknown		11.89 - 14.94	11.89 - 14.94		4.70 - 6.10	4.70 - 6.10	
Petroleum Hydrocarbons (PHCs)																			
PHC F1 (C_6-C_{10})-BTEX[2]	25	125	µg/L	30%	<25	<25	NC	<25	-	NC	31	27	NA	34	<25	NA	<25	<25	NC
PHC F2 (C_{10}-C_{16})	100	500	µg/L	30%	-	-	NC	<100	-	NC	<100	<100	NC	<100	<100	NC	<100	130	NA
PHC F3 (C_{16}-C_{34})	200	1000	µg/L	30%	-	-	NC	<100	-	NC	390	550	NA	<200	220	NA	<200	240	NA
PHC F4 (C_{34}-C_{50})	200	1000	µg/L	30%	-	-	NC	<100	-	NC	460	740	NA	<200	<200	NC	<200	<200	NC
PHC F4G (>C_{50})	200	1000	µg/L	30%	-	-	NC	-	-	NC	-	4900	NC	-	-	NC	-	-	NC
Volatile Organic Compounds (VOCs)																			
Acetone	10	50	µg/L	50%	<10	<10	NC	<5.0	<5.0	NC	<10	<10	NC	<10	<10	NC	<10	<10	NC
Benzene	0.2	1	µg/L	50%	0.34	0.25	NA	<0.5	<0.5	NC	1.1	1.1	0%	<0.20	<0.20	NC	<0.20	<0.20	NC
Bromodichloromethane	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
Bromoform	1	5	µg/L	50%	<1.0	<1.0	NC	<0.5	<0.5	NC	<1.0	<1.0	NC	<1.0	<1.0	NC	<1.0	<1.0	NC
Bromomethane	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
Carbon Tetrachloride	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.2	<0.2	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
Chlorobenzene	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
Chloroform	0.2	1	µg/L	50%	0.7	0.6	NA	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
Dibromochloromethane	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
1,2-Dichlorobenzene	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
1,3-Dichlorobenzene	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
1,4-Dichlorobenzene	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
Dichlorodifluoromethane	1	5	µg/L	50%	<1.0	<1.0	NC	<1.0	<1.0	NC	<1.0	<1.0	NC	<1.0	<1.0	NC	<1.0	<1.0	NC
1,1-Dichloroethane	0.2	1	µg/L	50%	0.24	0.23	NA	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
1,2-Dichloroethane	0.5	2.5	µg/L	50%	6.6	7	6%	2.7	2.7	0%	<0.50	<0.50	NC	5.2	5	4%	<0.50	<0.50	NC
1,1-Dichloroethylene	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
Cis-1,2-Dichloroethylene	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
Trans-1,2-Dichloroethylene	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
1,2-Dichloropropane	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
1,3-Dichloropropene[3]	0.4	2	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
Ethylbenzene	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	0.34	0.36	NA	<0.20	<0.20	NC	<0.20	<0.20	NC
Ethylene Dibromide	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.2	<0.2	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
Hexane(n)	1	5	µg/L	50%	<1.0	<1.0	NC	<1.0	<1.0	NC	1.1	1.1	NA	<1.0	<1.0	NC	<1.0	<1.0	NC
Methyl Ethyl Ketone	10	50	µg/L	50%	<10	<10	NC	<5.0	<5.0	NC	<10	<10	NC	<10	<10	NC	<10	<10	NC
Methyl Isobutyl Ketone	5	25	µg/L	50%	<5.0	<5.0	NC	<5.0	<5.0	NC	<5.0	<5.0	NC	<5.0	<5.0	NC	<5.0	<5.0	NC
Methyl-t-Butyl Ether	0.5	2.5	µg/L	50%	240	240	0%	15.7	15.6	1%	<0.50	<0.50	NC	39	37	5%	<0.50	<0.50	NC
Methylene Chloride	2	10	µg/L	50%	<2.0	<2.0	NC	<5.0	<5.0	NC	<2.0	<2.0	NC	<2.0	<2.0	NC	<2.0	<2.0	NC
Styrene	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
1,1,1,2-Tetrachloroethane	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
1,1,2,2-Tetrachloroethane	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
Tetrachloroethylene	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
Toluene	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
1,1,1-Trichloroethane	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
1,1,2-Trichloroethane	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<0.5	<0.5	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
Trichloroethylene	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
Trichlorofluoromethane	0.5	2.5	µg/L	50%	<0.50	<0.50	NC	<1	<1	NC	<0.50	<0.50	NC	<0.50	<0.50	NC	<0.50	<0.50	NC
Vinyl Chloride	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	<0.20	<0.20	NC	<0.20	<0.20	NC	<0.20	<0.20	NC
Xylene Mixture[4]	0.2	1	µg/L	50%	<0.20	<0.20	NC	<0.5	<0.5	NC	0.41	0.44	NA	0.22	0.22	NA	<0.20	<0.20	NC
Polycyclic Aromatic Hydrocarbons (PAHs)																			
Acenaphthene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	<0.050	<0.050	NC
Acenaphthylene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	<0.050	<0.050	NC
Anthracene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	<0.050	<0.050	NC
Benz(a)anthracene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	<0.050	<0.050	NC
Benzo(a)pyrene	0.01	0.05	µg/L	40%	-	-	NC	-	-	NC	0.043	0.058	NA	<0.0090	<0.0090	NC	<0.0090	<0.0090	NC
Benzo(b)fluoranthene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	0.064	0.088	NA	<0.050	<0.050	NC	<0.050	<0.050	NC
Benzo(g,h,i)perylene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	0.052	0.075	NA	<0.050	<0.050	NC	<0.050	<0.050	NC
Benzo(k)fluoranthene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	<0.050	<0.050	NC
Chrysene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	<0.050	0.057	NA	<0.050	<0.050	NC	<0.050	<0.050	NC
Dibenz(a,h)anthracene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	<0.050	<0.050	NC
Fluoranthene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	0.11	0.14	NA	<0.050	<0.050	NC	<0.050	<0.050	NC
Fluorene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	<0.050	<0.050	NC
Indeno(1,2,3-cd)pyrene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	<0.050	<0.050	NC	<0.050	<0.050	NC	<0.050	<0.050	NC
Methylnaphthalene, total[5]	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	0.19	0.18	NA	<0.071	<0.071	NC	<0.071	<0.071	NC
Naphthalene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	0.14	0.14	NA	<0.050	<0.050	NC	<0.050	<0.050	NC
Phenanthrene	0.03	0.15	µg/L	40%	-	-	NC	-	-	NC	0.099	0.12	NA	<0.030	<0.030	NC	<0.030	<0.030	NC
Pyrene	0.05	0.25	µg/L	40%	-	-	NC	-	-	NC	0.12	0.15	NA	<0.050	<0.050	NC	<0.050	<0.050	NC
Metals and Inorganics																			
Antimony	0.5	2.5	µg/L	30%	0.71	0.67	NA	-	-	NC	-	-	NC	-	-	NC	<2.5	<2.5	NC
Arsenic	1	5	µg/L	30%	<1.0	<1.0	NC	-	-	NC	-	-	NC	-	-	NC	<5.0	<5.0	NC
Barium	2	10	µg/L	30%	370	370	0%	-	-	NC	-	-	NC	-	-	NC	310	320	3%
Beryllium	0.5	2.5	µg/L	30%	<0.50	<0.50	NC	-	-	NC	-	-	NC	-	-	NC	<2.0	<2.0	NC
Boron (total)	10	50	µg/L	30%	180	180	0%	-	-	NC	-	-	NC	-	-	NC	82	82	0%
Cadmium	0.1	0.5	µg/L	30%	<0.10	<0.10	NC	-	-	NC	-	-	NC	-	-	NC	<0.45	<0.45	NC
Chromium (total)	5	25	µg/L	30%	<5.0	<5.0	NC	-	-	NC	-	-	NC	-	-	NC	<25	<25	NC
Chromium (Hexavalent)	2.5	12.5	µg/L	20%	-	-	NC	-	-	NC	-	-	NC	-	-	NC			NA
Cobalt	0.5	2.5	µg/L	30%	<0.50	<0.50	NC	-	-	NC	-	-	NC	-	-	NC	<2.5	<2.5	NC
Copper	1	5	µg/L	30%	<1.0	<1.0	NC	-	-	NC	-	-	NC	-	-	NC	<4.5	<4.5	NC
Lead	0.5	2.5	µg/L	30%	<0.50	<0.50	NC	-	-	NC	-	-	NC	-	-	NC	<2.5	<2.5	NC
Mercury	0.05	0.25	µg/L	20%	-	-	NC	-	-	NC	-	-	NC	-	-	NC			NA
Molybdenum	0.5	2.5	µg/L	30%	4.5	4.4	2%	-	-	NC	-	-	NC	-	-	NC	7.1	6.9	3%
Nickel	1	5	µg/L	30%	4.4	4.2	NA	-	-	NC	-	-	NC	-	-	NC	14	13	7%
Selenium	2	10	µg/L	30%	<2.0	<2.0	NC	-	-	NC	-	-	NC	-	-	NC	<10	<10	NC
Silver	0.1	0.5	µg/L	30%	<0.10	<0.10	NC	-	-	NC	-	-	NC	-	-	NC	<0.45	<0.45	NC
Thallium	0.05	0.25	µg/L	30%	<0.050	<0.050	NC	-	-	NC	-	-	NC	-	-	NC	<0.25	<0.25	NC
Uranium	0.1	0.5	µg/L	30%	0.38	0.37	NA	-	-	NC	-	-	NC	-	-	NC	8.9	9.1	2%
Vanadium	0.5	2.5	µg/L	30%	<0.50	<0.50	NC	-	-	NC	-	-	NC	-	-	NC	<2.5	<2.5	NC
Zinc	5	25	µg/L	30%	<5.0	<5.0	NC	-	-	NC	-	-	NC	-	-	NC	<25	<25	NC
Inorganics																			
Chloride	2	10	µg/L	20%	-	-	NC	-	-	NC	-	-	NC	-	-	NC	3500000	3700000	6%
Sodium	100	500	µg/L	30%	98000	97000	1%	-	-	NC	-	-	NC	-	-	NC	1300000	1400000	7%

Notes:

1 RPD Performance Standards Based on Values Provided in "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", dated March 9, 2004, amended as of July 1, 2011.

2 RPD (%) = ABS(Original Concentration – Duplicate Concentration) / (Original Concentration + Duplicate Concentration)/2

Shaded Values - RPD % exceeds performance standard
NA - Not Applicable. Original or duplicate sample not above PQL.
NC - Not Calculated. One or both samples below RDL or not reported.

Input By: CT [22-Jul-2021]
Checked By: EC [6-Aug-2021]

TABLE 11
FREE PHASE THRESHOLDS FOR SOIL COCS
CLV Group Developments Inc.
951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Contaminant of Concern	Units	PHC Subfraction Ratios for Soil (MECP, 2016)	Maximum Soil Concentration	Free Phase Threshold (coarse)[1]
Petroleum Hydrocarbons (PHCs)				
PHC F1 (C_6-C_{10})-BTEX	µg/g	-	**2600**	1700
Aliphatic (C6-C8)	µg/g	0.55	1430	1700
Aliphatic (C>8-C10)	µg/g	0.36	936	1700
Aromatic (C>8-C10)	µg/g	0.09	234	2900
PHC F2 (C_{10}-C_{16})	µg/g	-	550	2700
Aliphatic (C>10-C12)	µg/g	0.36	198	1700
Aliphatic (C>12-C16)	µg/g	0.44	242	6600
Aromatic (C>10-C12)	µg/g	0.09	49.5	2500
Aromatic (C>12-C16)	µg/g	0.11	60.5	2200
PHC F3 (C_{16}-C_{34})	µg/g	-	**6200**	5800
Aliphatic (C>10-C12)	µg/g	0.56	3472	6700
Aliphatic (C>12-C16)	µg/g	0.24	1488	6900
Aromatic (C>10-C12)	µg/g	0.14	868	3000
Aromatic (C>12-C16)	µg/g	0.06	372	7900
PHC F4 (C_{34}-C_{50})	µg/g	-	1400	6900
Aliphatic (C>10-C12)	µg/g	0.8	1120	6900
Aliphatic (C>12-C16)	µg/g	0.2	280	6900
PHC F4G (>C_{50})	µg/g	-	3100	6900
Aliphatic (C>10-C12)	µg/g	0.8	2480	6900
Aliphatic (C>12-C16)	µg/g	0.2	620	6900
Volatile Organic Compounds (VOCs)				
Acetone	µg/g	-	<3.5	92000
Benzene	µg/g	-	0.93	5000
Bromodichloromethane	µg/g	-	<0.05	5500
Bromoform	µg/g	-	<0.05	11000
Bromomethane	µg/g	-	<0.05	7300
Carbon Tetrachloride	µg/g	-	<0.05	3900
Chlorobenzene	µg/g	-	<0.05	3700
Chloroform	µg/g	-	<0.05	6600
Dibromochloromethane	µg/g	-	<0.05	10000
1,2-Dichlorobenzene	µg/g	-	<0.05	3100
1,3-Dichlorobenzene	µg/g	-	<0.05	3300
1,4-Dichlorobenzene	µg/g	-	1.1	3000
Dichlorodifluoromethane	µg/g	-	3.8	710
1,1-Dichloroethane	µg/g	-	<0.1	4800
1,2-Dichloroethane	µg/g	-	0.2	5300
1,1-Dichloroethylene	µg/g	-	<0.05	3900
Cis-1,2-Dichloroethylene	µg/g	-	0.057	4600
Trans-1,2-Dichloroethylene	µg/g	-	<0.05	4600
1,2-Dichloropropane	µg/g	-	<0.05	2100
1,3-Dichloropropene[3]	µg/g	-	<0.05	5000
Ethylbenzene	µg/g	-	49	2700
Ethylene Dibromide	µg/g	-	<0.05	2000
Hexane(n)	µg/g	-	51	1500
Methyl Ethyl Ketone	µg/g	-	<0.5	26000
Methyl Isobutyl Ketone	µg/g	-	<0.5	5100
Methyl-t-Butyl Ether	µg/g	-	<0.05	8000
Methylene Chloride	µg/g	-	<0.05	6400
Styrene	µg/g	-	<0.4	3500
1,1,1,2-Tetrachloroethane	µg/g	-	<0.05	4400
1,1,2,2-Tetrachloroethane	µg/g	-	<0.05	6700
Tetrachloroethylene	µg/g	-	<0.05	3700
Toluene	µg/g	-	12	3300
1,1,1-Trichloroethane	µg/g	-	<0.05	3700
1,1,2-Trichloroethane	µg/g	-	<0.05	3900
Trichloroethylene	µg/g	-	<0.05	4100
Trichlorofluoromethane	µg/g	-	<0.05	4400
Vinyl Chloride	µg/g	-	<0.02	6100
Xylene Mixture[4]	µg/g	-	280	2300
Polycyclic Aromatic Hydrocarbons (PAHs)				
Acenaphthene	µg/g	-	39	2800
Acenaphthylene	µg/g	-	0.84	2900
Anthracene	µg/g	-	110	2700
Benz(a)anthracene	µg/g	-	180	7600
Benzo(a)pyrene	µg/g	-	120	7600
Benzo(b)fluoranthene	µg/g	-	200	7600
Benzo(g,h,i)perylene	µg/g	-	57	7600
Benzo(k)fluoranthene	µg/g	-	65	7600
Chrysene	µg/g	-	140	7700
Dibenz(a,h)anthracene	µg/g	-	18	7600
Fluoranthene	µg/g	-	450	7600
Fluorene	µg/g	-	54	2800
Indeno(1,2,3-cd)pyrene	µg/g	-	62	7600
Methylnaphthalene, total[5]	µg/g	-	17	3600
Naphthalene	µg/g	-	12	2800
Phenanthrene	µg/g	-	430	2300
Pyrene	µg/g	-	330	7700
Metals and Inorganics				
Antimony	µg/g	-	5.9	8000
Arsenic	µg/g	-	56.6	12000
Barium	µg/g	-	430	7700
Beryllium	µg/g	-	1.3	3900
Boron (total)	µg/g	-	12	5000
Cadmium	µg/g	-	1.1	18000
Chromium (total)	µg/g	-	120	11000
Cobalt	µg/g	-	23	19000
Copper	µg/g	-	130	NV
Lead	µg/g	-	500	24000
Mercury	µg/g	-	0.26	34000
Molybdenum	µg/g	-	9	22000
Nickel	µg/g	-	64	NV
Selenium	µg/g	-	2.5	NV
Silver	µg/g	-	1.2	22000
Thallium	µg/g	-	<1	22000
Uranium	µg/g	-	1.4	40000
Vanadium	µg/g	-	100	7100
Zinc	µg/g	-	374	15000
Inorganics				
Electrical Conductivity	mS/cm	-	2.1	NV
Sodium Adsorption Ratio	-	-	6.3	NV

Notes:
1 Obtained from MECP (2016) Soil Components
Shaded Values - Maximum concentration exceeds free phase threshold

Input By: CT [22-Jul-2021]
Checked By: EC [6-Aug-2021]

PINCHIN

TABLE 12
HALF SOLUBILITY LIMITS FOR GROUNDWATER COCS
CLV Group Developments Inc.
951 Gladstone Ave and 145 Loretta Ave N, Ottawa, ON

Contaminant of Concern	Units	PHC Subfraction Ratios for Water (MECP, 2016)	Maximum Groundwater Concentration	Half Solubility Limit[1]
Petroleum Hydrocarbons (PHCs)				
PHC F1 (C_6-C_{10})-BTEX	µg/L	-	**12000**	1900
Aliphatic (C6-C8)	µg/L	0.605	**7260**	2700
Aliphatic (C>8-C10)	µg/L	0.063	**756**	220
Aromatic (C>8-C10)	µg/L	0.332	3984	33000
PHC F2 (C_{10}-C_{16})	µg/L	-	**6100**	150
Aliphatic (C>10-C12)	µg/L	0.024	**146.4**	17
Aliphatic (C>12-C16)	µg/L	0.002	**12.2**	0.38
Aromatic (C>10-C12)	µg/L	0.603	3678.3	13000
Aromatic (C>12-C16)	µg/L	0.371	2263.1	2900
PHC F3 (C_{16}-C_{34})	µg/L	-	**740**	0.000000049
Aliphatic (C>10-C12)	µg/L	0.56	**414.4**	0.0013
Aliphatic (C>12-C16)	µg/L	0.24	**177.6**	0.000000012
Aromatic (C>10-C12)	µg/L	0.14	103.6	330
Aromatic (C>12-C16)	µg/L	0.06	**44.4**	3.3
PHC F4 (C_{34}-C_{50})	µg/L	-	**740**	3.9E-12
Aliphatic (C>10-C12)	µg/L	0.8	**592**	3.2E-12
Aliphatic (C>12-C16)	µg/L	0.2	**148**	0.18
PHC F4G (>C_{50})	µg/L	-	**4900**	3.9E-12
Aliphatic (C>10-C12)	µg/L	0.8	**3920**	3.2E-12
Aliphatic (C>12-C16)	µg/L	0.2	**980**	0.18
Volatile Organic Compounds (VOCs)				
Acetone	µg/L	-	<500	500000000
Benzene	µg/L	-	37	900000
Bromodichloromethane	µg/L	-	<0.5	1500000
Bromoform	µg/L	-	<1	1600000
Bromomethane	µg/L	-	<0.5	7600000
Carbon Tetrachloride	µg/L	-	<0.2	400000
Chlorobenzene	µg/L	-	<0.5	250000
Chloroform	µg/L	-	3.4	4000000
Dibromochloromethane	µg/L	-	<0.5	1400000
1,2-Dichlorobenzene	µg/L	-	<0.5	40000
1,3-Dichlorobenzene	µg/L	-	<0.5	63000
1,4-Dichlorobenzene	µg/L	-	<0.5	41000
Dichlorodifluoromethane	µg/L	-	<50	140000
1,1-Dichloroethane	µg/L	-	<0.5	2500000
1,2-Dichloroethane	µg/L	-	20	2600000
1,1-Dichloroethylene	µg/L	-	<0.5	1200000
Cis-1,2-Dichloroethylene	µg/L	-	<0.5	1800000
Trans-1,2-Dichloroethylene	µg/L	-	<0.5	1800000
1,2-Dichloropropane	µg/L	-	<0.5	1400000
1,3-Dichloropropene[3]	µg/L	-	<0.5	1400000
Ethylbenzene	µg/L	-	1500	85000
Ethylene Dibromide	µg/L	-	<0.2	2000000
Hexane(n)	µg/L	-	280	4800
Methyl Ethyl Ketone	µg/L	-	24	110000000
Methyl Isobutyl Ketone	µg/L	-	<250	9500000
Methyl-t-Butyl Ether	µg/L	-	240	26000000
Methylene Chloride	µg/L	-	<5	6500000
Styrene	µg/L	-	<2.1	160000
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	540000
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	1400000
Tetrachloroethylene	µg/L	-	<0.5	100000
Toluene	µg/L	-	250	260000
1,1,1-Trichloroethane	µg/L	-	<0.5	650000
1,1,2-Trichloroethane	µg/L	-	<0.5	550000
Trichloroethylene	µg/L	-	<0.5	640000
Trichlorofluoromethane	µg/L	-	<25	550000
Vinyl Chloride	µg/L	-	<0.5	4400000
Xylene Mixture[4]	µg/L	-	6600	53000
Polycyclic Aromatic Hydrocarbons (PAHs)				
Acenaphthene	µg/L	-	<0.2	2000
Acenaphthylene	µg/L	-	0.13	8100
Anthracene	µg/L	-	0.067	22
Benz(a)anthracene	µg/L	-	0.14	4.7
Benzo(a)pyrene	µg/L	-	0.12	0.81
Benzo(b)fluoranthene	µg/L	-	0.2	0.75
Benzo(g,h,i)perylene	µg/L	-	0.076	0.13
Benzo(k)fluoranthene	µg/L	-	0.06	0.4
Chrysene	µg/L	-	0.13	1
Dibenz(a,h)anthracene	µg/L	-	<0.05	0.52
Fluoranthene	µg/L	-	0.37	130
Fluorene	µg/L	-	0.076	950
Indeno(1,2,3-cd)pyrene	µg/L	-	0.071	0.095
Methylnaphthalene, total[5]	µg/L	-	2.3	12000
Naphthalene	µg/L	-	5.5	16000
Phenanthrene	µg/L	-	0.27	580
Pyrene	µg/L	-	0.29	68
Metals and Inorganics				
Antimony	µg/L	-	<2.5	12000000
Arsenic	µg/L	-	<5	17000000
Barium	µg/L	-	3800	27000000
Beryllium	µg/L	-	<2	75000000
Boron (total)	µg/L	-	180	22000000
Cadmium	µg/L	-	<0.45	62000000
Chromium (total)	µg/L	-	<25	6000000
Cobalt	µg/L	-	6.6	44000000
Copper	µg/L	-	<4.5	210000000
Lead	µg/L	-	13	4800000
Molybdenum	µg/L	-	9.6	38000000
Nickel	µg/L	-	14	210000000
Selenium	µg/L	-	<10	41000000
Silver	µg/L	-	<0.45	35000000
Thallium	µg/L	-	<0.25	13000000
Uranium	µg/L	-	9.1	NV
Vanadium	µg/L	-	<2.5	43000000
Zinc	µg/L	-	<25	170000000
Inorganics				
Chloride	µg/L	-	3700000	21000000
Sodium	µg/L	-	1400000	220000000

Notes:
1 Obtained from MECP (2016) Groundwater Components

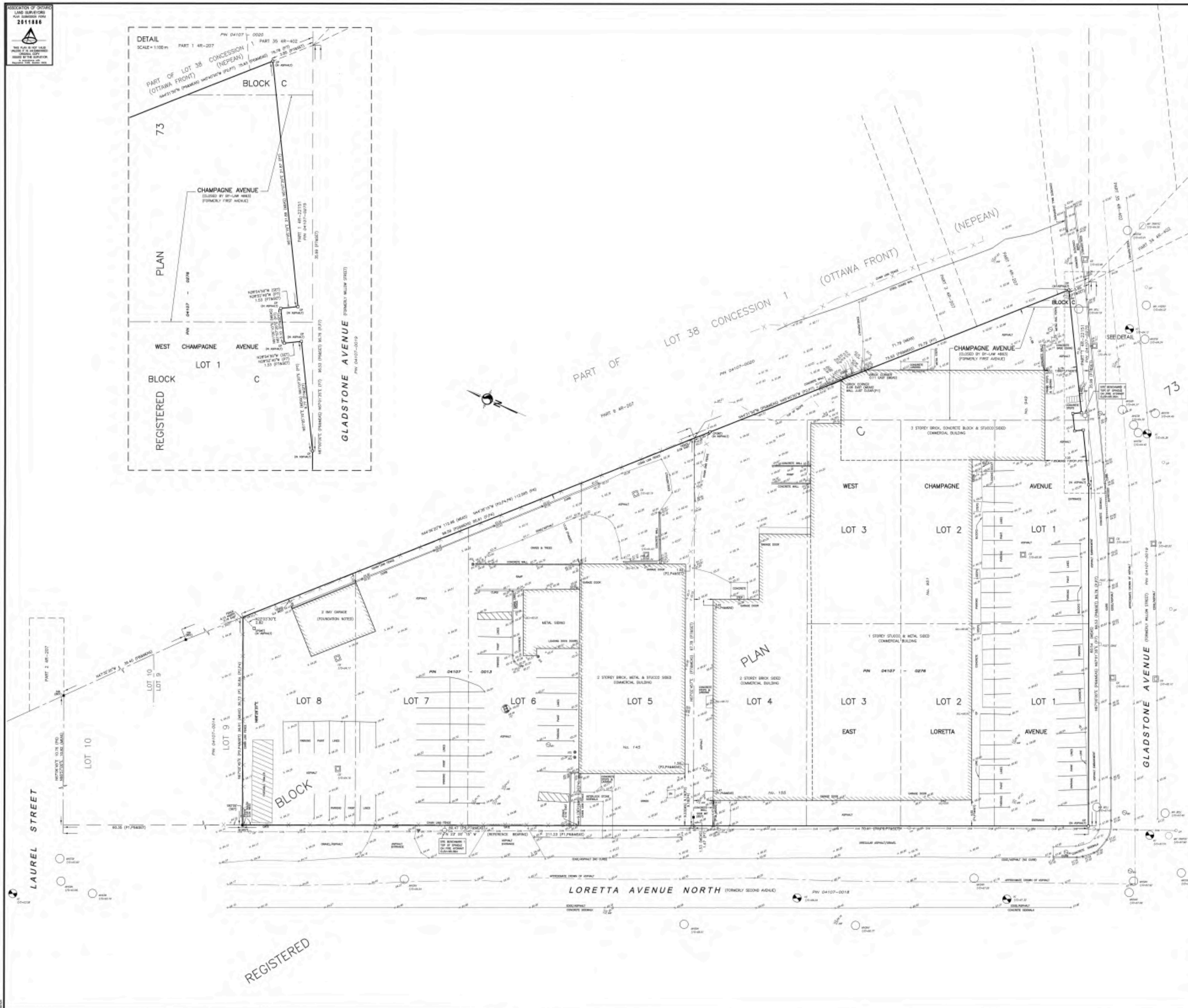
Shaded Values	- Maximum concentration exceeds half solubility limit

Input By: CT [22-Jul-2021]
Checked By: EC [6-Aug-2021]

10.0 APPENDICES

APPENDIX A

Legal Survey and Survey Data



SURVEYOR'S REAL PROPERTY REPORT

PART 1 - PLAN OF

PART OF LOT 1 & LOTS 2 & 3
(WEST CHAMPAGNE AVENUE)
BLOCK C AND
LOTS 1, 2 & 3 (EAST LORETTA AVENUE)
BLOCK C AND
LOTS 4, 5, 6, 7 & 8
BLOCK C AND
PART OF BLOCK C AND
PART OF CHAMPAGNE STREET
(CLOSED BY BY-LAW 4863)
REGISTERED PLAN 73
CITY OF OTTAWA

Scale 1:200

METRIC CONVERSION

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

BEARING NOTE

BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE EASTERLY LIMIT OF LORETTA AVENUE NORTH AS SHOWN ON PLAN 4R-207, HAVING A BEARING OF N 22°00' 15" W.

ELEVATION NOTE

POSITION OF SITE BENCHMARKS AS SHOWN HEREON.

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM CITY OF OTTAWA VERTICAL CONTROL MONUMENTS No.'s 2011-0106 and 2011-0107.

NOTE

- THE PLAN OF SURVEY IS TO BE READ IN CONJUNCTION WITH THE REPORT SUMMARY NOTED AS PART 2 HEREON.
- THE REPORT CAN ONLY BE UPDATED BY THIS OFFICE. NO ADDITIONAL PRINTS OF THE ORIGINAL REPORT WILL BE ISSUED SUBSEQUENT TO THE DATE OF CERTIFICATION.
- ALL TIES ARE MINIMUM UNLESS OTHERWISE NOTED.
- ALL TIES TO CURVED BOUNDARY ARE RADIAL TO ARC.
- RISK OF UNDERGROUND SERVICES. MONUMENTATION PLANTED ACCORDINGLY.

PART 2

This Report was prepared for [illegible] and the undersigned accepts no responsibility for the use by other parties.

1. REGISTERED RIGHTS-OF-WAY/EASEMENTS

No rights-of-way or easements were found to be registered against the subject properties.

2. PROPERTY IMPROVEMENTS

See Part 1 of this Report for details.

3. COMPLIANCE WITH MUNICIPAL ZONING BY-LAWS

Compliance is not certified by this report.

4. ADDITIONAL REMARKS

LEGEND (IF APPLICABLE)

SURVEYOR'S CERTIFICATE

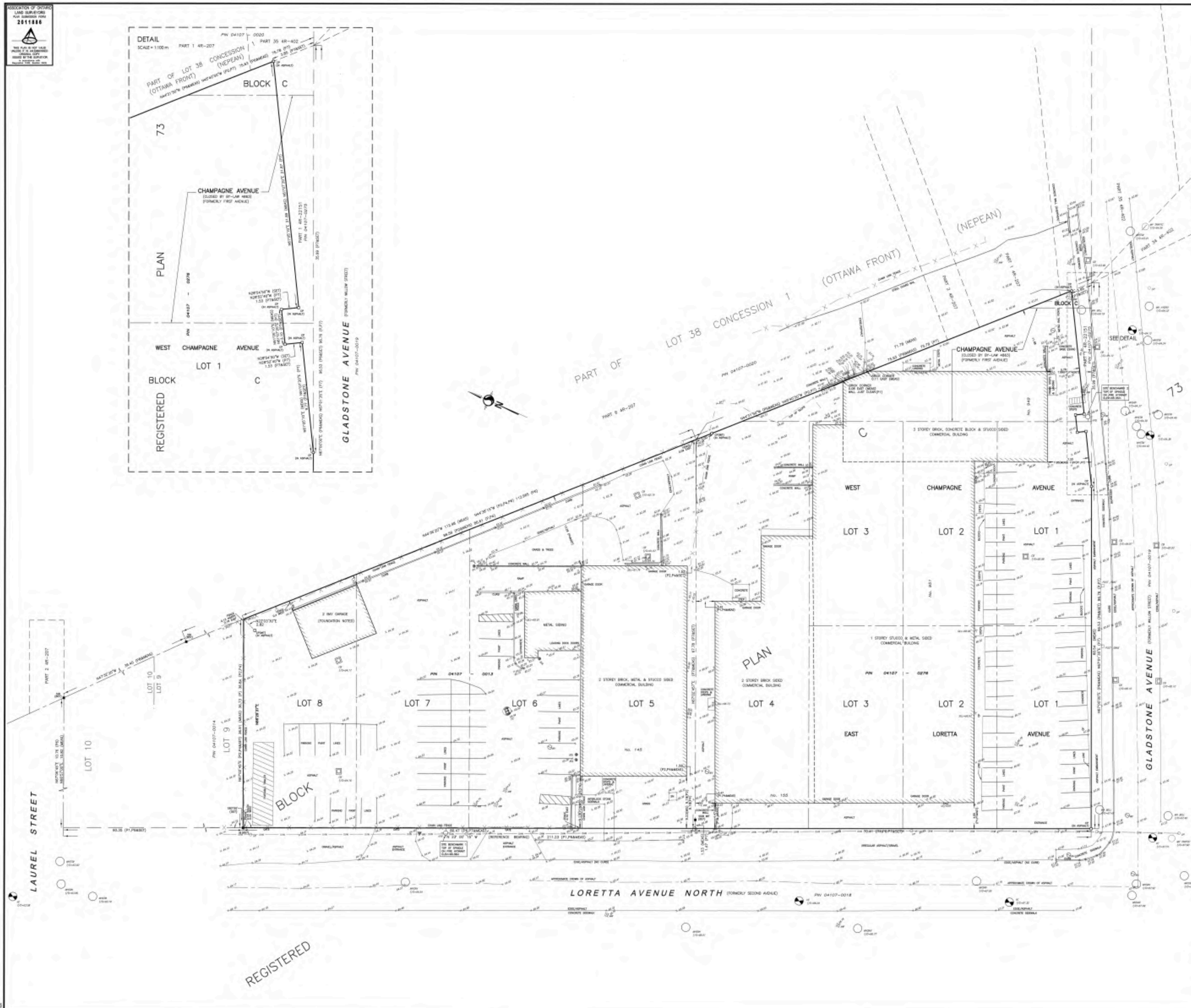
I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 4th DAY OF JULY, 2017.

July 13/17
DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
Stantec
stantec.com



SURVEYOR'S REAL PROPERTY REPORT

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(WEST CHAMPAGNE AVENUE)
BLOCK C AND
LOTS 1, 2 & 3 (EAST LORETTA AVENUE)
BLOCK C AND
LOTS 4, 5, 6, 7 & 8
BLOCK C AND
PART OF BLOCK C AND
PART OF CHAMPAGNE STREET
(CLOSED BY BY-LAW 4863)
REGISTERED PLAN 73
CITY OF OTTAWA

Scale 1:200

METRIC CONVERSION

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

BEARING NOTE

BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE EASTERLY LIMIT OF LORETTA AVENUE NORTH AS SHOWN ON PLAN 4R-207, HAVING A BEARING OF N 22°00' 15" W.

ELEVATION NOTE

POSITION OF SITE BENCHMARKS AS SHOWN HEREON.

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM CITY OF OTTAWA VERTICAL CONTROL MONUMENTS No.'s 2011-0106 (ELEV=62.968m) AND 2011-0107 (ELEV=65.863m).

NOTE

- THIS PLAN OF SURVEY IS TO BE READ IN CONJUNCTION WITH THE REPORT SUMMARY NOTED AS PART 2 HEREON.
- THIS REPORT CAN ONLY BE UPDATED BY THIS OFFICE. NO ADDITIONAL PRINTS OF THIS ORIGINAL REPORT WILL BE ISSUED SUBSEQUENT TO THE DATE OF CERTIFICATION.
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- ALL TIES TO CURVED BOUNDARY ARE RADIAL TO ARC.
- RISK OF UNDERGROUND SERVICES. MONUMENTATION PLANTED ACCORDINGLY.

PART 2

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3. COMPLIANCE WITH MUNICIPAL ZONING BY-LAWS
Compliance is not certified by this report.
4. ADDITIONAL REMARKS

LEGEND (IF APPLICABLE)

SURVEYOR'S CERTIFICATE

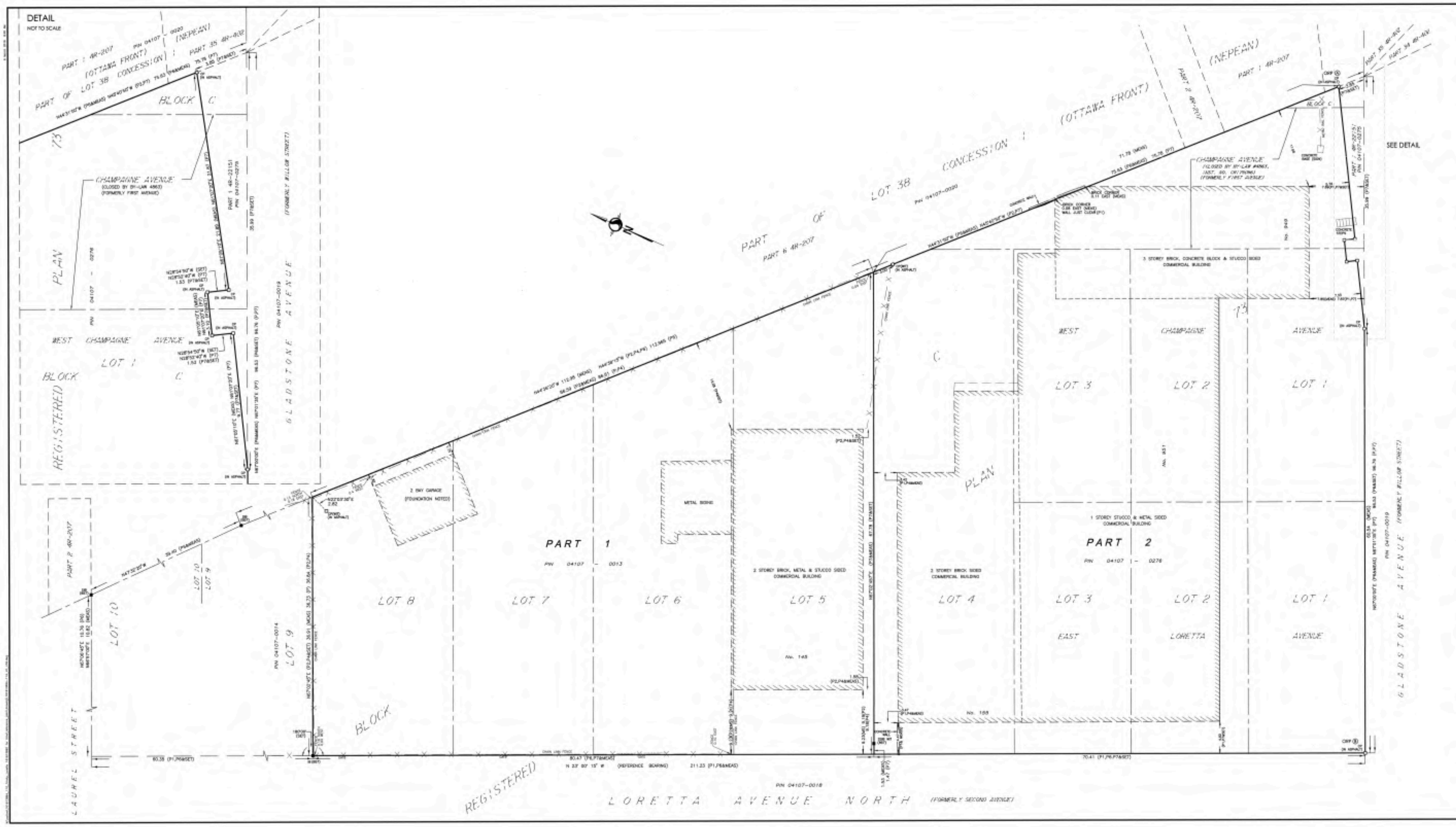
I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 4th DAY OF JULY, 2017.

July 13/17
DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
stantec.com



PLAN 4R-31991

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

DATE: Mar 8/19

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

RECEIVED AND DEPOSITED

DATE: June 6 2019

R. HATTA
REPRESENTATIVE FOR THE LAND REGISTRAR FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON No. 4

SCHEDULE

PART	LOT/BLOCK	PLAN	PIN
1	ALL OF 5, 6, 7 AND 8 BLOCK C	73	ALL OF 04107-0013
2	PART OF 1 AND ALL OF 2 AND 3 (WEST CHAMPAGNE AVENUE) BLOCK C ALL OF 1, 2, 3 AND 4 (EAST LORETTA AVENUE) BLOCK C PART OF C AND PART OF CHAMPAGNE AVENUE (CLOSED BY BY-LAW #4863, INST. No. CR175096)		ALL OF 04107-0276

PLAN OF SURVEY of

PART OF LOT 1 & LOTS 2 & 3 (WEST CHAMPAGNE AVENUE) BLOCK C AND LOTS 1, 2, 3 & 4 (EAST LORETTA AVENUE) BLOCK C AND LOTS 5, 6, 7 & 8 BLOCK C AND PART OF BLOCK C AND PART OF CHAMPAGNE AVENUE

(CLOSED BY BY-LAW #4863, INST. No. CR175096)

REGISTERED PLAN 73 CITY OF OTTAWA

Scale 1:200

METRIC CONVERSION

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

BEARING NOTE

BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE EASTERLY LIMIT OF LORETTA AVENUE NORTH AS SHOWN ON PLAN 4R-207, HAVING A BEARING OF N 23° 00' 15" W.

OBSERVED REFERENCE POINTS DERIVED FROM THE CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773020 AND 19680 FT. CENTRAL MERIDIAN, 76° 30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL). COORDINATES TO URBAN ACCURACY PER SEC 14(2) OF O.REG. 216/10

ORP ID	NORTHING	EASTING
(A)	5029619.12	366288.13
(B)	5029577.84	366202.38

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

LEGEND (IF APPLICABLE)

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
RIB	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
P	"	REGISTERED PLAN 73
P1	"	PLAN BY 720 DATED AUGUST 25, 1967
P2	"	PLAN BY 857 DATED AUGUST 10, 1979
P3	"	PLAN BY DCM DATED AUGUST 15, 1951
P4	"	PLAN BY 857 DATED JUNE 21, 2001
P5	"	PLAN BY A&M DATED NOVEMBER 4, 1963
P6	"	PLAN 4R-207
P7	"	PLAN 4R-22151

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 16th DAY OF JULY, 2018 .

Nov 9/18
DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

Stantec

Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO K2C 3G4
TEL. 613.722.4420 FAX. 613.722.2799
stantec.com

DRAWN: MB/CEC	CHECKED: BW	PM: BW	FIELD: ES	PROJECT No.: 161610898-114

APPENDIX B

Sampling and Analysis Plan

Sampling and Analysis Plan for Phase Two Environmental Site Assessment

951 Gladstone Avenue and 145 Loretta Avenue North
Ottawa, Ontario

Prepared for:

CLV Group Developments Inc.
200-485 Bank Street
Ottawa, ON K2P 1Z2

Attn: Oz Drewniak

July 5, 2021

Pinchin File: 285722.003

Issued To:	**CLV Group Developments Inc.**
Contact:	**Oz Drewniak**
Issued On:	**July 5, 2021**
Pinchin File:	**285722.003**
Issuing Office:	**Kanata, ON**
Primary Pinchin Contact:	**Larry Backman** **613.853.7778** **lbackman@pinchin.com**

Author: Christian Tenaglia, M.Env.Sc., P.Eng., QP$_{ESA}$
Director Northeastern Ontario
705.943.1298
ctenaglia@pinchin.com

Reviewer: Scott Mather, P.Eng., QP$_{ESA}$
Director Eastern Ontario
613.851.4098
smather@pinchin.com

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APPENDICES

FIGURES

TABLES

1.0 INTRODUCTION

Pinchin Ltd. (Pinchin) has prepared this Sampling and Analysis Plan (SAP) for the Phase Two Environmental Site Assessment (ESA) to be performed at the property located at 951 Gladstone Avenue and 145 Loretta Avenue North in Ottawa, Ontario (hereafter referred to as the Site or Phase Two Property). The Phase One Property is approximately 1.1 hectares (2.6 acre) in size and is located on the northeast corner of the intersection of Gladstone Avenue and Loretta Avenue North in Ottawa, Ontario. The Phase One Property is occupied by a multi-level commercial building (951 Gladstone Avenue) (Site Building A) and a three-storey commercial building equipped with one level of underground parking (145 Loretta Avenue North) (Site Building B). A Key Map showing the Phase Two Property location is provided on Figure 1 (all Figures are located in Appendix I).

The Phase Two ESA will be conducted at the request of TIP Gladstone Limited Partnership by its General Partner TIP Gladstone GP Inc. c/o CLV Group Developments Inc. (Client) in relation to the future redevelopment of the Phase Two Property from commercial to residential land use. A Record of Site Condition (RSC) submittal to the Ontario Ministry of the Environment, Conservation and Parks (MECP) is a mandatory requirement when a land use changes to a more sensitive land use and as such, to support the RSC submission, the Phase Two ESA will be conducted in accordance with the Province of Ontario's *Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Act*, which was last amended by Ontario Regulation 407/19 on December 4, 2019 (O. Reg. 153/04).

This SAP provides the scope of work and procedures for completing the field investigation for the Phase Two ESA. The Phase Two ESA will be performed in accordance with the scope of work, and terms and conditions described in the proposal entitled *"Proposal for Environmental Site Assessment, Risk Assessment and Record of Site Condition"*, prepared for the Client, dated April 6, 2021.

2.0 AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

The objectives of the Phase Two ESA will be to assess soil and groundwater quality at the Phase Two Property in relation to sixteen (16) areas of potential environmental concern (APECs) and related potentially contaminating activities (PCAs) and contaminants of potential concern (COPCs) identified in a Phase One ESA completed by Pinchin in accordance with O. Reg. 153/04, the findings of which are provided in the report entitled "*Phase One Environmental Site Assessment Update, 951 Gladstone Avenue and 145 Loretta Avenue North, Ottawa, Ontario",* prepared for the Client (Phase One ESA). The APECs and corresponding PCAs and COPCs are summarized in Table 1 (all Tables are located in Appendix II) and shown on Figure 2.

3.0 SCOPE OF WORK

The information obtained from the Phase One ESA, in particular the Phase One Conceptual Site Model, was used to determine the environmental media requiring investigation during the Phase Two ESA (i.e., soil and groundwater), the locations and depths for sample collection, and the parameters to be analyzed for the samples submitted from each APEC. The Phase Two ESA scope of work will include the advancement of up to 12 boreholes, all of which will be completed as groundwater monitoring wells. The proposed borehole and groundwater monitoring locations have been spatially located to assist with delineation of the impacted soil and groundwater identified by the previous environmental consultants during historical investigations. Previous sampling locations are illustrated in Figure 3. The proposed borehole and groundwater monitoring well locations are provided on Figure 4.

Table 2 in Appendix II provides a detailed summary of the proposed Phase Two ESA scope of work, including:

- Historical groundwater monitoring wells within the APECs to be sampled;
- Additional boreholes and/or groundwater monitoring wells to be completed within each APEC and the COPCs to be analyzed for samples collected in each APEC in order to assist with delineation;
- Media to be sampled at each sampling location, the sampling system (see Section 7.0), the soil sampling depth intervals, monitoring well screen intervals and the sampling frequency; and
- Number of samples per borehole or groundwater monitoring well to be collected and submitted for laboratory analysis.

Note that the soil sampling depth intervals (i.e., borehole depths), monitoring well screen intervals and sampling frequency are based on Pinchin's current knowledge of subsurface conditions and may be revised based on the actual subsurface conditions encountered.

Additional scope of work items include the following:

- Submission of up to four surface soil samples (0 to 1.5 mbgs) and up to four subsurface soil samples (deeper than 1.5 mbgs) for pH analysis;
- Submission of up to six soil samples for grain size analysis;
- Elevation surveying by an Ontario Licensed Surveyor of the ground surface elevations of all monitoring well locations, and the top of pipe elevations for all groundwater monitoring wells;

- Depth to water measurements of all newly-installed and existing groundwater monitoring wells, including assessment for non-aqueous phase liquid. Depth to water measurements will be made during well development and groundwater sampling; and
- Completion of groundwater sampling using low-flow purging and sampling methods as per SOP-EDR023 (see Section 6.0), unless well yields are too low to permit this method to be used. For well(s) where low flow sampling cannot be employed, groundwater sampling will be conducted using the well volume method described in SOP-EDR008.

4.0 DATA QUALITY OBJECTIVES

The data quality objectives (DQOs) for the Phase Two ESA will be to obtain unbiased analytical data that are representative of actual soil and groundwater conditions at the Phase Two Property. This will be accomplished by implementing a quality assurance/quality control (QA/QC) program, as described in Section 5.0, and by completing the field work in accordance with Pinchin's standard operating procedures (SOPs), as described in Section 6.0. Pinchin's SOPs are based in part on the MECP's *"Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario"*, dated December 1996 and the Association of Professional Geoscientists of Ontario document entitled *"Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended)"*, dated April 2011.

The DQOs are intended to minimize uncertainty in the analytical data set such that the data are considered reliable enough to not affect the conclusions and recommendations of the Phase Two ESA and to meet the overall objective of the Phase Two ESA, which is to assess the environmental quality of the Phase Two Property in relation to the identified APECs.

5.0 QUALITY ASSURANCE/QUALITY CONTROL PROGRAM

5.1 Non-Dedicated Sampling and Monitoring Equipment Cleaning

Based on the proposed scope of work, the following non-dedicated sampling and monitoring equipment will be used during completion of the Phase Two ESA:

- Interface probe;
- Water level tape;
- Spatula for soil sampling;
- Hollow-stem augers;
- Split-spoon samplers;
- Submersible pump; and
- Flow-through cell for groundwater sampling.

All of the above-listed equipment will be cleaned prior to initial use and between samples or sampling locations, as appropriate, following the equipment cleaning procedures described in SOP-EDR009. Any non-dedicated sampling or monitoring equipment not listed above that is used during the Phase Two ESA will also be cleaned in accordance with SOP-EDR009.

5.2 Trip Blanks

A trip blank is a set of VOC sample vials filled by the analytical laboratory with VOC-free distilled water and shipped with the groundwater sample containers. Trip blanks will be stored with the sample containers provided by the analytical laboratory during travel to the Phase Two Property, while on the Phase Two Property, and during travel from the Phase Two Property back to the analytical laboratory. The sample containers comprising a trip blank will not be opened in the field.

One trip blank will accompany each submission to the laboratory. Each trip blank will be submitted for analysis of VOCs. Based on the scope of work and anticipated field work schedule for the Phase Two ESA, it is estimated that analysis of up to four trip blanks will be required. Additional trip blanks will be submitted if there are additional laboratory submissions.

5.3 Field Duplicate Samples

Field duplicate soil and groundwater samples will be collected for laboratory analysis in accordance with SOP-EDR025 at a frequency of one sample for every ten samples submitted for laboratory analysis, with a minimum of one sample per media sampled per COPC.

5.4 Calibration Checks on Field Instruments

5.4.1 Field Screening Instruments

The photoionization detector (PID) and combustible gas indicator (CGI) used for the field screening of soil samples will be calibrated in accordance with the procedures described in SOP-EDR003. Calibration checks will also be made at the frequency specified in SOP-EDR003.

Records of the calibration and calibration checks of the PID and CGI, including any calibration sheets provided by the equipment supplier, will be retained in Pinchin’s project file.

5.4.2 Water Quality Measurement Instruments

Water quality instruments used to measure field parameters during groundwater sampling will be calibrated in accordance with the procedures described in SOP-EDR016. Calibration checks will also be made at the frequency specified in SOP-EDR016.

Records of the calibration and calibration checks of the probes/instruments used for water quality parameter measurements, including any calibration sheets provided by the equipment supplier, will be retained in Pinchin's project file.

6.0 STANDARD OPERATING PROCEDURES

The proposed field investigation for the Phase Two ESA will require the following SOPs to be followed:

- Borehole drilling (SOP-EDR006).
- Soil sampling (SOP-EDR013 and SOP-EDR019).
- Field screening (SOP-EDR003).
- Monitoring well installation (SOP-EDR007).
- Monitoring well development (SOP-EDR017).
- Field measurement of water quality indicators (SOP-EDR016).
- Groundwater sampling (SOP-EDR008 and/or SOP-EDR023).
- QA/QC sampling (SOP-EDR025).
- Non-dedicated field equipment decontamination (SOP-EDR009).
- Vertical elevation surveying (SOP-EDR026).

The above-referenced SOPs are provided in Appendix III. Each SOP includes a section describing the specific requirements for Phase Two ESAs completed to support the filing of an RSC in accordance with O. Reg. 153/04.

Any deviations from the SOPs will be summarized in the Phase Two ESA report.

7.0 SAMPLING SYSTEM

The borehole and monitoring well locations in all APECs will be selected following a judgemental sampling system. Boreholes and monitoring wells will be placed at locations where the potential for COPCs to be present is considered the highest (i.e., "worst case") or to provide for lateral/vertical delineation based on previous sampling efforts.

In addition, the field screening results for soil samples collected from each borehole will be used to select "worst case" samples for laboratory analysis.

Rationale for the selection of sampling locations (i.e., borehole/monitoring well positioning), as well as the sampling system that will be used for each APEC, is summarized and provided in Table 2.

8.0 PHYSICAL IMPEDIMENTS

Pinchin does not anticipate any physical impediments that will limit access to the Phase Two Property during completion of the Phase Two ESA.

It is the QP's opinion that the impediments to full access to the Phase Two Property will not affect the investigation of the APECs for COPCs and will have no impact on the overall findings and conclusions of the Phase Two ESA.

9.0 TERMS AND LIMITATIONS

This Sampling and Analysis Plan (SAP) has been prepared to summarize the general scope of work and field procedures to be followed for the Phase Two ESA that will be performed for TIP Gladstone Limited Partnership by it General Partner TIP Gladstone GP Inc. c/o CLB Group Developments Inc. (Client) in order to investigate potential environmental impacts at 951 Gladstone Avenue and 145 Loretta Avenue North in Ottawa, Ontario (Site). The term recognized environmental condition means the presence or likely presence of any hazardous substance on a property under conditions that indicate an existing release, past release, or a material threat of a release of a hazardous substance into structures on the property or into the ground, groundwater, or surface water of the property. The Phase Two ESA will not quantify the extent of the current and/or recognized environmental condition or the cost of any remediation.

Conclusions derived from the Phase Two ESA will be specific to the immediate area of study and cannot be extrapolated extensively away from sample locations. Samples will be analyzed for a limited number of contaminants that are expected to be present at the Site, and the absence of information relating to a specific contaminant does not indicate that it is not present.

No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions on a property. Performance of the Phase Two ESA to the standards established by Pinchin is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions on the Site, and recognizes reasonable limits on time and cost.

The Phase Two ESA will be performed in general compliance with currently acceptable practices for environmental site investigations, and specific Client requests, as applicable to this Site.

This SAP was prepared for the exclusive use of the Client, subject to the terms, conditions and limitations contained within the duly authorized proposal for this project. Any use which a third party makes of this SAP, or any reliance on or decisions to be made based on it, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

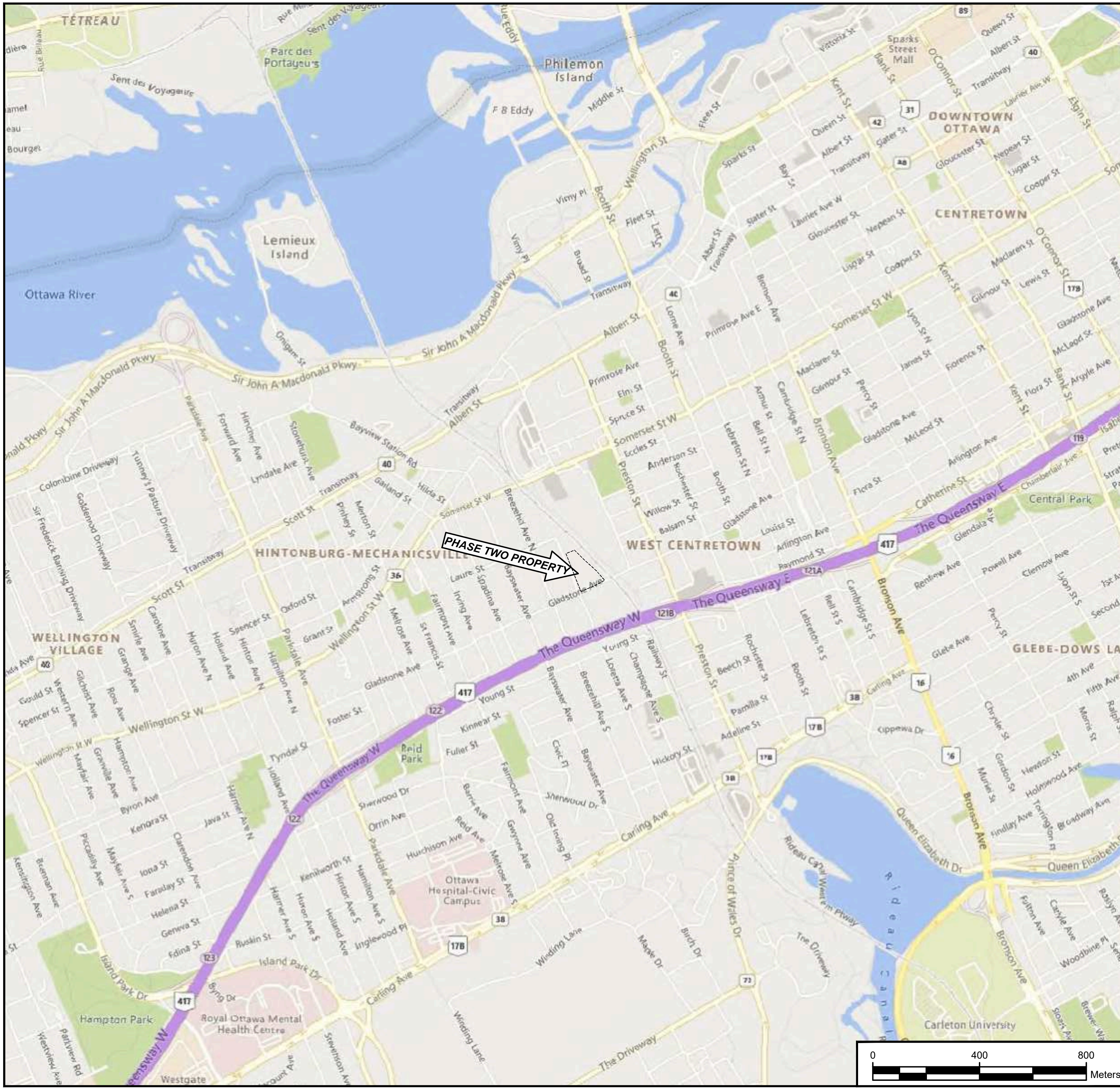
If additional parties require reliance on this SAP, written authorization from Pinchin will be required. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed. Furthermore, this SAP should not be construed as legal advice. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this SAP, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

285722.003 Phase Two ESA Sampling and Analysis Plan

Template: RSC Sampling and Analysis Plan, EDR, January 17, 2020

APPENDIX I
Figures



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PINCHIN

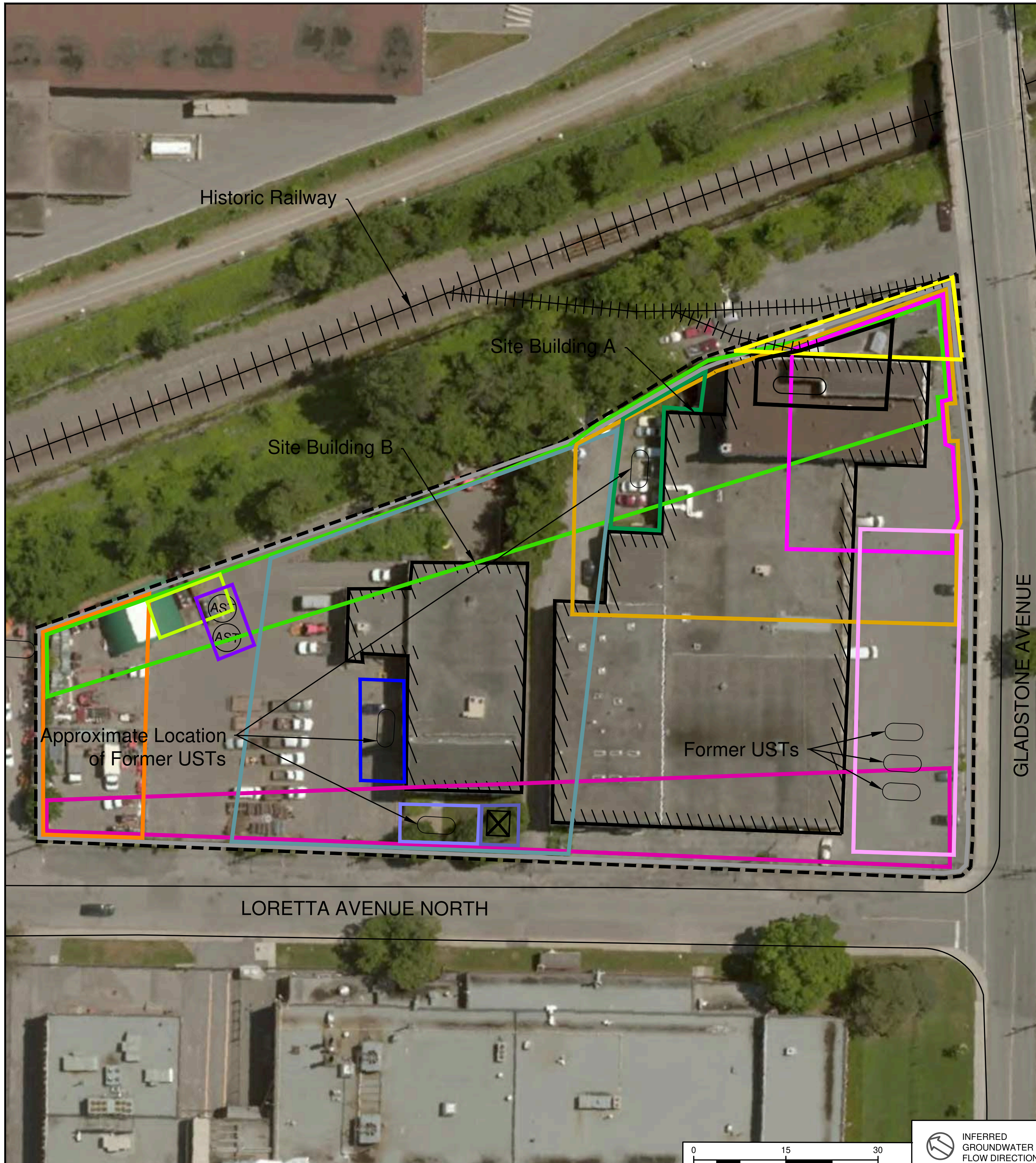
PROJECT NAME:
SAMPLING AND ANALYSIS PLAN

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION:
951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME:
KEY MAP

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
JULY 2021	1



APEC	Location of APEC	PCA	Location of PCA	COPCs	Media
APEC-1 (Fill of unknown quality)	Entire Phase One Property	Item 30 - Importation of Fill Material of Unknown Quality	On-Site	Metals, PHCs, PAHs	Soil and Groundwater
APEC-2 (Two gasoline above ground storage tanks [ASTs])	Northeast portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-3 (Former On-Site retail fuel outlet [RFO] with three undergound storage tanks [USTs])	Southwest portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-4 (Former On-Site UST west of 145 Loretta Site Building)	West-central portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-5 (Former On-Site AST within east portion of 951 Gladstone Site Building)	Southeast portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-6 (Former Automotive Service Garage in 145 Loretta Site Building)	Central Portion of Phase One Property	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	On-Site	VOCs, PHCs, PAHs	Soil and Groundwater
APEC-7 (Former Printing Facility within east portion of 951 Gladstone Site Building)	Southeast Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	On-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-8 (Former Rail Spur)	Southeast Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	On-Site	BTEX, PHCs, PAHs, Metals	Soil and Groundwater
APEC-9 (Off-Site UST to the north at 131 Loretta Avenue North)	North Portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	BTEX, PHCs	Soil and Groundwater
APEC-10 (Off-Site Rail Tracks at the east adjacent property)	East Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	Off-Site	BTEX, PHCs, PAHs, Metals	Soil and Groundwater
APEC-11 (Former Off-Site Ordnance Depot to the northeast across the rail tracks)	East Portion of Phase One Property	Item 38 - Ordnance Use	Off-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-12 (Off-Site Private Fuel Outlet to the south at 175 Loretta Avenue North)	Southeast Portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	VOCs, PHCs, Metals	Soil and Groundwater
APEC-13 (Off-Site Printing Facility to the west at 975 Gladstone Avenue)	West Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-14 (On-Site Pad Mounted Transformer west of 145 Loretta Site Building)	Central West Portion of Phase One Property	Item 55 - Transformer Manufacturing, Processing and Use	On-Site	PHCs, PCBs	Soil
APEC-15 (Former On-Site UST northwest of 145 Loretta Site Building)	Northwest of Site Building B	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-16 (On-Site Salt Storage in a Quonset building)	Northeast Portion of Phase One Property	Item 48 - Salt Manufacturing, Processing and Bulk Storage	On-Site	EC, SAR, Sodium, Chloride	Soil and Groundwater
APEC-17 (Current/Former On-Site UST northeast of 951 Gladstone Site Building)	Northeast of Site Building A	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater

LEGEND

PHASE ONE PROPERTY BOUNDARY
SITE BUILDING
(P) PARKING
HISTORIC RAILWAY LINE
APEC AREA OF POTENTIALLY ENVIRONMENTAL CONCERN

APEC-1, APEC-2, APEC-3, APEC-4, APEC-5, APEC-6, APEC-7, APEC-8, APEC-9, APEC-10, APEC-11, APEC-12, APEC-13, APEC-14, APEC-15, APEC-16, APEC-17

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
SAMPLING AND ANALYSIS PLAN

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

PROJECT LOCATION:
951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO

FIGURE NAME:
AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: JULY 2021	FIGURE NUMBER: 2

APPENDIX II
Tables

Table 1 - Table of Areas of Potential Environmental Concern

Area of Potential Environmental Concern[1]	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity[2]	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern[3]	Media Potentially Impacted (Ground Water, Soil and/or Sediment)
APEC-1 (Fill of unknown quality)	Entire Phase One Property	Item 30 - Importation of Fill Material of Unknown Quality	On-Site	Metals PHCs PAHs	Soil and Groundwater
APEC-2 (Fuel ASTs)	Northeast portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-3 (Former On-Site RFO)	Southwest portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-4 (Former On-Site UST)	West-central portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-5 (Former On-Site AST)	Southeast portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater

APEC-6 (Former Automotive Service Garage)	Central Portion of Phase One Property	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	On-Site	VOCs PHCs PAHs	Soil and Groundwater
APEC-7 (Former Printing Facility)	Southeast Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	On-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-8 (Former Rail Spur)	Southeast Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	On-Site	BTEX PHCs PAHs Metals	Soil and Groundwater
APEC-9 (Off-Site UST)	North Portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	BTEX PHCs	Soil and Groundwater
APEC-10 (Off-Site Rail Tracks)	East Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	Off-Site	BTEX PHCs PAHs Metals	Soil and Groundwater
APEC-11 (Former Off-Site Ordnance Depot)	East Portion of Phase One Property	Item 38 - Ordnance Use	Off-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-12 (Off-Site Private Fuel Outlet)	Southeast Portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	VOCs PHCs Metals	Soil and Groundwater

APEC-13 (Off-Site Printing Facility)	West Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-14 (Pad Mounted Transformer)	Central West Portion of Phase One Property	Item 55 - Transformer Manufacturing, Processing and Use	On-Site	PHCs PCBs	Soil
APEC-15 (Former On-Site UST)	Northwest of Site Building B	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-16 (On-Site Salt Storage)	Northeast Portion of Phase One Property	Item 48 - Salt Manufacturing, Processing and Bulk Storage	On-Site	EC SAR Sodium Chloride	Soil and Groundwater

Table 2 - Phase Two Scope of Work Summary

Sampling Location	APEC	Media Sampled	COPCs: PHCs	BTEX	VOCs	PAHs	PCBs	Metals	Hydrides (As, Sb, Se)	Boron (HWS)	Chromium VI	Mercury	Sodium	Chloride	EC	SAR	Number of Samples Submitted for Analysis	Soil Sampling Depth Interval (mbgs)	Screen Interval (mbgs)	Sampling Frequency	Sampling System	Rationale/Notes
BH1-20	7, 8	Groundwater			●	●											1	NA	8.07 - 11.07	NA	Judgemental	Reassess groundwater quality within APECs 7 and 8. Confirm VOC concentrations and assess for PAHs.
BH2-20	3	Groundwater			●	●											1	NA	3.17 - 6.17	NA	Judgemental	Reassess groundwater quality within APEC 3. Confirm VOC concentrations and assess for PAHs.
BH3-20	9, 13	Groundwater			●	●											1	NA	9.24 - 12.24	NA	Judgemental	Reassess groundwater quality within APECs 9 and 13. Confirm VOC concentrations and assess for PAHs.
BH4-20	6	Groundwater			●	●											1	NA	7.67 - 10.67	NA	Judgemental	Reassess groundwater quality within APEC 6. Confirm VOC concentrations and assess for PAHs.
BH5-20	4, 6	Groundwater			●	●											1	NA	10.42 - 11.91	NA	Judgemental	Reassess groundwater quality within APECs 4 and 6. Confirm VOC (chloroform) concentrations and assess for PAHs.
BHMW3	3	Groundwater			●	●											1	NA	3.7 - 6.7	NA	Judgemental	Reassess groundwater quality within APEC 3. Confirm VOC concentrations and assess for PAHs.
BH2017-10	2, 6	Groundwater			●	●											1	NA	10.1 - 13.1	NA	Judgemental	Reassess groundwater quality within APECs 2 and 6. Confirm VOC concentrations and assess for PAHs.
BH101	1, 9, 13	Soil	●	●		●		●									2	0 - 6.1	NA	Continous/Soil cores every 1.5 m	Judgemental	
BH102	1, 9	Soil	●	●		●		●									2	0 - 6.1	NA	Continous/Soil cores every 1.5 m	Judgemental	
BH103	1, 2	Soil	●	●		●		●									2	0 - 6.1	NA	Continous/Soil cores every 1.5 m	Judgemental	
BH104	1, 13	Soil	●	●		●		●									2	0 - 6.1	NA	Continous/Soil cores every 1.5 m	Judgemental	Assess for shallow lateral delineation of BTEX, PAH, Metals and PHC impacts between 0.76 and 2.0 mbg. Assess for deeper vertical delineation of PAHs and PHCs.
BH105	1, 4, 13	Soil	●	●		●		●									2	0 - 6.1	NA	Continous/Soil cores every 1.5 m	Judgemental	
BH106	1, 4, 13	Soil	●	●		●		●									2	0 - 6.1	NA	Continous/Soil cores every 1.5 m	Judgemental	
BH107	1, 4, 13	Soil	●	●		●		●									2	0 - 6.1	NA	Continous/Soil cores every 1.5 m	Judgemental	
BHMW108	3	Soil & Groundwater			●	●		●														
BHMW109	3	Soil & Groundwater																				
BHMW110	3	Soil & Groundwater																				
BHMW111	3	Soil & Groundwater																				
BHMW112	3	Soil & Groundwater																				
BH113		Soil																				
BHMW114		Soil & Groundwater																				
BHMW115		Soil & Groundwater																				
BHMW116		Soil & Groundwater																				
BHMW117		Soil & Groundwater																				
BHMW118		Soil & Groundwater																				
BHMW119		Soil & Groundwater																				
BHMW120		Soil & Groundwater																				
BH121		Soil																				
BHMW122		Soil & Groundwater																				
BHMW123		Soil & Groundwater																				
BHMW124		Soil & Groundwater			●												1	0 - 6.1	3.1 - 6.1	NA	Judgemental	

PHCs	Petroleum Hydrocarbons (Fraction 1 to Fraction 4)
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
VOCs	Volatile Organic Compounds
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
As, Sb, Se	Arsenic, Antimony, Selenium
Boron (HWS)	Hot Water Soluble Boron
Chromium VI	Hexavalent Chromium
EC	Electrical Conductivity
SAR	Sodium Adsorption Ratio

APEC	Area of Potential Environmental Concern
COPCs	Contaminants of Potential Concern
m	Metres
mbgs	Metres Below Ground Surface
NA	Not Applicable
PCA	Potentially Contaminating Activity
SOP	Standard Operating Procedure
UST	Underground Storage Tank

APPENDIX III

Pinchin Standard Operating Procedures

SOP – EDR003 – REV004 – FIELD SCREENING OF SOIL SAMPLES

Title:	Field Screening of Soil Samples
Practice:	EDR
First Effective Date:	June 16, 2009
Version:	004
Version Date:	April 28, 2017
Author:	Robert MacKenzie
Authorized by:	Robert MacKenzie
Signature:	

TABLE OF CONTENTS

1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	June 16, 2009	N/A	MEM
001	November 26, 2010	Update approval signature	FG
002	September 25, 2013	Revised SOP to reflect current practices/Added section on O.Reg. 153/04 compliance	RLM
003	April 29, 2016	Updated Section 4.0/Modified time between readings to 1 hour	RLM
004	April 28, 2017	Removed reference to Pinchin West/In Section 5.2, clarified that soil vapour measurements do not need to be made within one hour of sampling during winter conditions	RLM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) presents the quantitative and qualitative methods to be used by Pinchin field personnel for field screening soil samples for potential impacts during field investigations.

The quantitative part of field screening consists of the measurement of vapour concentrations in soil sample headspace in order to assess the potential for volatile constituents to be present in the soil. The soil vapour readings obtained from these measurements are then used to assist in selecting potential "worst case" soil samples for submission to the laboratory for analysis. There are no regulatory standards for comparison with soil headspace vapour readings and we are using the general principle that the sample with the highest soil headspace vapour concentration from a group of samples is often the most likely to be impacted by volatile constituents.

The qualitative part of field screening includes assessing the soil for visual or olfactory indicators of potential contamination and is used in conjunction with the soil headspace vapour readings to select "worst case" soil samples to be submitted for laboratory analysis.

Note that soil vapour measurements have limited value when selecting "worst case" soil samples for laboratory analysis of non-volatile parameters such as metals. Visual observations of the presence of staining and debris (e.g., brick fragments and other building materials, coal ash, etc.), along with sample depth and likely migration pathways are to be factored into selecting the samples. The sample with the highest soil headspace vapour reading is not automatically selected under these circumstances.

Soil samples collected for soil vapour measurement must not be submitted for laboratory analysis except for analysis of non-volatile parameters (i.e., metals and inorganics) or grain size analysis.

This SOP also applies to the field screening of sediment samples but for simplicity, only soil samples are referred to below.

3.0 OVERVIEW

Not applicable.

4.0 DISTRIBUTION

This is an on-line document. Paper copies are valid only on the day they are printed. Refer to the author if you are in any doubt about the accuracy of this document.

This SOP will be distributed to all Pinchin staff and others as follows:

- Posted to the SOP section of the Environmental Due Diligence and Remediation (EDR) Practice Line on the Pinchin Orchard; and
- Distributed to senior staff at Le Groupe Gesfor Poirier and Pinchin LeBlanc for distribution as appropriate.

5.0 PROCEDURE

5.1 Equipment and Supplies

- Resealable plastic bags (e.g., Ziploc®);

  (Note that small capacity bags (e.g., 500 millilitre capacity) are preferred over larger sized bags. When conducting headspace screening of a set of soil samples, the size of bag used should be consistent throughout in order to maintain the same approximate headspace volume in each bag);
- Combustible gas indicator (CGI) capable of operating in methane-elimination and/or photo-ionization detector (PID);

  (The Project Manager will be responsible for selecting the appropriate instrument(s) for each project. CGIs (e.g., RKI Eagle or Gastechtor) are acceptable for screening of petroleum hydrocarbons (PHCs) and related compounds, whereas PIDs (e.g., MiniRAE) are acceptable for screening for volatile organic compounds (VOCs), including chlorinated solvents, but can also be used when screening for PHCs. For many projects, it will be appropriate to employ both a CGI and a PID); and
- Calibration equipment (e.g., calibration gas, regulators, tubing, calibration bags, etc. as provided by the equipment supplier).

5.2 Soil Headspace Vapour Measurement Procedure

The procedure for conducting soil headspace vapour measurements for soil sample headspace is as follows:

1. Unless pre-calibrated by the equipment supplier, calibrate the CGI/PID as per the instrument manufacturer's instructions before commencing soil vapour measurements. Record the date and time of calibration, and type and concentration of the calibration gas used in the field logbook or field forms;
2. Label the plastic bag with the sample number;
3. Create a split soil sample by splitting the sample core vertically (i.e., along the longitudinal axis) with one half used for soil headspace vapour measurement and the other half used to fill sample jars for laboratory analysis of volatile parameters (e.g., VOCs and PHCs (F1 fraction)). In other words, the depth interval of the soil subjected to soil headspace vapour measurements should be the same as the depth interval from which samples for volatile parameters are collected. This procedure doesn't apply to grab samples but is to be completed when soil cores are obtained, such as sampling with dual tube samplers, split-spoon samplers and hand augers. For grab samples, soil used for laboratory analysis and soil headspace vapour measurements should be collected from proximal locations;
4. Place the soil into the plastic bag until the bag is approximately one-quarter full as soon as possible after the sampling device is retrieved/opened;
5. Seal the bag and break apart the soil by manually kneading the soil in the sealed bag;
6. Allow the soil sample to equilibrate at ambient temperature for a minimum of 5 minutes but no longer than one hour before taking a soil headspace vapour measurement. The exception to this is that during winter conditions, the soil samples should be placed in a heated environment (e.g., building interior) to warm up for a minimum of 15 minutes before taking soil vapour measurements. In this case, the soil vapour measurements do not need to be completed within one hour of sample collection;
7. Do not store the bagged soil samples in direct sunlight prior to taking soil headspace vapour measurements;
8. When conducting soil headspace vapour measurements with a CGI, make sure it is switched to methane elimination mode;
9. When completing soil headspace vapour measurements of a soil sample using both a PID and CGI, the vapour measurement using the PID should be made first;

10. Immediately before taking a soil headspace vapour measurement, gently agitate the bag and then create a small opening in the top of the bag. Insert the tip of the CGI/PID into the headspace of the bag and quickly reseal the bag around the tip to minimize leakage. If there is any water inside the bag, ensure that the tip does not contact the water;
11. Record the maximum vapour concentration measured within the first 10 seconds after inserting the tip of the CGI/PID into the bag. Note any anomalies that occur during the taking of the measurement (e.g., if the readings displayed by the instrument progressively increase and do not reach an obvious peak);
12. Remove the tip of the CGI/PID from the bag and reseal the bag immediately in case additional soil headspace vapour measurements are needed. If the soil headspace vapour is measured for a sample using a PID and an additional measurement with a CGI is required, wait a minimum of five minutes after the bag is resealed before taking the measurement with the CGI;
13. Before completing the next soil headspace vapour measurement, allow the CGI/PID to reach "zero" or "baseline". If the CGI/PID does not return to "zero" or "baseline" it should be recalibrated before further soil headspace vapour measurements are made;
14. At the discretion of the Project Manager, a calibration check of the CGI/PID should be completed at least once per day or at a frequency of once per 100 soil headspace vapour measurements (for projects where numerous soil headspace vapour measurements are made on a daily basis such as a large remediation project); and
15. A calibration check is made by measuring the concentration of a sample of the calibration gas with the CGI/PID without making any adjustments to the instrument beforehand and comparing the measured concentration with the known concentration. The comparison of the measured concentration versus the actual concentration of the calibration gas indicates how much the instrument's calibration may have been altered during soil headspace vapour measurements, which is known as "instrument drift". Should the calibration check show instrument drift of more than 10%, the CGI/PID needs to be recalibrated before completing further soil headspace vapour measurements. Record all pertinent information for the calibration check (e.g., date and time, initial measured concentration, calibration gas type and concentration) in the field logbook or field forms.

5.3 Visual Screening

Visual screening consists of examining the soil sample for potential indicators of contamination as per the following:

1. Visually examine the soil sample, including breaking apart a portion of the sample;

2. Note any indications of a mottled appearance, dark discolouration or staining, free-phase product or unusual colour;
3. Note any indications of non-soil constituents, such as brick, asphalt, wood or concrete fragments, coal fragments, coal ash, etc.; and
4. Record the findings of the visual screening in the field logbook or field forms. If there is no visual evidence of impacts this should be noted.

5.4 Olfactory Screening

Record in the field logbook or field forms the presence of any odours noted during sample collection and visual screening. Field staff are not expected to directly smell soil samples to assess the presence/absence of odours.

If it is possible to identify the likely type of odour (e.g., PHC-like, solvent-like, etc.) then this information should be recorded along with a comment on the severity of the odour (e.g., slight, strong, etc.). If the odour cannot be readily identified, it should be described in the field notes as “unidentified odour”.

If no odours are observed, this information should also be recorded in the field logbook or field forms.

5.5 Additional Considerations for Ontario Regulation 153/04 Phase Two ESA Compliance

When completing a Phase Two Environmental Assessment (ESA) in accordance with Ontario Regulation 153/04, the following additional procedures must be undertaken:

- Calibration of the CGI/PID must be completed at the beginning of each field day and calibration checks must be made either at the end of each field day or after every 100 soil vapour readings (whichever occurs first); and
- Thorough records of the CGI/PID calibration and calibration checks must be kept, including any calibration sheets provided by the equipment supplier. The Quality Assurance/Quality Control section of the Phase Two ESA report requires a discussion of field screening instrument calibration, and equipment calibration records must be appended to the Phase Two ESA report.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

Association of Professional Geoscientists of Ontario, *Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended),* April 2011.

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

9.0 APPENDICES

None.

I:\2017 SOP Updates\SOP - EDR003 - REV004 - Field Screening of Soil Samples.docx

Template: Master SOP Template – February 2014

SOP – EDR006 – REV003 – BOREHOLE DRILLING

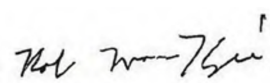
Title:	Borehole Drilling
Practice:	EDR
First Effective Date:	November 25, 2010
Version:	003
Version Date:	April 28, 2017
Author:	Francesco Gagliardi and Robert MacKenzie
Authorized by:	Robert MacKenzie
Signature:	

TABLE OF CONTENTS

MEMBER OF THE PINCHIN GROUP

1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	November 25, 2010	N/A	FG
001	November 22, 2013	Streamlined text to reflect most common current practices/Removed sections covered by other SOPs	RM
002	April 29, 2016	Updated Section 4.0	RM
003	April 28, 2017	Removed reference to Pinchin West	RM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) presents a description of the methods employed for the completion of boreholes and the collection of subsurface soil samples.

Boreholes are typically completed to determine geologic conditions for hydrogeological evaluation, to allow the installation of monitoring wells, and to allow for the collection of subsurface soil samples for laboratory analysis.

Several methods are available for the collection of shallow subsurface soil samples using hand-held equipment (e.g., hand augers, post-hole augers). However, the use of a drill rig, equipped with direct-push tooling, solid-stem augers and/or hollow-stem augers, is the most common method used by Pinchin to advance boreholes and will be the focus of this SOP.

A detailed discussion of all the various drilling rigs and drilling methods (e.g., direct push, augering, sonic drilling, air/water/mud rotary drilling, etc.) is beyond the scope of this SOP. The Project Manager will be responsible for determining the appropriate drill rig and drilling method for the site investigation.

The majority of the site investigations completed by Pinchin involve relatively straightforward drilling within the overburden within a one aquifer system. In some situations, such as when multiple aquifers are spanned by a borehole, when drilling into bedrock or when there are known impacts in the shallow subsurface, drilling using telescoped casing methods may be appropriate. Telescoped casing and bedrock drilling methods are beyond the scope of this SOP. In these situations, the Project Manager, in consultation with the drilling contractor, will be required to confirm the drilling requirements and procedures.

3.0 OVERVIEW

Not applicable.

4.0 DISTRIBUTION

This is an on-line document. Paper copies are valid only on the day they are printed. Refer to the author if you are in any doubt about the accuracy of this document.

This SOP will be distributed to all Pinchin staff and others as follows:

- Posted to the SOP section of the Environmental Due Diligence and Remediation (EDR) Practice Line on the Pinchin Orchard; and
- Distributed to senior staff at Le Groupe Gesfor Poirier and Pinchin LeBlanc for distribution as appropriate.

5.0 PROCEDURE

5.1 General

The overall borehole drilling program is to be managed in accordance with SOP-EDR005. In particular, utility locates must be completed in accordance with SOP-EDR021 before any drilling activities commence.

All non-dedicated drilling and sample collection equipment must be decontaminated in accordance with SOP-EDR009.

5.2 Prior Planning and Preparation

The planning requirements for borehole drilling programs are covered in detail in SOP-EDR005.

As noted above, the type of drilling rig and drilling method will be determined by the Project Manager when scoping out the site investigation. In some cases, a switch in drilling rig and/or drilling method may be required depending on site conditions. For example, if competent bedrock is encountered in the subsurface at a depth above the water table, bedrock coring would be required to advance the borehole deep enough to install a monitoring well.

5.3 Borehole Drilling Procedures

Once the final location for a proposed boring has been selected and utility clearances are complete, one last visual check of the immediate area should be performed before drilling proceeds. This last visual check should confirm the locations of any adjacent utilities (subsurface or overhead) and verification of adequate clearance.

In some instances, in particular where there is uncertainty regarding the location of buried utilities or the borehole is being completed near a buried utility, the use of a hydro-excavating (hydro-vac) unit will be required to advance the borehole to a depth below the bottom of the utility. The hydro-vac uses a combination of high-pressure water and high-suction vacuum (in the form of a vacuum truck) to excavate soil. This is also known as "daylighting". The need to use a hydro-vac will be determined by the Project Manager.

If it is necessary to relocate any proposed borehole due to terrain, utilities, access, etc., the Project Manager must be notified and an alternate location will be selected.

5.4 Borehole Nomenclature

If a borehole is advanced strictly for the purpose of soil sampling and no monitoring well is installed, the borehole should be identified as "BHxx". If a monitoring well is installed in a borehole, the borehole should be identified as "MWxx".

To avoid confusion, for site investigations involving both boreholes and monitoring wells, the numerical identifiers are to be sequential (e.g., there should not be a BH01 and MW01 for the same project).

When completing supplemental drilling programs, the borehole number should start at either the next sequential number after the last borehole number used in the first stage, or label them as '100 series', '200 series', etc. as appropriate (e.g., BH101, MW102, etc. for the first series of additional boreholes).

It is also acceptable to add the 2 digit year either before or after the borehole or monitoring well name (e.g., 17-MW101 or MW101-17).

5.5 Borehole Advancement

Each borehole will be advanced incrementally to permit intermittent or continuous sampling as specified by the Project Manager. Typically, the sampling frequency is one sample for every 2.5 or 5 feet (0.75 or 1.5 metres) the borehole is advanced. At the discretion of the Project Manager, soil samples may be collected at a lower frequency in homogeneous soil or at a higher frequency if changes in stratigraphy or other visual observations warrant it.

5.6 Direct-Push Drilling

This method is most commonly used at Pinchin to obtain representative samples of the subsurface soil material at a site. Direct-push drilling is achieved by driving a steel sampler into the subsurface at 1.5 metre intervals until the desired depth is achieved. The samplers are advanced by the drilling rig by means of a hydraulic hammer. For each soil sample run, a dedicated PVC sample liner is placed within the steel sampler which collects the soil as the sampler is advanced. After each sample run, a new sampler is assembled and it is advanced deeper down the open borehole.

There are generally two methods of direct-push drilling which are used:

- Dual-tube sampling; and
- Macro-core sampling.

A dual-tube sampler consists of an 8.25 centimetre (cm) inner diameter steel tooling (outer tube), equipped with a steel cutting-shoe affixed to the advancing end. A smaller diameter steel tooling, consisting of a 5.75 cm inner diameter (inner tube), fits within the outer tube and contains a PVC sample liner within. These two tubes form the completed dual-tube sampler. The completed dual-tube sampler has a length of 1.5 metres.

A macro-core sampler consists of the smaller inner tube (mentioned above) used independently. The macro-core sampler measures approximately 1.5 metres in length.

The difference in drilling methods used is typically determined by soil conditions. Where soil conditions consist of tight or dense soil types (e.g., silts or clays), the macro-core sampling method may be used as this method provides less resistance to advancing the sampler. In soil types that are less resistive (e.g., loose sands), the dual-tube sampler may be used.

5.7 Auger Drilling (Split-Spoon)

The auger drilling method for borehole advancement and sampling involves using an auger drill rig to advance the borehole to the desired sampling depth and sampling with a split-spoon sampler. Borehole advancement with hollow stem augers is the preferred drilling method when sampling with split-spoon samplers as it minimizes the potential from sloughed material to reach the bottom of a borehole and possibly cross-contaminate samples when the split-spoon is driven beyond the bottom of the borehole. Solid stem augers can be used when drilling at sites with cohesive soils (e.g., silty clay), provided that the borehole remains open after the augers are removed from the ground prior to driving the split-spoon sampler.

The split-spoon sampler consists of an 18- or 24-inch (0.45 or 0.60 metres) long, 2-inch (5.1 cm) outside diameter tube, which comes apart lengthwise into two halves.

Once the borehole is advanced to the target depth, the sampler is driven continuously for either 18 or 24 inches (0.45 or 0.60 metres) by a 140-pound (63.5 kilogram) hammer. The hammer may be lifted and dropped by either the cathead and rope method, or by using an automatic or semi-automatic drop system.

The number of blows applied in each 6-inch (0.15 metre) increment is counted until one of the following occurs:

- A total of 50 blows have been applied during any one of the 6-inch (0.15 metre) increments described above;

- A total of 100 blows have been applied;
- There is no advancement of the sampler during the application of ten successive blows of the hammer (i.e., the spoon is "bouncing" on a cobble or bedrock); or
- The sampler has advanced the complete 18 or 24 inches (0.45 or 0.60 metre) without the limiting blow counts occurring as described above.

On the field form, record the number of blows required to drive each 6-inch (0.15 metre) increment of penetration. The first 6 inches is considered to be a seating drive.

The sum of the number of blows required for the second and third 6 inches (0.15 metres) of penetration is termed the "standard penetration resistance" or the "N-value". This information is typically provided on the borehole logs included in our site investigation reports.

The drill rods are then removed from the borehole and the split-spoon sampler unthreaded from the drill rods.

Caution must be used when drilling with augers below the groundwater table, particularly in sandy or silty soils. These soils tend to heave or "blow back" up the borehole due to the difference in hydraulic pressure between the inside of the borehole and the undisturbed formation soil. If blowback occurs, the drilling contractor will introduce water or drilling mud into the borehole or inside of the hollow-stem augers (if used) to equalize the hydraulic pressure and permit drilling deeper to proceed.

Heaving conditions and the use of water or drilling mud must be noted on the field logs, including the approximate volume of water or drilling mud used.

5.8 Auger Drilling (Direct Sampling)

In some jurisdictions (e.g., BC, Manitoba) it may be acceptable to collect soil samples directly from auger flights when using solid stem augers.

When sampling directly from auger flights, care must be exercised not to collect soils that were in direct contact with the auger or that were smeared along the edge of the borehole.

5.9 Borehole Advancement In Bedrock

It is sometimes possible to advance augers through weathered bedrock but borehole advancement through competent bedrock requires alternate drilling procedures. Bedrock drilling can be accomplished by advancing core barrels or tri-cone bits using air rotary or water rotary drilling methods. A description of the various bedrock drilling procedures is beyond the scope of this SOP.

The bedrock drilling method selected will depend in part on the type of bedrock, the borehole depth required, whether bedrock core logging is required, whether telescoped casing is required, etc. The Project Manager, in consultation with the drilling contractor, will determine the best method for advancing boreholes in competent bedrock.

5.10 Borehole Soil Sample Logging and Collection

The following describes the methods for logging and collection of samples from a split-spoon or direct-push sampler but can be adapted for sample collection from augers:

1. After the driller opens the split-spoon sampler or PVC liner, measure the length of the soil core retained in the sampler in inches or centimetres. Be sure to be consistent in the use of metric or imperial units, and that the units used are clearly noted in the field notes. The percentage of soil retained versus the length of the sampler is known as "sample recovery" and this information is presented on the borehole logs within our Phase II ESA reports;
2. Dedicated, disposable nitrile gloves are to be worn during soil logging and sampling;
3. When using a dual-tube or macro-core sampler with direct-push drilling, there is usually sufficient sample recovery to permit the collection of two soil samples from each sample run. In this case, if the sample recovery is greater than 2.5 feet (0.75 metres), divide the recovered soil into two depth intervals and log/collect a sample from each interval. Split-spoon samplers typically are not long enough nor provide enough sample to divide a sample run into two. However, if a recovered sample contains distinct stratigraphic units (e.g., fill material and native material, obviously impacted soil and non-impacted soil), the distinct units are to be sampled separately. It is especially important that potentially impacted soil (e.g., fill material, obviously impacted soil) is not mixed with potentially unimpacted soil (e.g., native soil, soil without obvious impacts) to form one sample;
4. Discard the top several centimetres in each core as this material is the most likely to have sloughed off the borehole wall and may not be representative of the soil from the intended depth interval;
5. To minimize the potential for cross-contamination, scrape the exterior of the soil core with a clean, stainless-steel putty knife, trowel or similar device to remove any smeared soil. Note that is not practical and can be skipped if the soil is non-cohesive (e.g., loose sand);
6. Split the soil core longitudinally along the length of the sampler and to the extent practical, collect the soil samples for laboratory analysis from the centre of the core (i.e., soil that has not contacted the sampler walls). When sampling directly from augers, soils in direct contact with the auger or soils retained on the augers that may have been in contact with the edge of the borehole should not be collected;
7. Collect soil samples for potential volatile parameter analysis and field screening (in that order) as soon as possible after the core is opened. The length of time between opening the sampler and sample collection for these parameters should not exceed 2 minutes. It

is important to follow this as it minimizes the potential for volatile constituents in the soil to be lost. See SOP-EDR003 for additional details regarding the collection of soil samples for field screening;

8. Drillers are not to open the split-spoon sampler or PVC liner until instructed to do so. If drilling and sample retrieval is occurring at a rate faster than Pinchin staff are able to sample and log the soil cores, the drillers are to be instructed to slow down or stop until further notice. This will prevent a back log of soil cores from accumulating and minimize the exposure of the soil cores to ambient conditions. This is particularly important when sampling for VOCs;
9. Collect soil samples for the remaining parameters to be analyzed;
10. Soil samples are to be labelled and handled in accordance with SOP-EDR013;
11. Record the parameters sampled for, the type(s) and number of sample containers, and the time and date of sample collection in the field notes;
12. Determine the soil texture in accordance with SOP-EDR019 and record this information in the field notes;
13. Soil samples collected for soil headspace vapour measurement must not be submitted for laboratory analysis except for analysis of non-volatile parameters (i.e., metals and inorganics) or grain size analysis;
14. Immediately following collection, place each sample container in a cooler containing ice bags or ice packs; and
15. After the maximum borehole drilling depth is reached, measure the borehole depth with a weighted measuring tape and record the total depth in the field notes if the borehole diameter is large enough to permit measurement.

5.11 Borehole Backfilling.

Following completion of each borehole in which a well is not installed, it must be properly backfilled with bentonite and/or bentonite grout by the drilling contractor. The drilling contractor is to be consulted to confirm the proper borehole abandonment procedures required by the local regulations (e.g., Ontario Regulation 903 (as amended) for Ontario sites).

Drill cuttings are not be used to backfill boreholes.

Record the borehole backfilling method and materials used in the field notes.

5.12 Borehole Location Documentation

For each borehole, complete the following to document its location:

1. Photograph the completed borehole location. Close up photographs of the borehole are to be taken as well as more distant photographs that show the location of site landmarks relative to the borehole so that the photograph can be used to locate the borehole in the future; and
2. Using a measuring tape or measuring wheel, measure the distance between the borehole and a nearby landmark (e.g., corner of the nearest building) and provide a borehole location sketch in the field notes. Measurements are to be made at right angles relative to the orientation of the landmark or to a fixed axis (e.g., relative to true north). If required by the Project Manager, measure the UTM coordinates of the borehole with a hand-held GPS device.

5.13 Field Notes

The field notes must document all drilling equipment used, sample depths and measurements collected during the borehole drilling activities. The field notes must be legible and concise such that the entire borehole drilling and soil sampling event can be reconstructed later for future reference. The field notes are to be recorded on the field forms or in a field book.

5.14 Additional Considerations for O. Reg. 153/04 Phase Two ESA Compliance

None. Following this SOP will be sufficient to comply with the Ontario Regulation 153/04 requirements for Phase Two Environmental Site Assessments.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of Health & Safety Training by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

Canadian Standards Association, *Phase II Environmental Site Assessment, CSA Standard Z769-00 (R2008)*, dated 2000 and reaffirmed in 2008.

Association of Professional Geoscientists of Ontario, *Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended)*, April 2011.

9.0 APPENDICES

None.

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Template: Master SOP Template – February 2014

SOP – EDR007 – REV004 – MONITORING WELL DESIGN AND CONSTRUCTION

Title:	Monitoring Well Design and Construction
Practice:	EDR
First Effective Date:	August 03, 2009
Version:	004
Version Date:	April 28, 2017
Author:	Robert MacKenzie
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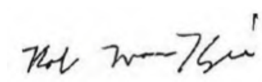
Signature:	

TABLE OF CONTENTS

1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	August 03, 2009	N/A	MEM
001	November 26, 2010	Update approval signatures	FG
002	November 15, 2013	Streamlined to cross reference AAPGO guidance document/Added section on O. Reg. 153/04 compliance	RLM
003	April 29, 2016	Updated Section 4.0/Added procedure for outer casing installation in Ontario	RLM
004	April 28, 2017	Remove reference to Pinchin West/Added note to Section 5.2 about placing a reference mark at the top of the well pipe/Added note to Section 5.3 that O.Reg.153/04 requires well screens to intersect the water table when assessing groundwater for petroleum hydrocarbon impacts during a Phase Two ESA	RLM

2.0 SCOPE AND APPLICATION

Monitoring wells are installed in overburden and bedrock to enable the collection of groundwater samples from water bearing formations at project sites. For some projects, monitoring wells are also used to monitor for combustible gases in the subsurface.

A monitoring well consists of two parts: the well screen and the well casing (also known as the well riser). The well screen allows groundwater to enter the well from the formation adjacent to the well so that it can be sampled. The well casing allows access to the well from the ground surface.

In Ontario, the regulatory requirements for monitoring well installation are provided in Ontario Regulation 903. All drilling contractors who install groundwater monitoring wells in Ontario must be licensed with the Ontario Ministry of the Environment and Climate Change (MOECC). In addition, for any well installed at a depth of greater than 3.0 metres below ground surface, a Water Well Record must be prepared by the drilling contractor and submitted to the MOECC and the well owner (typically our client).

The design and construction of soil vapour monitoring wells is beyond the scope of this SOP and is described in SOP-EDR018.

3.0 OVERVIEW

Not applicable.

4.0 DISTRIBUTION

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5.0 PROCEDURE

5.1 General Considerations

5.1.1 Borehole and Well Diameters

The borehole diameter must be sufficient in size to accommodate the well casing, sand pack and seal materials. In Ontario, the borehole diameter and annular space surrounding the monitoring well must meet the requirements of Ontario Regulation 903. Other provinces have similar requirements that must be considered. It is the Project Manager's responsibility to be aware of specific provincial requirements. Wherever possible, 2-inch (5.1. centimetre) interior diameter monitoring wells should be installed as they permit the use of most sampling and monitoring devices, and will generally provide greater water volume for sampling, especially in low permeability soils. Monitoring wells with interior diameters between 1-inch (2.5 centimetres) and 1.5-inches (3.8 centimetres) are also considered acceptable in some jurisdictions but the use of monitoring wells smaller than 1-inch (2.5 centimetres) is not permitted unless approved by the Project Manager.

5.1.2 Screen Length and Placement

Well screens typically range in length from 1.5 to 3.0 metres. Saturated well screen lengths beyond 1.8 metres, including sand pack, should be avoided in British Columbia, as per British Columbia Ministry of Environment Technical Guidance 8.

Wells screens must not straddle more than one hydrostratigraphic unit and should not be placed such that a preferential pathway for contaminant migration is created between two hydrostratigraphic units. In particular, a well screen must not straddle the overburden/bedrock interface, and the well screen, sand pack and seal must be situated entirely within either the overburden or the bedrock. An exception to this if the well is installed for assessing dense non-aqueous phase liquid (DNAPL), the penetration into the bedrock is minimal, and bedrock fractures are isolated from the sand pack. This type of well installation must only be completed under the guidance of staff with the appropriate geological expertise to ensure it is done correctly.

When determining the well screen length and depth of screen placement for a project, the following should be considered by the Project Manager:

- When assessing for the presence of light non-aqueous phase liquid (LNAPL) at the water table, longer well screens are preferred due to seasonal fluctuations in the water table and the well screen should intersect the water table whenever possible;
- When assessing for the presence of DNAPL, the well screen should be positioned at the bottom of the aquifer immediately above the aquitard;
- When assessing geochemical parameters, shorter well screens may be preferable to reduce the potential for mixing of water from distinct vertical geochemical zones;
- The use of long well screens within the saturated zone may result in the mixing of impacted and unimpacted groundwater from different depths within the aquifer, with the resulting dilution effect biasing the groundwater concentrations low; and
- Nested wells can be used to determine contaminant stratification within an aquifer or assess multiple aquifers, as long as the wells and individual aquifers are properly sealed off from each other within the borehole.

5.1.3 Well Screen/Casing Materials

Polyvinyl chloride (PVC) is the standard material used to construct groundwater monitoring wells. However, some organic compounds if present at excessive concentrations can degrade PVC, and stainless-steel or Teflon well materials may be considered for use by the Project Manager at such project sites.

A filter sock must not be placed over a well screen.

5.1.4 Well Screen Slot Size and Sand Pack

The slot size of the well screen will be determined by the size of the filter pack used. Pinchin typically uses No. 10 slot screen and #1 silica sand to form the sand pack around the well screen. When investigating a site with fine-grained soil, it may be appropriate to use a finer sand pack and smaller slot size to act as a “filter” to prevent as much fine-grained soil from entering the well as possible. The Project Manager should consult with the drilling contractor to determine the most appropriate screen slot size and sand pack size.

5.1.5 Bentonite Seal

The annular space above the sand pack in all wells is to be filled with bentonite. The purpose of placing the bentonite is create a seal above the sand pack that prevents a connection between other water bearing zones within the subsurface and/or water infiltration from the surface.

5.1.6 Surface Completions

A protective steel casing and lockable cap are to be installed at each well to protect the well and prevent tampering. Protective casings come in two varieties: aboveground casings (commonly known as monument casings) and flush-mount casings.

Aboveground casings have the advantage of having better visibility and can be located more easily, especially during winter, are less likely to need repair, and have fewer problems related to water intrusion and frost heave of the casing.

Flush-mount casings are usually the only available option for wells installed in areas of high vehicular or pedestrian traffic. Also, some clients prefer flush-mount casings for aesthetic reasons as they are less obtrusive.

When installing a well in a high vehicular traffic area such as a roadway, the flush-mount casing must have sufficient strength to avoid damage when run over by vehicles. Flush-mount casings with brass lids should not be installed in high vehicular traffic areas as they are easily damaged to the point where they can no longer be opened.

5.2 Well Installation Procedures

Note that Pinchin field staff are not trained, nor have the necessary licensing, to install monitoring wells. This task is to be performed by the drilling contractor in accordance with the applicable regulatory requirements (e.g., Ontario Regulation 903 (as amended) in Ontario). Pinchin field staff will assist the drilling contractor by specifying the general design of the monitoring well but will not perform the actual installation. The primary role of Pinchin field staff during well installation is to document the installation (e.g., measuring and/or recording the well length, screen length, depth to top of sand pack, etc.) as outlined below.

The following presents the general procedure for the completion of overburden and bedrock monitoring well installations after the borehole has been advanced to the appropriate depth:

1. Assemble the well by threading sufficient lengths of screen and riser materials together, and placing a threaded cap or slip-on cap at the bottom of the well. Well materials are to be kept in their plastic sleeves until immediately prior to well installation, and are not to be placed on the ground unless the ground surface is covered by clean plastic sheeting. Well materials should not be stored near potentially contaminated materials (e.g., soil cuttings;
2. Dedicated, disposable nitrile gloves are to be worn by all personnel handling the well materials and are to be replaced if they become contaminated during well installation. Confirm the length of the well screen, well riser and total length of well. This is especially important if the screen and/or riser are trimmed to fit the borehole depth or desired

screen interval. Record the length of the well screen, the length of the well casing, the total length of the well (including the bottom cap), the type of bottom cap used, and the interior diameter of the well screen/well casing in the field notes;

3. Prior to placing the assembled well into the borehole, measure the depth from ground surface to the bottom of the borehole and record this depth in the field notes;
4. When possible, place a minimum of 0.15 metres of filter pack into the bottom of the borehole to provide a firm base for the well. Note that the placement of such a filter pack base may not be appropriate when investigating a site where DNAPLs are suspected as the filter pack base may act as a DNAPL "sump" beneath the well and the DNAPL may go undetected when monitoring the well;
5. Place the assembled well into the open borehole or within the interior of the hollow stem augers. If trimming of the well casing is required, measure the length of the trimmed piece and record this information in the field notes. Before installing the sand pack, place a J-plug or slip cap on the top of the well to prevent sand and seal materials from entering the well when backfilling the annular space between the well and the borehole walls;
6. Install the sand pack around the exterior of the well screen and extend it to between 0.3 and 0.6 metres above the top of the well screen. The sand pack should be installed slowly, and with a tremie pipe if possible, to minimize the potential for bridging of the sand pack. When installing a sand pack in a borehole that has been drilled with hollow stem augers, the sand pack should be installed in lifts of approximately 0.5 metres. After placement of each lift, the augers are withdrawn from the ground by approximately 0.5 metres and the process repeated until the sand pack is placed to the required depth. Measure the depth to the top of the sand pack and record this depth in the field notes;
7. Install a bentonite seal comprised of granular and/or powdered bentonite above the sand pack to within approximately 0.6 metres of the ground surface. The bentonite should be installed slowly, and with a tremie pipe if possible, to minimize the potential for bridging of the seal. For the portion of the seal located above the water table, distilled water is to be poured into the borehole for each lift placed above the water table (approximately 0.3 to 0.6 metres per lift) to hydrate the seal. Approximately 1 to 2 litres of distilled water per lift is considered sufficient to hydrate the seal. Measure the depth to the top of the bentonite seal and record this depth in the field notes;
8. Record whether the seal was hydrated during installation and over which depth interval. Note that in some jurisdictions very long bentonite seals can be broken up with sand intervals. This reduces the potential for ground heaving due to bentonite shrinking and swelling but the sand intervals must not connect hydraulically separated aquifers;

9. (Ontario only) If the well is to be installed with a flush-mount protective casing, an outer casing comprised of a short length (10 to 15 cm) of PVC riser, or PVC coupling, that is slightly larger in diameter than the well casing needs to be installed around the well casing into the top of the bentonite seal, with the gap between the two casings sealed with bentonite. The top of the outer casing needs to be flush with or slightly below the top of the well casing. For example, if a 2-inch diameter well is installed, then a 10 to 15 cm length of 3-inch or 4-inch diameter riser or coupling placed around the 2-inch diameter well casing will suffice provided that bentonite is placed between the two casings. The flush-mount protective casing is then installed around the two casings. The outer casing does not need to be capped, and we only need to cap the well casing with a J-plug or slip cap;
10. (Ontario only) If the well is to be installed with a stick up protected by a monument casing, the procedure for installing the outer casing is essentially the same, except that the outer casing will extend from 10 to 15 cm below ground to above the ground surface, preferably flush with or slightly below the top of the well casing if the design of the monument casing permits it;
11. Place a protective well casing (monument or flush-mount) around the well casing and cement it in place;
12. Using a permanent marker, mark a point on the top of the well casing that will serve as a reference point for all future depth to water and elevation survey measurements. Measure the depth to groundwater in the well at the time of completion. Note the depth to water and time of measurement in the field notes;
13. Place a lockable J-plug on the well casing and ensure that the J-plug is tightened sufficiently to prevent surface water from infiltrating into the well if the well has a flush-mount completion. Place a lock on the J-plug for a flush-mount completion or on the lockable cap for an aboveground completion if required by the Project Manager. A PVC slip cap can also be used, especially for an aboveground completion;
14. Photograph the completed well installation. Close up photographs of the well are to be taken as well as more distant photographs that show the location of site landmarks relative to the well so that the photograph can be used to locate the well in the future; and
15. Using a measuring tape or measuring wheel, measure the distance between the well and a nearby landmark (e.g., corner of the nearest building) and provide a well location sketch in the field notes. Measurements are to be made at right angles relative to the orientation of the landmark or to a fixed axis (e.g., relative to true north). If required by the Project Manager, measure the UTM coordinates of the well with a hand-held GPS device.

5.3 Additional Considerations for O. Reg. 153/04 Phase Two ESA Compliance

Ontario Regulation 153/04 mandates that well screens must not exceed 3.1 metres in length. In addition, whenever the Phase Two ESA includes the assessment of petroleum hydrocarbon impacts in groundwater, the well screen in each well must intersect the water table.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

Association of Professional Geoscientists of Ontario, *Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended),* April 2011.

British Columbia Ministry of the Environment, *Technical Guidance 8: Groundwater Investigation and Characterization*, July 2010.

9.0 APPENDICES

None.

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Template: Master SOP Template – February 2014

SOP – EDR008 – REV004 – MONITORING WELL SAMPLING

Title:	Monitoring Well Sampling
Practice:	EDR
First Effective Date:	November 8, 2013
Version:	004
Version Date:	April 28, 2017
Author:	Robert MacKenzie
Authorized by:	Robert MacKenzie
Signature:	

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1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	November 08, 2013	N/A	RM
001	September 25, 2015	Incorporated procedures specific to Pinchin West into SOP	RM
002	February 9, 2016	Revised overall procedure to be consistent with well development SOP/Added reference to revised well development field forms	RM
003	April 29, 2016	Updated Section 4.0	RM
004	April 28, 2017	Removed reference to Pinchin West	RM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) describes the standard procedures for groundwater monitoring well purging and sampling, and provides a description of the equipment required and field methods.

Note that this SOP pertains to monitoring well sampling using the “well volume” purging procedure. Groundwater monitoring well purging and sampling using low flow procedures is described in SOP-EDR023.

3.0 OVERVIEW

Groundwater sampling involves two main steps: well purging followed by sample collection. All groundwater monitoring wells must be purged prior to groundwater sampling to remove groundwater that may have been chemically altered while residing in the well so that groundwater samples representative of actual groundwater quality within the formation intersected by the well screen can be obtained.

Monitoring well sampling should not be completed until at least 24 hours have elapsed following monitoring well development to allow subsurface conditions to equilibrate. Any deviation from this procedure must be discussed with the Project Manager before proceeding.

4.0 DISTRIBUTION

This is an on-line document. Paper copies are valid only on the day they are printed. Refer to the author if you are in any doubt about the accuracy of this document.

This SOP will be distributed to all Pinchin staff and others as follows:

- Posted to the SOP section of the Environmental Due Diligence and Remediation (EDR) Practice Line on the Pinchin Orchard; and

- Distributed to senior staff at Le Groupe Gesfor Poirier and Pinchin LeBlanc for distribution as appropriate.

5.0 PROCEDURE

5.1 Equipment and Supplies

5.1.1 Documents and Information Gathering

- A copy of the proposal or work plan;
- Monitoring well construction details (borehole logs, well construction summary table from a previous report or well installation field notes);
- A copy of this SOP;
- A site-specific Health and Safety Plan (as per the project requirements); and
- Client or site representative's contact details.

5.1.2 Well Purging and Sampling Equipment

- Inertial pump (e.g., Waterra tubing and foot valve) (Optional depending on jurisdiction);
- Peristaltic pump (Optional depending on the parameters being sampled);
- Submersible or bladder pump (Optional depending on jurisdiction and well depth);
- Disposable bailer (Optional);
- Graduated pail (to contain purge water and permit the volume of groundwater purged to be tracked);
- Pails or drums for purge water storage prior to disposal;
- Well keys (if wells are locked);
- Tools to open monitoring well (T-bar, socket set, Allen keys, etc.);
- Interface probe;
- Equipment cleaning supplies (see SOP-EDR009);
- Disposable latex or nitrile gloves; and
- Field forms.

5.2 Purging Procedures

The well purging procedure employed will be determined by the hydraulic conductivity of the formation in which the groundwater monitoring well is installed. For this SOP, a high yield well is defined as a well that cannot be purged to dryness when pumping continuously at a rate of up to 2 litres per minute (L/min) and a low yield well is defined as a well that can be purged to dryness when pumping continuously at a rate of 2 L/min or less. This threshold represents a “normal” pumping rate when hand pumping with an inertial pump.

5.2.1 Purging of High Yield Wells

The procedure for purging a high yield monitoring well is as follows:

1. Decontaminate all non-dedicated monitoring and sampling equipment that will be used, including the interface probe and submersible or bladder pump (if used), in accordance with the procedures described in SOP-EDR009;
2. Review the well construction details provided in the borehole logs, previous field notes or well construction summary table from a previous report. Determine the well depth, well stick up, screen length, depth to top of sand pack and diameter of the borehole annulus. If the well depth is unavailable, measure it with the interface probe;
3. Measure the initial water level (i.e., static water level) from the reference point on the well (which should be marked at the top of the well pipe) with an interface probe. If measurable free-phase product is present on the water table, record the depth to the top of the free-phase product and the depth to the free-phase product/water boundary (i.e., water level), and discuss this with the Project Manager before proceeding further;
4. Calculate the well volume. **Note that for the purpose of this SOP, there are two definitions of well volume depending on the province in which the project is being conducted.** For Ontario and Manitoba, the well volume is defined as the volume of water within the wetted length of the well pipe (well pipe volume) plus the volume of water within the wetted length of the sand pack (sand pack volume). For British Columbia, Alberta and Saskatchewan, the well volume is defined as the volume of water within the wetted length of the well pipe (well pipe volume) only;

   The volume of water in the well pipe is calculated as follows:

   Well Pipe Volume (litres) = $h_w \times \pi r_w^2 \times 1{,}000$ litres per cubic metre (L/m^3)

   Where $\pi = 3.14$

   h_w = the height of the water column in the monitoring well in metres (wetted length)

   r_w = the radius of the monitoring well in metres (i.e., half the interior diameter of the well)

   The volume of the sand pack in the monitoring well is calculated as follows:

   Sand Pack Volume (litres) = $h_w \times [(0.3\ \pi r_b^2 \times 1{,}000\ L/m^3) - (0.3\ \pi r_w^2 \times 1{,}000\ L/m^3)]$

   Where 0.3 = the assumed porosity of the sand pack

h_w = the height of the water column in the monitoring well in metres (wetted length)

π = 3.14

r_b = the radius of the borehole annulus in metres

r_w = the radius of the monitoring well in metres

For Ontario and Manitoba projects, the following table provides well volumes in litres/metre for typical well installations:

Borehole Annulus Diameter (Inches/Metres)	Well Interior Diameter (Inches)	Well Pipe Volume (Litres/Metre)*	Well Volume (Litres/Metre)*
4/0.1	1.25	0.8	2.9
	1.5	1.1	3.2
	2	2.0	3.8
6/0.15	1.25	0.8	5.9
	1.5	1.1	6.1
	2	2.0	6.7
8.25/0.21	1.5	1.1	11.2
	2	2.0	11.8
10.25/0.26	1.5	1.1	16.7
	2	2.0	17.3

* Litres to be removed per metre of standing water in the well (wetted length).

If the borehole annulus and well interior diameters match one of those listed above, to determine the volume of one well volume simply multiply the number in the last column of the table by the wetted length in the well. For example, if a 2-inch diameter well installed in a 8.25-inch diameter borehole has 2.2 metres of standing water, one well volume equals 26.0 litres (2.2 metres x 11.8 litres/metre).

Note that the above well volume calculations apply only to wells where the water level in the well is below the top of the sand pack. If the water level is above the top of the sand pack, then the well volume is the volume of water in the sand pack and well within the sand pack interval, plus the volume of water in the well pipe (i.e., well pipe volume) above the top of the sand pack. For example, assume a 2-inch diameter well has been installed in a 8.25-inch diameter borehole to a depth of 6.0 metres below ground surface (mbgs), with a 3.05 metre long screen. The sand pack extends from 6.0 mbgs to 2.5 mbgs and the water level is at 1.85 mbgs. One well volume equals ([6.0 metres – 2.5 metres] x 11.8 litres/metre) + ([2.5 metres – 1.85 metres] x 2.0 litres/metre) or 42.6 litres.

For British Columbia, Alberta and Saskatchewan projects, the well volume is calculated using the conversion factor listed in the third column of the above table. For example, if there are

2.5 metres of standing water in a 1.5-inch diameter well, one well volume equals 2.75 litres (2.5 metres x 1.1 litres/metre);

5. Lower the pump intake into the well until it is approximately 0.3 metres above the bottom of the well. Remove half a well volume while pumping at a rate of approximately 1 to 2 L/min. Record the approximate purge volume, pump intake depth and pertinent visual/olfactory observations (e.g., sheen, odour, free-phase product, sediment content, clarity, colour, etc.);
6. Move the pump intake upward to the middle of the water column (or middle of the screened interval if the water level in the well is above the top of the screen). Remove half a well volume (for a cumulative total of 1 well volume) while pumping at a rate of approximately 1 to 2 L/min. Record the approximate purge volume, pump intake depth and any pertinent visual/olfactory observations;
7. Move the pump intake upward to near the top of the screened interval (or near the top of the water column if the water level is currently below the top of the screen). Remove half a well volume (for a cumulative total of 1.5 well volumes) while pumping at a rate of approximately 1 to 2 L/min. Record the approximate purge volume, pump intake depth and any pertinent visual/olfactory observations.
   Note that if the wetted length is short within a well (e.g., 1.5 metres or less), there will not be enough separation between pump intake depths to warrant pumping from three depths (i.e., near the bottom, middle and top of the water column). In this case, pumping from two depths (i.e., near the bottom and top of the water column) is sufficient;
8. Repeat steps 5 through 7 until a minimum of 3 well volumes in total have been removed. If the purge water contains high sediment content after the removal of 3 well volumes, well purging should continue by removing additional well volumes until the sediment content visibly decreases. If the purge water continues to have high sediment content after the removal of 2 additional well volumes (i.e., 5 well volumes in total), contact the Project Manager to discuss whether well purging should continue; and
9. Proceed with groundwater sample collection (see below).

Note that the use of a bailer to purge a high yield well with a wetted interval greater than 2 metres is not recommended given that the depth from which groundwater is removed is difficult to control.

5.2.2 Purging of Low Yield Wells

The procedure for purging a low yield monitoring well is as follows:

1. Decontaminate all non-dedicated monitoring and sampling equipment that will be used, including the interface probe and submersible or bladder pump (if used), in accordance with the procedures described in SOP-EDR009;

2. Review the well construction details provided in the borehole logs, previous field notes or well construction summary table from a previous report. Determine the well depth, well stick up, screen length, depth to top of sand pack and diameter of the borehole annulus. If the well depth is unavailable, measure it with the interface probe;
3. Measure the initial water level (i.e., static water level) from the reference point on the well (which should be marked at the top of the well pipe) with an interface probe. If measurable free-phase product is present on the water table, record the depth to the top of the free-phase product and the depth to the free-phase product/water boundary (i.e., water level), and discuss this with the Project Manager before proceeding further;
4. Position the pump intake at the bottom of the well. Purge the well to dryness at a rate of between approximately 1 and 2 litres L/min. At the conclusion of purging, drain the pump tubing if possible. Record the approximate purge volume;
5. After allowing sufficient time for the well to recover, proceed with sample collection (see below). Note that wherever possible, the well should be allowed to recover to at least 90% recovery before proceeding with sample collection. However, if recovery to this level requires more than one hour to complete, it is better to sample the well as soon as it recovers sufficiently to permit sampling, especially if samples are being collected for volatile parameters such as volatile organic compounds (VOCs) and petroleum hydrocarbons (PHCs) (F1); and
6. Record the water levels, time of water level measurements and well status (e.g., well recovery incomplete, 90% recovery target met) on the field form to document the well recovery. Purging of wells at the end of a day and returning to the site the following day to collect samples is not permitted unless the well recovery is so poor that this amount of time is needed for there to be sufficient recovery to permit sample collection.

Note that bailers can be used in lieu of a pump to purge a low yield well provided that the well yield is low enough to permit the draining of all of the groundwater in the well with the bailer.

5.3 Well Purging Record

Well purging prior to sampling is to be documented through the completion in full of the following field forms located in the Pinchin Orchard:

- EDR-GW-Well Sampling-Low Yield Well; or
- EDR-GW-Well Sampling-High Yield Well.

Any deviations from this SOP along with the rationale for these deviations must be recorded on the forms.

5.4 Sample Collection

5.4.1 General Considerations

Inertial pumps are generally suitable for all sample collection for due diligence projects. However, the motion of the inertial pump in the water column of a well, even when pumping at a low rate, can create turbulence in the well that can suspend sediment already in the well or draw it in from the formation. Sediment captured in a sample can often result in positive bias to the analytical results, especially for the parameters PHCs (F3 and F4) and polycyclic aromatic hydrocarbons (PAHs), resulting in "false positives" that are not representative of actual groundwater quality. Sampling for these parameters following low flow purging and sampling procedures (SOP-EDR023) is an acceptable option to minimize potential sediment bias but because it is more expensive and time consuming than "conventional" sampling, it is typically not completed for due diligence projects. In lieu of low flow purging and sampling, a peristaltic pump, submersible pump or bladder pump is to be used as a "grab sampler" when sampling for PHCs (F2-F4) and PAHs.

In Ontario and Manitoba, or where otherwise prohibited by provincial guidance documents, peristaltic pumps must not be used to collect samples for analysis of volatile parameters, namely VOCs and PHCs (F1). As such, if the suite of parameters to be sampled at a given well includes VOCs and/or PHCs (F1), a "hybrid" sampling procedure is to be followed, in which samples for VOCs, PHCs (F1), PCBs and/or metals analysis are to be collected using an inertial pump and samples for PHCs (F2-F4) and PAHs analysis are to be collected using a peristaltic pump. Alternatively, the entire suite of parameters can be collected using a submersible or bladder pump.

The following table summarizes the pump types, parameters that can be sampled using each pump and how the well volume is determined for each province:

Jurisdiction	Pump Type	Parameters	Well Volume
BC	Inertial Pump	All Parameters	Well Pipe Volume
	Peristaltic Pump	All Parameters	Well Pipe Volume
Alberta/Saskatchewan	Inertial Pump	All Parameters Except PHCs (F2) and PAHs	Well Pipe Volume
	Peristaltic Pump	PHCs (F2) and PAHs	Well Pipe Volume

Jurisdiction	Pump Type	Parameters	Well Volume
Manitoba/Ontario	Inertial Pump	All Parameters Except PHCs (F2-F4) and PAHs	Well Pipe Volume + Casing Volume
	Peristaltic Pump	PHCs (F2-F4) and PAHs	
All Provinces	Submersible Pump	All Parameters	As Per Above
All Provinces	Bladder Pump	All Parameters	As Per Above

Bailers should not be used for sample collection unless there is no other option (e.g., when there is minimal groundwater in a well). They can be used as a substitute for an inertial pump but may bias concentrations of volatile parameters low and concentrations of PHCs (F2-F4) and PAHs high. The use of a bailer for groundwater sample collection must be approved by the Project Manager.

There is a common misconception that using a peristaltic pump, submersible pump or bladder pump and sampling at a low pumping rate is "low flow sampling". Sampling in this manner is essentially "grab sampling" using a device other than an inertial pump and is not "low flow sampling". Only if groundwater sampling was completed in accordance with SOP-EDR023 can the sampling be referred to as "low flow sampling".

5.4.2 Sampling of High and Low Yield Wells

The procedure for collecting groundwater samples from a high or low yield monitoring well is as follows:

1. Label the sample containers with the sample identifier, project number and date and time of sample collection. The sample containers for each well are be filled in the following order:
   - Volatiles parameters (e.g., VOCs, PHCs (F1));
   - Semi-volatile parameters (e.g., PHCs (F2-F4), PAHs); and
   - Non-volatile parameters (e.g., inorganic parameters, metals).

   There is an exception to the above sample collection order when using the "hybrid" sampling method. In this case, the semi-volatile parameters (PHCs (F2-F4) and/or PAHs) are to be sampled first using the peristaltic pump, submersible pump or bladder pump, followed by sampling volatile parameters and then non-volatile parameters using the inertial pump;

2. Position the pump intake at the approximate middle of the screened interval (or middle of the water column if the water level is below the top of the screen). At the discretion of the Project Manager, the pump intake may be positioned near the top of the water column if light non-aqueous phase liquids (LNAPLs) are being investigated (e.g., gasoline, fuel oil) and at the bottom of the well when dense non-aqueous phase liquids (DNAPLs) (e.g., chlorinated solvents) are being investigated. For a low yield well when the tubing was (or could) not be drained at the conclusion of purging, or when a high yield well is not sampled immediately after purging, pump sufficient water from the tubing before initiating sample collection at a rate of approximately 0.5 L/min to remove any water that was left over in the tubing following purging;
3. When sampling for volatile parameters (i.e., VOCs and PHCs (F1)), pump at a rate of approximately 0.5 L/min. When using an inertial pump, hold the pump vertical while pumping to minimize agitation and possible contaminant volatilization. During volatile parameter sampling, the tubing of the inertial pump must not contain air bubbles. If air bubbles are present, continue pumping until there are no air bubbles in the tubing. Once the tubing is full and free of air bubbles, carefully pour the groundwater from the tubing into the sample vials until they are filled to be headspace-free. When using a peristaltic pump (BC only), submersible pump or bladder pump for volatile parameter sampling, the samples can be collected by pumping directly into the sample containers until they are headspace-free. Once filled and capped, check each vial for air bubbles by turning it upside down. If bubbles are present in a vial, reopen it and add additional groundwater until there are no remaining bubbles;
4. When sampling for semi-volatile parameters, pump at a rate of between 0.5 and 1 L/min. The samples can be collected by pumping directly into the sample containers;
5. When sampling for non-volatile parameters, pump at a rate of between 0.5 and 1 L/min. The samples can be collected by pumping directly into the sample containers;
6. Samples collected for dissolved metals analysis are to be filtered in the field using dedicated, disposable 0.45 micron in-line filters or marked to be filtered by the laboratory, except for samples collected in Ontario for methyl mercury analysis which are not to be filtered. Field filtering must occur before samples for metals analysis are preserved. Prior to filling the first sample container using a new filter, the filter is to be “primed” by flushing a volume of water equal to twice the capacity of the filter through the filter. Samples for other parameters are not to be filtered in the field. In situations where field filtering cannot be completed, such as when sampling with a bailer, samples for metals analysis

are to be collected in sample containers without preservatives and the analytical laboratory is to be instructed on the Chain-of-Custody to filter and preserve the samples upon receipt;

7. When collecting samples in containers that are pre-charged with preservatives, care must be taken not to overfill the containers as some of the preservative may be lost which will result in the sample not being properly preserved. Also, sample containers for metals analysis typically have a fill line marked on the container and the container must not be filled to above this line as this will cause dilution of the preservative and the sample may not be properly preserved;
8. Record the parameters sampled for, the purging and sampling equipment used, whether samples for metals analysis were field filtered, and the time and date of sample collection in the field forms; and
9. Immediately following collection, place each sample container in a cooler containing ice bags or ice packs.

5.5 Additional Considerations for O. Reg. 153/04 Phase Two ESA Compliance

Groundwater sampling conducted for a Phase Two ESA completed in accordance Ontario Regulation 153/04 must be completed using the low flow purging and sampling methods provided in SOP-EDR023 unless authorized by the Qualified Person responsible for the Phase Two ESA.

6.0 TRAINING

The Practice Leader is responsible for identifying the initial training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

Association of Professional Geoscientists of Ontario, "*Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended)*", April 2011.

9.0 APPENDICES

None.

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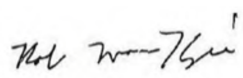
Template: Master SOP Template – February 2014

SOP – EDR009 – REV004 – FIELD DECONTAMINATION OF NON-DEDICATED MONITORING AND SAMPLING EQUIPMENT

Title:	Field Decontamination of Non-Dedicated Monitoring and Sampling Equipment
Practice:	EDR
First Effective Date:	August 03, 2009
Version:	004
Version Date:	April 28, 2017
Author:	Robert MacKenzie
Authorized by:	Robert MacKenzie
Signature:	

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1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	August 02, 2009	N/A	MEM
001	November 26, 2010	Updated Approval Signature/Added reference to Ontario Regulation 511/09	FG
002	September 20, 2013	Revised majority of text to reflect current practices/Focused on equipment cleaning and removed reference to personnel decontamination/Added section on O. Reg. 153/04 requirements/Revised reference list	RLM
003	April 29, 2016	Updated Section 4.0/Removed methanol as optional cleaning reagent	RLM
004	April 28, 2017	Removed reference to Pinchin West/In Section 5.2.2, modified requirements for cleaning water level tapes and interface probes/In Section 5.2.3, modified requirements for cleaning electrical or retrieval cables for pumps	RLM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) presents the general requirements for field decontamination of non-dedicated equipment used for monitoring of environmental media and the collection of environmental samples (i.e., equipment that is re-used between monitoring and sampling locations). Note that the procedures described in this SOP also apply to pumps used for well development.

3.0 OVERVIEW

The main purpose of non-dedicated monitoring and sampling equipment decontamination is to minimize the potential for cross-contamination during monitoring/sampling activities completed for site investigations. Cross-contamination can occur when equipment used to monitor/sample contaminated soil, groundwater or sediment is reused at another monitoring/sampling location without cleaning. This can result in the transfer of contaminants from a “dirty” monitoring/sampling location to a “clean” monitoring/sampling location, causing possible positive bias of subsequent samples. Positive sample bias can result in reported analytical results that are not representative of actual site conditions and, if significant cross-contamination occurs, can result in reported exceedances of the applicable regulatory standards for samples that would have met the standards had cross-contamination not occurred.

Site investigations completed by Pinchin typically use the following non-dedicated monitoring/sampling equipment:

- Manually operated equipment (e.g., water level tapes/interface probes using during groundwater monitoring and sampling, knifes/spatulas used for soil sampling, hand augers);
- Pumps for groundwater monitoring well development, purging and/or sampling (e.g., bladder pumps, submersible pumps); and
- Downhole drilling/sampling equipment (e.g., split-spoon samplers, augers).

The above list is not all inclusive and other non-dedicated monitoring/sampling equipment may be employed during a site investigation that requires decontamination. For example, it may be appropriate to decontaminate the bucket of a backhoe used for test pitting between test pit locations. The Project Manager will be responsible for identifying the additional monitoring/sampling equipment that requires decontamination and instructing field staff regarding the procedure to be followed for cleaning this equipment.

When conducting field monitoring and sampling work in the field, it is not always possible to judge whether a monitoring/sampling location is uncontaminated. Because of this, it is important that all non-dedicated monitoring/sampling equipment be properly cleaned before initial use and between uses to minimize the potential for cross-contamination to occur.

4.0 DISTRIBUTION

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5.0 PROCEDURE

5.1 Equipment and Supplies

The following is a list of equipment needed to perform the decontamination of non-dedicated monitoring and sampling equipment in accordance with this SOP:

- Personal Protective Equipment (PPE);
- Potable tap water;

- Distilled water (store bought);
- Volatile organic compound (VOC)-free deionized distilled water (supplied by the analytical laboratory);
- Laboratory grade, phosphate-free soap;
- Wash buckets (minimum of three);
- Scrub brushes;
- Paper towels; and
- Buckets or drums with resealable lids for containing liquids generated by equipment cleaning.

Other equipment required to clean drilling equipment (e.g., steam cleaner, power washer, tub for containing wash water, etc.) is typically provided by the drilling subcontractor. The Project Manager is responsible for ensuring that the drilling subcontractor brings the required cleaning equipment to the project site. Prior to mobilization, the Project Manager should also assess the availability of a potable water supply for drilling equipment cleaning at the project site. When no accessible potable water supply is available at a project site, the drilling subcontractor will need to bring a potable water supply to the site in the drill rig water supply tank or separate support vehicle, or arrange to have a third-party supplier deliver potable water to the site.

5.2 Procedure

5.2.1 General Procedures and Considerations

The following general procedures and considerations apply to all decontamination of non-dedicated monitoring/sampling equipment activities:

- Personnel will dress in suitable PPE to reduce personal exposure during equipment decontamination activities;
- In addition to cleaning between monitoring/sampling locations, all non-dedicated monitoring/sampling equipment must be cleaned before initial use. Field staff should not assume that the equipment was properly cleaned by the last person to use it;
- Prior to starting a drilling program, the downhole drilling equipment (e.g., augers) must be inspected and any “dirty” equipment must not be used in the drilling program or it must be cleaned prior to use; and
- All liquids and solids generated by the cleaning of non-dedicated monitoring/sampling equipment are to be containerized and managed in accordance with the procedures outlined in SOP-EDR020 – Investigation Derived Wastes.

5.2.2 Decontamination of Manually Operated Monitoring/Sampling Equipment

The procedure for decontaminating manually operated monitoring/sampling equipment is as follows:

- Wash the equipment in a bucket filled with a mixture of phosphate-free soap/potable water, while using a brush to remove any obvious contamination and/or adhered soil;
- Rinse the equipment thoroughly in a bucket filled with potable water;
- Rinse the equipment thoroughly using a spray bottle filled with distilled water, capturing the rinsate in a bucket; and
- Allow the equipment to air dry. If there is insufficient time to allow the equipment to air dry before reusing, or the equipment cleaning is occurring during winter conditions, the equipment should be dried after the final rinse with a clean paper towel.

At the discretion of the Project Manager, it may be acceptable to use spray bottles, rather than buckets, for lightly contaminated equipment or if no obvious contaminants are present.

Should soil or obvious contaminants remain on the equipment after cleaning, the above procedure must be repeated until the soil or contaminants have been removed. The equipment should not be reused if repeated cleanings do not remove the soil or contaminants.

The above equipment cleaning procedure applies to, but is not limited to, the following non-dedicated monitoring/sampling equipment:

- Knives/spatulas used for soil sampling;
- Hand augers;
- Water level tapes and interface probes (both the end probe and portion of the tape that entered the well);
- The exterior of submersible pumps and interior/exterior of bladder pumps (including the portion of the electrical or retrieval cables that contact groundwater in a well); and
- Various pieces of drilling equipment, including split-spoon samplers, hollow stem auger centre plugs, continuous sampling tubes, and the reusable portions of dual-tube samplers.

At the discretion of the Project Manager, the distilled water used for the final equipment rinse will be VOC-free deionized distilled water supplied by the analytical laboratory. For example, the use of VOC-free distilled water would be appropriate for a project where trace VOCs are being investigated and it is important to minimize the potential for cross-contamination and positive bias of VOC sample results.

For tapes associated with water level tapes and interface probes, if they were submerged in a monitoring well water free of non-aqueous phase liquids or obvious contamination, the tape can be cleaned at the discretion of the Project Manager by pulling the tape through a towel dampened with phosphate-free soap/potable water as the tape is retrieved. The end probe should then be cleaned as described above.

5.2.3 Decontamination of Groundwater Sampling Pumps

The exterior of each bladder or submersible pump that is used for well development, well purging and/or groundwater sampling, and the portion of any electrical or retrieval cables that entered the well, are to be cleaned following the procedure described above for decontaminating manually operated monitoring/sampling equipment.

Submersible pumps are not designed to be disassembled in the field and cleaning of the interior of this type of pump requires flushing of cleaning solutions through the pump. After cleaning the exterior of the pump, the minimum decontamination requirement for a submersible pump is the flushing of a phosphate-free soap/potable water mixture contained in a bucket through the pump (i.e., pumping the mixture through the pump and capturing the pump outflow in the same bucket or a separate bucket), followed by flushing distilled water contained in a separate bucket through the pump and capturing the pump outflow in the same bucket or separate bucket. Note that store bought distilled water is acceptable for this purpose.

At the discretion of the Project Manager and depending on the requirements of the project, the final step in the process is a final flush with laboratory-supplied VOC-free distilled water.

The following summarizes the flushing sequence for decontaminating the interior of a submersible pump:

- Soap/water mixture*;
- Distilled water (store bought)*; and
- Distilled water (laboratory supplied VOC-free distilled water - to be confirmed by the Project Manager).

* Minimum requirement.

Bladder pumps are designed for disassembly in the field to facilitate the replacement of the bladders. The internal parts of a bladder pump are to be cleaned in accordance with the procedure described above for decontaminating manually operated monitoring/sampling equipment. Whenever possible, bladders are to be disposed of between well locations. However, if it is necessary to reuse a bladder, it must be cleaned in accordance with the procedure for cleaning manually operated monitoring/sampling equipment. It should be noted that bladders are difficult to clean and the decontamination procedure needs to be thorough.

Flushing of a bladder pump with distilled water after cleaning and reassembly is not required unless specified by the Project Manager.

5.2.4 Decontamination of Downhole Drilling Equipment

Hollow stem and solid stem augers used for borehole advancement are to be decontaminated by the drilling contractor using the following procedure:

- Wherever possible, all augers used for borehole drilling should be cleaned before initial use and between borehole locations by steam cleaning or power washing with potable water. However, the minimum requirements for auger cleaning are as follows:
  - Use a brush or shovel to remove excess soil from <u>all</u> used augers; and
  - Any augers that <u>may come into contact with groundwater</u> are to be decontaminated by steam cleaning or power washing with potable water. An auger must not be used for the balance of the drilling program if obvious contaminants or residual soil remain on the auger following decontamination, unless subsequent cleaning efforts remove these materials.

As noted previously, downhole drilling equipment used for soil sample retrieval (e.g., split-spoon samplers, continuous sampling tubes and the reusable portions of dual-tube samplers used with direct push rigs) and the hollow stem auger centre plug are to be decontaminated following the procedure outlined above for cleaning manually operated monitoring/sampling equipment.

5.3 Decontamination Records

Field personnel will be responsible for documenting the decontamination of non-dedicated monitoring/sampling equipment and drilling equipment in their field log book or field forms. The documentation should include the type of equipment cleaned and the frequency of cleaning, the methods and reagents used for equipment cleaning, and how fluids generated by the equipment cleaning were stored.

5.4 Additional Considerations for Ontario Regulation 153/04 Phase Two ESA Compliance

When completing a Phase Two Environmental Assessment (ESA) in accordance with Ontario Regulation 153/04, the following additional procedures must be undertaken:

- All augers must have excess soil removed by a brush or shovel and be steam cleaned or power washed before initial use and between borehole locations regardless of whether they contact the groundwater or not (i.e., the minimum requirements listed above for auger cleaning are not sufficient); and

- Thorough records of the frequency and cleaning materials used for the decontamination of non-dedicated monitoring/sampling equipment and downhole drilling must be kept. The Quality Assurance/Quality Control section of the Phase Two ESA report requires a summary of what steps were taken to minimize the potential for cross-contamination during the Phase Two ESA. The handling and disposal of fluids generated by equipment decontamination must also be well documented in the field for inclusion in the Phase Two ESA report.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

Association of Professional Geoscientists of Ontario, *Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended),* April 2011.

9.0 APPENDICES

None.

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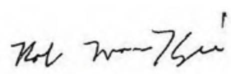
Template: Master SOP Template – February 2014

SOP – EDR013 – REV004 – SAMPLING HANDLING DOCUMENTATION

Title:	Sampling Handling Documentation
Practice:	EDR
First Effective Date:	August 03, 2009
Version:	004
Version Date:	April 28, 2017
Author:	Mark McCormack and Robert MacKenzie
Authorized by:	Robert MacKenzie
Signature:	

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1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	August 03, 2009	N/A	MEM
001	November 26, 2010	Updated Approval Signature/Added reference to Ontario Regulation 511/09	FG
002	September 12, 2013	Updated text/Added tables from MOE lab protocol/Streamlined reference section/Added O. Reg. 153/04 compliance section	RLM
003	April 29, 2016	Updated Section 4.0/Aligned document retention with PEP	RLM
004	April 28, 2017	Removed reference to Pinchin West	RLM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) presents the general requirements for sample handling and documentation practices.

3.0 OVERVIEW

Not applicable.

4.0 DISTRIBUTION

This is an on-line document. Paper copies are valid only on the day they are printed. Refer to the author if you are in any doubt about the accuracy of this document.

This SOP will be distributed to all Pinchin staff and others as follows:

- Posted to the SOP section of the Environmental Due Diligence and Remediation (EDR) Practice Line on the Pinchin Orchard; and
- Distributed to senior staff at Le Groupe Gesfor Poirier and Pinchin LeBlanc for distribution as appropriate.

5.0 PROCEDURE

5.1 Equipment Required

- Laboratory-supplied sample containers;
- Field log book or field forms; and
- Laboratory-supplied Chain-of-Custody forms.

5.2 Procedures

5.2.1 *Sample Labelling*

Sample labels are to be filled out in the field at the time of sampling as completely as possible by field personnel. All sample labels shall be filled out using waterproof ink. At a minimum, each label shall contain the following information:

- Sample identifier, consisting of sample location (borehole number, monitoring well number, surface sample location, etc.) and sample number (if appropriate). For example, the second soil sample collected during borehole advancement at borehole BH3 would be labelled "BH3-2";
- Pinchin project number;
- Date and time of sample collection;
- Company name (i.e., Pinchin); and
- Type of analysis.

5.2.2 *Sample Containers, Preservation and Holding Times*

The sample containers, sample preservation and holding times for projects in Ontario are to be those specified in Table A (for soil and sediment) and Table B (groundwater) from the Ontario Ministry of the Environment Climate Change (MOECC, formerly the Ontario Ministry of the Environment) document entitled *"Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act",* dated March 9, 2004, amended as of July 1, 2011. These tables are attached and form part of this SOP.

With reference to the attached Tables A and B, field personnel must use the sample containers appropriate for the parameters being sampled for, undertake any required field preservation or filtration and observe the sample holding times.

Each province has its own preservation and holding time regulations or guidance, which are generally similar. It is the Project Manager's responsibility to ensure that field staff are aware of, and can meet, the requirements in the province they are working in.

5.2.3 *Sample Documentation*

The following sections describe documentation required in the field notes and on the Chain-of-Custody forms.

Field Notes

Documentation of observations and data from the field will provide information on sample collection and also provide a permanent record of field activities. The observations and data will be recorded using a pen with permanent ink in the field log book or on field forms.

The information in the field book or field forms will, at a minimum, include the following:

- Site name;
- Name of field personnel;
- Sample location (borehole number, monitoring well number, surface sample location, etc.);
- Sample number;
- Date and time of sample collection;
- Sample containers used;
- Description of sample;
- Matrix sampled;
- Sample depth (if applicable);
- Method of field preservation (if applicable);
- Whether filtration was completed for water samples;
- Analysis requested;
- Field observations;
- Results of any field measurements (e.g., field screening measurements, depth to water, etc.); and
- Volumes purged (if applicable).

In addition to the above, other pertinent information is to be recorded in the field log book or field forms depending on the type of sampling being completed (e.g., field parameter measurements and pumping rates for low flow sampling) as required by the SOP for the particular sampling activity.

Sufficient information should be recorded to allow the sampling event to be reconstructed without relying on the sampler's memory.

All field notes are to be scanned and saved to the project folder on the server immediately upon returning from the field.

Sample Chain-of-Custody

Sample Chain-of-Custody maintains the traceability of the samples from the time they are collected until the analytical data are issued by the laboratory. Initial information concerning collection of the samples will be recorded in the field log book or field forms as described above. Information on the custody, transfer, handling and shipping of samples will be recorded on a Chain-of-Custody for each sample submission.

All signed Chain-of-Custody forms will be photocopied or duplicate copies retained prior to sample shipment. A Chain-of-Custody should be laboratory specific and will typically be supplied by the laboratory with the sample containers requested for the project. The sampler will be responsible for fully filling out the Chain-of-Custody for each sample submission.

The Chain-of-Custody will be signed by the sampler when the sampler relinquishes the samples to anyone else (i.e., courier or laboratory). Until samples are picked up by the courier or delivered to the laboratory, they must be stored in a secure area. The following information needs to be provided on the Chain-of-Custody at a minimum:

- Company name;
- Name, address, phone number, fax number and e-mail address of the main contact for the submission (typically the Project Manager);
- Project information (project number, site address, quotation number, rush turnaround number, etc.);
- Regulatory standards or criteria applicable to the samples (including whether the samples are for regulated drinking water or whether the samples are for a Record of Site Condition);
- Sample identifiers;
- Date and time of sample collection;
- Matrix (e.g., soil, groundwater, sediment, etc.);
- Field preservation information (e.g., whether groundwater samples for metals analysis were field filtered);
- Analyses required;
- Number of sample containers per sample;
- Analytical turnaround required (i.e., standard or rush turnaround);
- Sampler's name and signature;
- Date and time that custody of the samples was transferred;

- Name and signature of person accepting custody of the samples from Pinchin, and date and time of custody transfer; and
- Method of shipment (if applicable).

The person responsible for delivery of the samples to the laboratory or transfer to a courier will sign the Chain-of-Custody, retain a duplicate copy or photocopy of the Chain-of-Custody so it can be scanned and saved to the project file, document the method of shipment, and send the original copy of the Chain-of Custody with the samples.

5.3 Additional Considerations for Ontario Regulation. 153/04 Phase Two ESA Compliance

Custody seals must be placed on all coolers containing samples prior to transfer to a courier or delivery to the laboratory. The laboratory will comment on the presence/absence of custody seals in the Certificate-of-Analysis for each submission and this information must be discussed in the Quality Assurance/Quality Control section of the Phase Two Environmental Site Assessment report.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

Ontario Ministry of the Environment and Climate Change, *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*, March 9, 2004, as amended as of July 1, 2011.

9.0 APPENDICES

Appendix I Tables A and B From Ontario MOECC Laboratory Protocol

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Template: Master SOP Template – February 2014

APPENDIX I

Tables A and B From Ontario MOECC Laboratory Protocol

TABLE A: SOIL AND SEDIMENT Sample Handling and Storage Requirements

SOIL Inorganic Parameters	**Container**[1]	**Field Preservation**	**Storage Temp.**[2]	**Preserved Holding Time**[3]	**Unpreserved Holding Time**[3]
Chloride, electrical conductivity	glass, HDPE or PET	none	5 ± 3 °C		30 days as received (without lab drying); indefinite when dried at the lab
Cyanide (CN^-)	glass wide-mouth jar, Teflon™ lined lid	protect from light	5 ± 3 °C		14 days
Fraction organic carbon (FOC)	glass jar, Teflon™ lined lid	none	5 ± 3 °C		28 days as received(without lab drying); indefinite storage time when dried
Hexavalent chromium	glass, HDPE	none	5 ± 3 °C		30 days as received
Metals (includes hydride-forming metals, SAR, HWS boron, calcium, magnesium, sodium)	glass, HDPE	none	5 ± 3 °C		180 days as received (without lab drying); indefinite when dried at the lab
Mercury, methyl mercury	glass, HDPE or PET	none	5 ± 3 °C		28 days
pH	glass, HDPE or PET	none	5 ± 3 °C		30 days as received
SOIL Organic Parameters	**Container** [1,5,6,7,20]	**Field Preservation**	**Storage Temp.**[2]	**Preserved Holding Time**[3]	**Unpreserved Holding Time**[3]
BTEX[8], PHCs (F1)[8], THMs, VOCs[7] **NB: SEE FOOTNOTE #20**	40–60 mL glass vial (charged with methanol preservative, pre-weighed)[6]AND glass jar (for moisture content) [hermetic samplers are an acceptable alternative [5, 18]]	methanol (aqueous $NaHSO_4$ is an acceptable alternative for bromomethane)[6, 7, 18,20]	5 ± 3 °C	14 days	hermetic samples: stabilize with methanol preservative within 48 hours of sampling[18]
1,4-Dioxane[9, 15]	when processed as a VOC sample: same as per VOCs above; when processed as an extractable: same as per ABNs below; (consult laboratory)[9,15,18]		5 ± 3 °C	14 days	when processed as a VOC sample: same as per VOCs above; when processed as an extractable: same as per ABNs below; (consult laboratory)[18]
PHCs (F2–F4)	glass wide-mouth jar, Teflon™ lined lid	none	5 ± 3 °C		14 days
ABNs, CPs, OCs, PAHs	glass wide-mouth jar, Teflon™ lined lid	none	5 ± 3 °C		60 days
Dioxins and furans, PCBs	glass wide-mouth jar Teflon™ lined lid	none	5 ± 3 °C		indefinite storage time

HDPE = high density polyethylene; PET = polyethylene terephthalate; HWS = hot water soluble boron; THM = trihalomethanes; VOC = volatile organic compounds; BTEX = benzene, toluene, ethylbenzene, xylenes; PHCs = petroleum hydrocarbons; CPs = chlorophenols; PCBs = polychlorinated biphenyls; OCs = organochlorine pesticides

[1–20]footnotes immediately follow Table B

TABLE B: GROUND WATER Sample Handling and Storage Requirement

GROUND WATER Inorganic Parameters	Container[10]	Field Preservation	Storage Temperature[2]	Preserved Holding Time[3]	Unpreserved Holding Time[3]
Chloride, electrical conductivity, pH	HDPE or glass	none	5 ± 3 °C		28 days
Cyanide (CN^-)	HDPE or glass	NaOH to a pH > 12	5 ± 3 °C	14 days	must be field preserved
Hexavalent chromium	HDPE or glass	field filter followed by buffer solution to a pH 9.3–9.7 [17]	5 ± 3 °C	28 days[17]	24 hours[17]
Metals (includes hydride-forming metals, calcium, magnesium, sodium)	HDPE or Teflon™ [10]	field filter followed by HNO_3 to pH < 2[11]	room temperature when preserved	60 days	must be field preserved
Mercury	glass or Teflon™ [10]	field filter followed by HCl to pH < 2[11]	room temperature when preserved	28 days	must be field preserved
Methyl mercury	glass or Teflon™	DO NOT FILTER HCl or H_2SO_4 to pH <2[12]	5 ± 3 °C	28 days	DO NOT FILTER must be field preserved[12]
GROUND WATER Organic Parameters[10, 13, 14]	**Container[10, 13, 14]**	**Field Preservation**	**Storage Temperature[2]**	**Preserved Holding Time[3]**	**Unpreserved Holding Time[3]**
BTEX, PHCs (F1),THMs, VOCs;	40–60 mL glass vials (minimum of 2)[14] (no headspace)	$NaHSO_4$ or HCl to a pH < 2[16]	5 ± 3 °C	14 days	7 days
1,4-Dioxane[9, 15]	when processed as a VOC sample: same as per VOCs above; when processed as an extractable: same as per ABNs below; (consult laboratory)[9, 15]		5 ± 3 °C	14 days	14 days
PHCs (F2–F4)	1L amber glass bottle, Teflon™ lined lid	$NaHSO_4$ or HCl to a pH < 2[16]	5 ± 3 °C	40 days	7 days
ABNs, CP, OCs, PAHs[19], PCBs	1L amber glass bottle, Teflon™ lined lid	none	5 ± 3 °C		14 days
Dioxins and furans	1L amber glass bottle, Teflon™ lined lid	None	5 ± 3 °C		indefinite storage time

HDPE = high density polyethylene;THM = trihalomethanes; VOC = volatile organic compounds; BTEX = benzene, toluene, ethylbenzene, xylenes; PHCs = petroleum hydrocarbons; CPs = chlorophenols; PCBs = polychlorinated biphenyls; OCs = organochlorine pesticides

1 One soil container is generally sufficient for inorganic analysis and another for extractable organics. A separate container is required for BTEX, THM, VOC and PHC (F1) moisture analysis.

2 Storage temperature refers to storage at the laboratory. Samples should be cooled and transported as soon as possible after collection.

3 Holding time refers to the time delay between time of sample collection and time stabilization/analysis is initiated. For samples stabilized with methanol, the hold time for the recovered methanol extract is up to 40 days.

4 PET can not be used for samples requiring antimony analysis.

5 As an alternative, the USEPA has investigated hermetic sample devices that take and seal a single core sample. The sample is submitted as is to the laboratory where it is extruded into an extracting solvent. Samples must be received at the laboratory within 48 hours of sampling. (Note that replicate samples are necessary for bisulphate and methanol extraction for all samples plus laboratory duplicates and spikes.) Consult the laboratory for the number of samples required.

6 The USEPA has approved field preservation. Pre-weighed vials containing known weights of methanol preservative (or aqueous sodium bisulphate if used for bromomethane) are sent to the field. Sample cores (approximately 5 g) are extruded directly into the vial. The vials are sealed, and submitted directly to the laboratory. In practice, this technique requires great care to prevent losses of methanol due to leaking vials or through splashing. Consult the laboratory for the number of containers required.

7 Methanol-preserved samples may elevate the detection limit for bromomethane (VOC); a separate bisulphate-preserved sample or hermetically sealed sample may be submitted at the time of sampling if bromomethane is a chemical of concern – contact the laboratory to determine if a separate sample should be collected.

8 For BTEX and PHC (F1) pre-charging the soil sampling container with methanol preservative is an accepted deviation from the CCME method.

9 1,4-Dioxane may be analyzed with the ABNs or VOCs; sample container requirements used for ABNs or VOCs are both acceptable. If 1,4-dioxane is to be analyzed with ABNs, follow the ABN sample container requirements; similarly if it is to be analyzed with VOCs, follow VOC sample container requirements. Consult the laboratory for the container type and the total number required (see also footnote #15).

10 Samples containing visual sediment at the time of analysis should be documented and noted on the Certificate of Analysis or written report as results may be biased high due to the inclusion of sediment in the extraction.

11 Field filter with 0.45µm immediately prior to adding preservative or filling pre-charged container.

12 Sample directly into a HCl or H_2SO_4 preserved container, or add acid to an unfiltered sample immediately after sample collection in the field.

13 Aqueous organic samples should be protected from light. If amber bottles are not available, glass should be wrapped in foil.

14 Separate containers are required for each organic water analysis. Consult the laboratory for required volumes. Chloride and electrical conductivity can be taken from the same container.

15 For 1,4-dioxane in soil and sediment, no preservative is required if processed as an ABN, however. Methanol is an acceptable alternative if processed as a VOC. For 1,4-dioxane in groundwater, no preservative is required, however, $NaHSO_4$ or HCl are acceptable alternatives.

16 Preserved to reduce biodegradation, however effervescence/degassing may occur in some ground water samples. In this case, rinse preservative out three times with sample and submit to the laboratory as unpreserved.

17 To achieve the 28-day holding time, use the ammonium sulfate buffer solution [i.e., $(NH_4)_2SO_4/NH_4OH$] or $(NH_4)_2SO_4/NH_4OH/NaOH + NaOH$] as specified in EPA Method 218.6 (revision 3.3, 1994) or Standard Methods 3500-Cr Chromium (2009).Using only NaOH without the ammonium sulfate buffer to adjust the pH would require analysis within 24 hours of sampling.

18 Alternatively, to achieve a longer hold time, hermetic samples may be frozen within 48 hours of sampling as per ASTM method D6418 – 09; however, storage stability must be validated by the laboratory with no more than 10% losses.

19 For benzo(a)pyrene in ground water samples filtration prior to analysis on a duplicate sample is permitted.

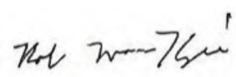
20 For VOC, BTEX, F1 PHCs, 1,4 dioxane soil samples collected before July 1, 2011, the following sampling and handling requirements are also permitted.

SOIL Organic Parameters	**Container**	**Preservative**	**Storage Temperature**	**Preserved Holding Time**	**Unpreserved Holding Time**
VOC, BTEX, F1 PHCs, 1,4-dioxane*	glass jar, Teflon lined lid, no headspace, separate container required Hermetic samplers are an acceptable alternative	none field preservation with aqueous sodium bisulphate and methanol is an acceptable alternative	5 ± 3C	See notations 1-3 below	Stabilize by extraction or freezing within 48 hrs of receipt at the laboratory (7days from sampling). Frozen or field preserved samples must be extracted within 14 days of sampling.

*Special care must be used when sampling for VOC, BTEX and F1 in soil and sediment. Studies have shown that substantial losses can occur through volatilization and bacterial degradation. There are several allowable options for field collection of samples. Each is discussed below. Consult SW846, Method 5035A for additional detail. The laboratory is required to stabilize the sample on the day of receipt, either by extraction or freezing.

1. Collection in soil containers: To minimize volatilization losses, minimize sample handling and mixing during the process of filling the sample container. The bottle should be filled with headspace and voids minimized. Care is required to ensure that no soil remains on the threads of the jar, preventing a tight seal and allowing volatilization losses. To minimize losses through bacterial degradation, commence cooling of the samples immediately and transport the samples to the lab as soon as possible, ideally on the day of sampling. Samples must be received at the laboratory within 48 hours of sampling. Freezing can be used to extend the hold time to 14 days, however the practice is difficult to implement in the field and can cause sample breakage.
2. As an alternative, the USEPA has investigated hermetic sample devices that take and seal a single core sample. The sampler is submitted as is to the laboratory where it is extruded into the extracting solvent. Samples must be received at the laboratory within 48 hours of sampling. This technique minimizes volatilization losses and is worth consideration for critical sites. (Note that replicate samplers are necessary for bisulphate and methanol extraction for all samples plus lab duplicates and spikes). Consult the laboratory for the number of samplers required.
3 The USEPA has also approved field preservation. Pre-weighed vials containing known weights of methanol and aqueous sodium bisulphate preservative are sent to the field. Sample cores (≈5 g) are extruded directly into the vial. The vials are sealed, and submitted directly to the laboratory. In practice, this technique requires great care to implement successfully. Losses due to leaking vials, through splashing and effervescence (aqueous bisulphate) can easily occur and make the sample unusable. Consult the laboratory for the number of containers required.

SOP – EDR016 – REV003 – FIELD MEASUREMENT OF WATER QUALITY PARAMETERS

Title:	Field Measurement of Water Quality Parameters
Practice:	EDR
First Effective Date:	November 24, 2010
Version:	003
Version Date:	April 28, 2017
Author:	Paresh Patel
Authorized by:	Robert MacKenzie
Signature:	

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MEMBER OF THE PINCHIN GROUP

1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	November 24, 2010	N/A	PDP
001	October 31, 2013	Cross-referenced low flow sampling SOP/Added section on O. Reg. 153/04 compliance	RLM
002	April 29, 2016	Updated Section 4.0	RLM
003	April 28, 2017	Removed reference to Pinchin West	RLM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) defines the standard procedures for measuring water quality parameters during water sampling, and covers the calibration and use of multi-parameter and single-parameter probes for monitoring in situ water quality parameters in streams, down hole in monitoring wells and in flow-through cells. Water quality parameters may include temperature, pH, dissolved oxygen (DO), oxidation reduction potential (ORP), conductivity and turbidity.

Measurements of water quality parameters are typically made for two main purposes: to provide information on water geochemistry to assist in designing in situ remediation programs and to assess whether representative formation groundwater is being sampled during low flow purging and sampling. They can also be used to assess whether well development is complete in certain situations (see SOP-EDR018).

3.0 OVERVIEW

Not applicable.

4.0 DISTRIBUTION

This is an on-line document. Paper copies are valid only on the day they are printed. Refer to the author if you are in any doubt about the accuracy of this document.

This SOP will be distributed to all Pinchin staff and others as follows:

- Posted to the SOP section of the Environmental Due Diligence and Remediation (EDR) Practice Line on the Pinchin Orchard; and
- Distributed to senior staff at Le Groupe Gesfor Poirier and Pinchin LeBlanc for distribution as appropriate.

5.0 PROCEDURE

5.1 Equipment and Reagents Required

- Single or multi-parameter probes for monitoring water quality parameters;
- Calibration solutions for calibrating the probes to the standard values;
- Field book or field forms;
- Distilled water;
- Beaker or bucket;
- Stirrer for DO measurement (optional); and
- Flow-through cell (optional).

5.2 Probe Measurement Accuracy

The probes utilized for measuring water quality parameters shall be capable of producing measurement accuracy greater or equal to the following specifications:

Temperature:	± 0.5 degrees Celsius (ºC)
Conductivity:	± 1 microSiemens per centimetre (µS/cm)
pH:	±0.1 pH unit
Dissolved Oxygen:	±0.2 milligrams per litre (mg/L) up to20 mg/L
	± 0.6 mg/L greater than 20 mg/L
Turbidity:	±1% up to 100 Nephelometric Turbidity Units (NTU)
	±3% up to 100-400 NTU
	±5% up to 400-3,000 NTU
ORP:	± 20 millivolts (mV)

5.3 Probe Calibration

Calibrate the water quality probes used for field parameter measurement in accordance with the manufacturer's specifications. Wherever possible, arrange for the equipment rental company to calibrate the water quality probes and provide a calibration sheet that contains information such as calibration date and calibration measurements for each parameter. If the water quality probes are used for more than one day, a calibration check shall be performed using standard calibration solutions at the start of each day at a minimum. If the calibration check shows deviations from the standard values that exceed the ranges provided below, the probe(s) that exceed the ranges shall be calibrated prior to further use:

pH	±0.1 pH units
Specific Conductance	±3%
Temperature	±3%

DO	±10%
ORP	±10 mV
Turbidity	±10%

A calibration check should also be performed if the parameter measurements suggest that calibration drift has occurred. Document all calibration activities in the field notes, including date and time of calibration/calibration check, calibration solutions used, probe readings, and make, model and serial number of the instrument(s). Note that if the water quality probe manufacturer recommends more frequent calibration/calibration checks than specified above, the manufacturer's recommendations are to be followed.

Extra care must be taken to calibrate a multi-parameter probe to prevent cross-contamination. Specifically, following immersion of the probes into each calibration standard, all probes should be thoroughly rinsed in distilled water and the excess water shaken off or blotted dry with a lint-free wipe. Conductivity standards are much more sensitive to cross contamination/dilution than other standards, and prior to immersion in a conductivity standard, all probes should be thoroughly rinsed and completely dried with lint-free wipes. Besides being easily diluted, conductivity also affects other parameters (specifically DO), and the conductivity probe should always be the first probe calibrated. The following order for calibration of a multi-parameter probe is to be followed:

1. Specific Conductance;
2. pH;
3. DO; and
4. Turbidity.

There is no recommended order for calibration of other parameters.

5.4 Single-Parameter Probes

Prior to conducting field measurements, probe sensors must be allowed to equilibrate to the temperature of the water being monitored. Probe sensors have equilibrated adequately when the temperature reading has stabilized. Deployment of single-parameter probes will follow the following procedures:

5.4.1 Temperature

Whenever possible the temperature shall be measured in situ (i.e., within a stream, direct deployment in a monitoring well). When temperature cannot be measured in situ, it can be measured in a beaker or bucket. The following conditions must be met when measuring temperature within a beaker or bucket:

- The beaker or bucket shall be large enough to allow full immersion of the temperature probe. The beaker or bucket is to be rinsed with water from the well or stream being measured prior to obtaining the measurement;

- The probe must be placed in the beaker or bucket immediately before the temperature changes due to ambient conditions;
- The beaker or bucket must be shaded from direct sunlight and strong breezes before and during temperature measurement; and
- The probe must be allowed to equilibrate for at least 1 minute before temperature is recorded.

5.4.2 pH

Preferably, pH is measured in situ at the centroid of flow and at the mid-depth of a stream, or the mid-point of the well screen in a well. The pH probe must be allowed to equilibrate according to the manufacturer's recommendations before the pH value is recorded without removing the probe from the water.

If the pH cannot be measured in situ, it should be measured in a bucket or beaker using the procedures outlined above for measuring temperature.

5.4.3 Dissolved Oxygen

As for pH, it is preferable to measure DO in situ at the centroid of flow and at the mid-depth of a stream, or the mid-point of the well screen in a well. The DO probe must be allowed to equilibrate according to manufacturer's recommendations before the DO value is recorded without removing the probe from the water.

If DO cannot be measured in situ, it should be measured in a bucket or beaker using the procedures outlined above for measuring temperature.

Some types of DO probes require a sufficient flow of fresh water across the membrane to maintain the accuracy and precision of the DO measurement. When taking DO measurements in a bucket or beaker, either employ a stirrer, or physically move the probe in a gentle motion. Moving the probe in a gentle motion should also be completed when measuring DO in situ down hole in a monitoring well.

5.4.4 ORP

ORP shall be measured using the procedures outlined above for measuring pH. Note that changes in temperature directly affect ORP values and ORP should be measured as soon as possible after the probe has stabilized.

5.4.5 Turbidity

In situ turbidity shall be measured using the procedures outlined above for measuring pH.

If turbidity cannot be measured in situ, it can be measured with a probe in a bucket or beaker using the procedures outlined above for measuring temperature. Note that some turbidity measuring instruments do not use a probe, and a sample of the water is collected in a small vial that is inserted into the instrument which then measures the turbidity of the water.

5.4.6 Multi-Parameter Probe Use With A Flow-Through Cell

A multi-parameter probe and a flow-through cell are typically employed when undertaking low flow purging and sampling of groundwater. SOP-EDR023 describes the procedures to be followed when using a multi-parameter probe and a flow-through cell.

5.5 Additional Considerations for Ontario Regulation 153/04 Phase Two ESA Compliance

When completing a Phase Two Environmental Assessment (ESA) in accordance with Ontario Regulation 153/04, the following additional procedures must be undertaken:

- Thorough records of the calibration and calibration checks of the probes/instruments used for water quality parameter measurement must be kept, including any calibration sheets provided by the equipment supplier. The Quality Assurance/Quality Control section of the Phase Two ESA report requires a discussion of field equipment calibration, and equipment calibration records must be appended to the Phase Two ESA report; and
- If groundwater samples collected for a Phase Two ESA are not collected using low flow purging and sampling, which mandates the measurement of water quality parameters, water quality parameters must be measured (pH, temperature and specific conductance at a minimum) and the measurements included in the Phase Two ESA report. Ontario Regulation 153/04 does not provide specifics as to when or how these water quality parameter measurements are to be made but one set of measurements made at the conclusion of purging prior to sampling is the minimum requirement. These measurements can be made by filling a clean bucket or beaker with purge water and immersing the probes in the purge.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

New Jersey Department of Environmental Protection, *Field Sampling Procedures Manual,* August 2005.

Commonwealth of Kentucky – Department of Environmental Protection, *Standard Operating Procedure – In Situ Water Quality Measurements and Meter Calibration,* January 1, 2009.

U.S Environmental Protection Agency – Science and Ecosystem Support Division, Athens, Georgia, *In Situ Water Quality Monitoring,* December 7, 2009.

U.S. Geological Survey, *National Field Manual for the Collection of Water-Quality Data: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 9, Chapters A1-A9,* Various dates.

9.0 APPENDICES

None.

I:\2017 SOP Updates\SOP - EDR016 - REV003 - Field Measurement of Water Quality Parameters.docx

Template: Master SOP Template – February 2014

PINCHIN

SOP – EDR017 – REV005 – MONITORING WELL DEVELOPMENT

Title:	Monitoring Well Development
Practice:	EDR
First Effective Date:	November 23, 2010
Version:	005
Version Date:	April 28, 2017
Author:	Paresh Patel and Robert MacKenzie
Authorized by:	Robert MacKenzie
Signature:	

TABLE OF CONTENTS

1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	November 23, 2010	N/A	PDP
001	June 15, 2013	Streamlined background section/Focused procedure on tasks that can be completed by Pinchin personnel/Provided step-by-step summary of field procedure	RLM
002	January 22, 2015	Incorporated procedures specific to Pinchin West into SOP	RLM
003	February 9, 2016	Revised overall procedure to include initial determination of well yield/Added reference to revised well development field forms/Provided guidance on assessing field parameter stabilization when developing wells where water or air were used during drilling	RLM
004	April 29, 2016	Updated Section 4.0	RLM
005	April 28, 2017	Removed references to Pinchin West	RLM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) describes the standard procedures for groundwater monitoring well development and provides a description of the equipment required and field methods.

All groundwater monitoring wells are to be developed following installation prior to groundwater sampling or the completion of hydraulic conductivity testing. In addition, previously installed groundwater monitoring wells that have not been purged in over one year should be redeveloped prior to additional sampling or hydraulic conductivity testing if there is evidence of sediment impacting the monitoring well (e.g., the depth to bottom of well measurement indicates sediment accumulation) or at the discretion of the Project Manager.

This SOP pertains to monitoring well development that can be undertaken by Pinchin personnel. Monitoring well development completed by drilling rigs is beyond the scope of this SOP.

3.0 OVERVIEW

The main objective of groundwater monitoring well development is to ensure that groundwater sampled from a well is representative of the groundwater in the formation adjacent to the well and that hydraulic conductivity testing provides data representative of the hydraulic characteristics of the adjacent formation.

The specific goals of well development include the following:

- Rectifying the clogging or smearing of formation materials that may have occurred during drilling of the borehole;
- Retrieving lost drilling fluids;
- Improving well efficiency (i.e., the hydraulic connection between the sand pack and the formation);
- Restoring groundwater properties that may have been altered during the drilling process (e.g., volatilization of volatile parameters due to frictional heating during auger advancement or use of air rotary drilling methods); and
- Grading the filter pack to effectively trap fine particles that may otherwise interfere with water quality analysis.

Monitoring well development should not be completed until at least 24 hours have elapsed following monitoring well installation to permit enough time for the well seal to set up and for the water level in the monitoring well to stabilize. Any deviation from this procedure must be approved by the Project Manager before proceeding.

4.0 DISTRIBUTION

This is an on-line document. Paper copies are valid only on the day they are printed. Refer to the author if you are in any doubt about the accuracy of this document.

This SOP will be distributed to all Pinchin staff and others as follows:

- Posted to the SOP section of the Environmental Due Diligence and Remediation (EDR) Practice Line on the Pinchin Orchard; and
- Distributed to senior staff at Le Groupe Gesfor Poirier and Pinchin LeBlanc for distribution as appropriate.

5.0 PROCEDURE

5.1 Equipment and Supplies

- Inertial pump (e.g., Waterra tubing and foot valve);
- Surge block for use with an inertial pump (Optional);
- Submersible pump (including pump controller and power supply) (Optional);

- Disposable bailer (Optional);
- Graduated pail (to contain purge water and permit the volume of groundwater purged to be tracked);
- Pails or drums for purge water storage prior to disposal;
- Well keys (if wells are locked);
- Tools to open monitoring well (T-bar, socket set, Allen keys, etc.);
- Interface probe;
- Equipment cleaning supplies (see SOP-EDR009);
- Field parameter measurement equipment (see SOP-EDR016) (Optional);
- Disposable nitrile gloves; and
- Field forms.

Pinchin typically employs inertial pumps or bailers for well development because they can be dedicated to each well. However, the use of submersible pumps is a viable alternative for developing deep wells with high well volumes at the discretion of the Project Manager.

5.2 Procedures

The well development procedures employed will be determined by the hydraulic conductivity of the formation in which the groundwater monitoring well is installed. For this SOP, a high yield well is defined as a well that cannot be purged to dryness when pumping continuously at a rate of up to 2 litres per minute (L/min) and a low yield well is defined as a well that can be purged to dryness when pumping continuously at a rate of up to 2 L/min or less. This threshold represents a "normal" pumping rate when hand pumping with an inertial pump.

The initial stage of well development (Stage 1) will apply to all wells and will involve the removal of up to one well volume, followed by an evaluation of the well yield. The procedures followed for Stage 2 of well development will be contingent on whether the well is determined to be a low yield or high yield well.

5.2.1 Well Development for Low and High Yield Wells - Stage 1

The initial procedure for developing a low yield or high yield monitoring well is as follows:

1. Decontaminate all non-dedicated monitoring and pumping equipment that will be used, including the interface probe and submersible pump (if used), in accordance with the procedures described in SOP-EDR009;
2. Review the well construction details provided in the borehole log, previous field notes or well construction summary table from a previous report. Determine the well depth, well stick up, screen length, depth to the top of the sand pack and diameter of the borehole annulus. If the well depth is unavailable, measure it with the interface probe;

3. Measure the initial water level (i.e., static water level) from the reference point on the well (which should be marked at the top of the well pipe) with an interface probe. If measurable free-phase product is present on the water table, record the depth to the top of the free-phase product and the depth to the free-phase product/water boundary (i.e., water level), and discuss this with the Project Manager before proceeding further;

4. Calculate the well volume. **Note that for the purpose of this SOP, there are two definitions of well volume depending on the province in which the project is being conducted.** For Ontario and Manitoba, the well volume is defined as the volume of water within the wetted length of the well pipe (well pipe volume) plus the volume of water within the wetted length of the sand pack (sand pack volume). For British Columbia, Alberta and Saskatchewan, the well volume is defined as the volume of water within the wetted length of the well pipe (well pipe volume) only.

   The volume of water in the well pipe is calculated as follows:

   Well Pipe Volume (litres) = $h_w \times \pi r_w^2 \times 1{,}000$ litres per cubic metre (L/m^3)

   Where $\pi = 3.14$

   h_w = the height of the water column in the monitoring well in metres (wetted length)

   r_w = the radius of the monitoring well in metres (i.e., half the interior diameter of the well)

   The volume of the sand pack in the monitoring well is calculated as follows:

   Sand Pack Volume (litres) = $h_w \times [(0.3\ \pi\ r_b^2 \times 1{,}000\ L/m^3) - (0.3\ \pi\ r_w^2 \times 1{,}000\ L/m^3)]$

   Where 0.3 = the assumed porosity of the sand pack

   h_w = the height of the water column in the monitoring well in metres (wetted length)

   $\pi = 3.14$

   r_b = the radius of the borehole annulus in metres

   r_w = the radius of the monitoring well in metres

   For Ontario and Manitoba projects, the following table provides well volumes in litres/metre for typical well installations:

Borehole Annulus Diameter (Inches/Metres)	Well Interior Diameter (Inches)	Well Pipe Volume (Litres/Metre)*	Well Volume (Litres/Metre)*
4/0.1	1.25	0.8	2.9
	1.5	1.1	3.2
	2	2.0	3.8
6/0.15	1.25	0.8	5.9
	1.5	1.1	6.1
	2	2.0	6.7
8.25/0.21	1.5	1.1	11.2
	2	2.0	11.8
10.25/0.26	1.5	1.1	16.7
	2	2.0	17.3

* Litres to be removed per metre of standing water in the well (wetted length).

If the borehole annulus and well interior diameters match one of those listed above, to determine the volume of one well volume simply multiply the number in the last column of the table by the wetted length in the well. For example, if a 2-inch diameter well installed in a 8.25-inch diameter borehole has 2.2 metres of standing water, one well volume equals 26.0 litres (2.2 metres x 11.8 litres/metre).

Note that the above well volume calculations apply only to wells where the water level in the well is below the top of the sand pack. If the water level is above the top of the sand pack, then the well volume is the volume of water in the sand pack and well within the sand pack interval, plus the volume of water in the well pipe (i.e., well pipe volume) above the top of the sand pack.

For example, assume a 2-inch diameter well has been installed in a 8.25-inch diameter borehole to a depth of 6.0 metres below ground surface (mbgs), with a 3.05 metre long screen. The sand pack extends from 6.0 mbgs to 2.5 mbgs and the water level is at 1.85 mbgs. One well volume equals ([6.0 metres – 2.5 metres] x 11.8 litres/metre) + ([2.5 metres – 1.85 metres] x 2.0 litres/metre) or 42.6 litres.

For British Columbia, Alberta and Saskatchewan projects, the well volume is calculated using the conversion factor listed in the third column of the above table. For example, if there are 2.5 metres of standing water in a 1.5-inch diameter well, one well volume equals 2.75 litres (2.5 metres x 1.1 litres/metre);

5. Lower the pump into the well until the pump intake is approximately 0.3 metres above the bottom of the well. Remove half a well volume while pumping at a rate of approximately 1 to 2 L/min. Measure the depth to water after the half a well volume is removed. Record the approximate purge volume, pump intake depth and any pertinent visual/olfactory observations (e.g., sheen, odour, free-phase product, sediment content, clarity, colour, etc.); and
6. Move the pump intake upward to the middle of the water column (or middle of the screened interval if the static water level in the well is above the top of the screen). Remove half a well volume (for a cumulative total of 1 well volume) or purge until dry while pumping at a rate of approximately 1 to 2 L/min, whichever occurs first. Measure the depth to water after the half a well volume is removed unless dry. Record the approximate purge volume, pump intake depth and any pertinent visual/olfactory observations. Note that if suction is broken (indicating that drawdown to the pump intake depth has occurred), move the pump intake to the bottom of the well and continue purging.

After completing Step 6, review the water level data to assess whether the well is a low yield or high yield well. If the well is purged dry or close to dryness, or significant drawdown has occurred, then the well is a low yield well. If little or no drawdown has occurred then the well is a high yield well. Some judgement will be required by field personnel when classifying the well yield if moderate drawdown has occurred during removal of the first well volume.

5.2.2 Well Development for High Yield Wells - Stage 2

The procedure for the second stage of developing a high yield monitoring well is as follows:

1. Move the pump intake upward to near the top of the screened interval (or near the top of the water column if the water level is currently below the top of the screen). Remove half a well volume (for a cumulative total of 1.5 well volumes) while pumping at the maximum practical rate that is greater than 2 L/min. Record the approximate purge volume, pump intake depth and any pertinent visual/olfactory observations (e.g., sheen, odour, free-phase product, sediment content, clarity, colour, etc.);

2. Note that if the wetted length is short within a well (e.g., 1.5 metres or less), there will not be enough separation between pump intake depths to warrant pumping from three depths (i.e., near the bottom, middle and top of the water column). In this case, pumping from two depths (i.e., near the bottom and top of the water column) is sufficient;
3. Lower the pump intake until it is approximately 0.3 metres above the bottom of the well. Remove half a well volume (for a cumulative total of 2 well volumes) while pumping at the maximum practical rate that is greater than 2 L/min. Record the approximate purge volume, pump intake depth and any pertinent visual/olfactory observations;
4. Move the pump intake upward to the middle of the water column (or middle of the screened interval if the water level in the well is above the top of the screen). Remove half a well volume (for a cumulative total of 2.5 well volumes) while pumping at the maximum practical rate that is greater than 2 L/min. Record the approximate purge volume, pump intake depth and any pertinent visual/olfactory observations;
5. Move the pump intake upward to near the top of the screened interval (or near the top of the water column if the water level is currently below the top of the screen). Remove half a well volume (for a cumulative total of 3 well volumes) while pumping at the maximum practical rate that is greater than 2 L/min. Record the approximate purge volume, pump intake depth and any pertinent visual/olfactory observations;
6. If the purge water contains high sediment content after the removal of 3 well volumes, well development should continue by removing additional well volumes following the same procedure as above until the sediment content visibly decreases. If the purge water continues to have high sediment content after the removal of 2 additional well volumes (i.e., 5 well volumes in total), contact the Project Manager to discuss whether well development should continue. A cap of 10 well volumes removed is considered sufficient for high yield well development regardless of sediment content; and
7. Record the water level at the conclusion of well development.

Note that at the discretion of the Project Manager, when developing a monitoring well using an inertial pump, a surge block can be attached to the foot valve before completing Step 1 (i.e., the first time groundwater is pumped from near the top of the screened interval or water column) and then leaving it on the foot valve for the remainder of well development. A surge block is used to increase the turbulence created by pumping and enhance the removal of fine-grained material from the sand pack.

Note that the use of a bailer to develop a high yield well with a wetted interval greater than 2 metres is not recommended given that the depth from which groundwater is removed is difficult to control. However, a bailer can be used as a substitute for a surge block by raising and lowering it through the screened interval for approximately 5 to 10 minutes before the start of Step 1.

5.2.3 Well Development for Low Yield Wells - Stage 2

The procedure for the second stage of developing a low yield monitoring well is as follows:

1. Position the pump intake at the bottom of the well and purge the well to dryness if it was not purged to dryness during completion of Stage 1 at the maximum practical rate that is greater than 2 L/min. Allow sufficient time for the well to recover to at least 90% of the initial static water level or allow the well to recover for a period of time designated by the Project Manager; and
2. Repeat Step 1 until the well has been purged to dryness a minimum of 3 times. An exception to this is that if recovery is slow, especially if sediment content is low, repeat purging (i.e., purging the well to dryness more than once) may not be necessary and the need for additional purging is to be discussed with the Project Manager. If the purge water contains high sediment content after purging to dryness 3 times, well development should continue by purging the well to dryness until the sediment content visibly decreases. If the purge water continues to have high sediment content after purging the well to dryness 2 additional times (i.e., purging the well to dryness 5 times in total), contact the Project Manager to discuss whether well development should continue. A cap of purging a well to dryness 10 times is considered sufficient for low yield well development regardless of sediment content.

As per the procedure for high yield well development, a surge block can be attached to the foot valve to increase the effectiveness of the pumping action. If a surge block is used, pumping should commence at the top of the water column in the well (instead of near the bottom of the well as described above) with the pump intake progressively lowered as the water level in the well decreases.

Note that bailers can be used in lieu of an inertial pump for the development of a low yield well. The turbulence created in a well by the act of dropping a bailer into it and then removing it full of groundwater can be effective in removing fine-grained material from the sand pack. If a bailer is left in a well, it should be "hung" above the water table to facilitate future water level monitoring.

5.2.4 Removal of Water Lost During Well Installation

When water has been used during well installation (e.g., for bedrock coring, to control heaving sands), the total volume of water required to be purged from a well during development will be equal to 3 times the estimated volume of water lost during drilling plus the volume of water that would normally be removed during well development.

For example, for a high yield well where 25 litres of water were lost during drilling and the well volume is 10 litres, the minimum amount of water to be purged during development is 105 litres (i.e., 3 times the volume of water lost during drilling [75 litres] plus a minimum of 3 well volumes [30 litres]).

For a low yield well, the well will need to be purged to dryness enough times to remove a volume equivalent to 3 times the volume of water lost during drilling plus the volume of water that would normally be removed during well development.

As an alternative to removing 3 times the volume of water lost during drilling, field parameter stabilization during well development can be used to assess whether sufficient water has been removed. For example, the conductivity of drill water (which is usually tap water) is typically much lower than groundwater, and conductivity measurements can act as a guide during development as to whether the water being removed is formation groundwater or drill water.

For assessing field parameter stability when developing a high yield well, field parameter measurements of pH, conductivity, temperature and oxidation-reduction potential are to be made after every half well volume is removed and stability is considered achieved if the field parameters are all within ±10% over 3 consecutive readings. Note that a minimum of 3 well volumes must be removed even if field parameter stabilization is achieved prior to the removal of 3 well volumes to comply with the minimum well purging requirements of this SOP (i.e., removal of a minimum of 3 well volumes from a high yield well).

For assessing field parameter stability when developing a low yield well, field parameter measurements of pH, conductivity, temperature and oxidation-reduction potential are to be made once each time a well is purged to dryness, approximately halfway through purging. For example, if based on the current water level it is estimated that 10 litres will be removed before a well is purged to dryness, the field parameters are to be measured after 5 litres have been removed. Stability is considered achieved if the field parameters are all within ±10% over 3 consecutive readings. After stabilization is achieved, continue to purge the well to dryness a final time at which point development is complete.

A second alternative would be to allow sufficient time for the drill water to dissipate into the formation. The appropriate amount of time will depend on the amount of water lost to the formation and the formation characteristics, but will be a minimum of one week. A Senior Project Manager or Senior Technical Reviewer will be responsible for determining the suitability of this approach and the required length of time. At the discretion of the Senior Project Manager or Senior Technical Reviewer, field parameter measurements may be made during pre-sampling purging to assess whether the drill water has dissipated by the time of sampling.

Note that it can be difficult to estimate the amount of water lost during drilling. If the driller's water tank is accessible, measure the water levels in the water tank before and after drilling the well and then estimate the volume of water used during drilling using the water tank dimensions and subtract this volume from the volume of water recovered at the end of drilling from this volume to estimate the volume of water lost. If this is not possible, ask the driller to estimate the approximate volume of water lost during drilling.

For some well installations, determining even an approximate volume of water lost during drilling is not possible. In this situation, field parameter stabilization should be used as a guide in deciding how much water to remove during well development.

5.2.5 Development of Monitoring Wells Installed Using Air Rotary Drilling Methods

When developing a monitoring well installed using an air rotary drilling procedure, field parameter stabilization <u>must</u> be used to assess whether sufficient water has been removed and the field parameters measured must include dissolved oxygen. This is particularly important when the contaminants of concern at a site include volatile organic compounds (VOCs) as the use of compressed air during the drilling process can result in sparging of VOCs from the groundwater, resulting in groundwater samples that are biased low with respect to VOC concentrations.

The well development procedure is the same as described in Section 5.2.4, except that the field parameters measured are to include pH, conductivity, temperature, oxidation-reduction potential and dissolved oxygen. The criterion for determining field parameter stabilization for dissolved oxygen is ±10% over 3 consecutive readings or 3 consecutive readings with concentrations less than 0.5 milligrams per litre.

5.2.6 Assessing Field Parameter Stabilization

When determining whether field parameter stabilization has occurred over 3 consecutive readings (except for dissolved oxygen), the following procedure is to be followed:

1. For each parameter, use the first of the 3 readings and calculate 10% of this reading; and
2. The range that the next 2 readings must be within ± 10% of the first reading.

For example, if the temperature of the first of 3 consecutive readings is 10º C, the next 2 readings must fall between 9 and 11 º C for temperature to be considered stable.

5.3 Well Development Record

Well development is to be documented through the completion in full of the following field forms located in the Pinchin Orchard:

- EDR-GW-Well Development-S1-Low/High Yield Well (completed for Stage 1 for both low and high yield wells);

- EDR-GW-Well Development-S2-Low Yield Well (completed for Stage 2 for low yield wells); and/or
- EDR-GW-Well Development-S2-High Yield Well (completed for Stage 2 for high yield wells).

Any deviations from this SOP along with the rationale for these deviations must be recorded on the EDR-GW-Well Development-S1-Low/High Yield Well form.

5.4 Additional Considerations for O. Reg. 153/04 Phase Two ESA Compliance

When developing a low yield well, the well must be purged to dryness a minimum of 3 times regardless of the recovery time unless reduced purging is authorized by the Qualified Person responsible for the Phase Two ESA.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

Association of Professional Geoscientists of Ontario, "*Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended)",* April 2011.

9.0 APPENDICES

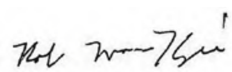
None.

I:\2017 SOP Updates\SOP - EDR017 - REV005 - Well Development.docx

Template: Master SOP Template – February 2014

PINCHIN

SOP – EDR019 – REV003 – SOIL SAMPLE LOGGING

Title:	Soil Sample Logging
Practice:	EDR
First Effective Date:	August 03, 2013
Version:	003
Version Date:	April 28, 2017
Author:	Francesco Gagliardi and Robert MacKenzie
Authorized by:	Robert MacKenzie
Signature:	

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1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	November 26, 2010	N/A	FG
001	October 31, 2013	Streamlined SOP to focus only on soil sample logging/Added O. Reg. 153/04 compliance section	RLM
002	April 29, 2016	Updated Section 4.0	RLM
003	April 28, 2017	Removed reference to Pinchin West	RLM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) presents the methods used to describe the physical characteristics of soil samples collected during site investigations.

The methods and equipment used for retrieving soil samples are provided in other SOPs (e.g., SOP-EDR007 – Borehole Drilling) and will not be repeated herein.

3.0 OVERVIEW

Not applicable.

4.0 DISTRIBUTION

This is an on-line document. Paper copies are valid only on the day they are printed. Refer to the author if you are in any doubt about the accuracy of this document.

This SOP will be distributed to all Pinchin staff and others as follows:

- Posted to the SOP section of the Environmental Due Diligence and Remediation (EDR) Practice Line on the Pinchin Orchard; and
- Distributed to senior staff at Le Groupe Gesfor Poirier and Pinchin LeBlanc for distribution as appropriate.

5.0 PROCEDURE

5.1 General Procedures

For each soil sample collected during a site investigation, the following information is to be recorded in the field log book or field forms in the order presented below:

- Depth;
- Primary soil texture;

- Colour;
- Minor constituents*;
- Noticeable odours;
- Noticeable staining;
- Noticeable free-phase product/sheen*; and
- Moisture content.

*These constituents only need to be noted if they are actually present in the sample.

5.1.1 Primary Soil Texture

The primary soil texture should be determined using the attached flow chart as a guide to help classify the soil.

5.1.2 Colour

Describe the primary colour of the soil sample (e.g., brown, grey, black, green, white, yellow, red). The relative lightness or darkness of the primary colour can be described using the adjectives “light” or “dark” as appropriate. Soil that exhibits different shades or tints is to be described by using two colours (e.g., brown-grey). If the soil sample contains spots of a different colour, this is to be described as “mottling” (e.g., grey with green mottling).

5.1.3 Minor Constituents

Note the presence of minor constituents in the soil that are “natural” materials (e.g., gravel, cobbles, sand, oxidation, etc.) or “man-made” materials (e.g., asphalt, brick, concrete, coal or glass fragments, coal ash, etc.). Gravel comprises particles between 5 millimetres (mm) and 75 mm in diameter. Cobbles comprise particles greater than 75 mm in diameter.

When the percentage of the minor constituents in the soil is between approximately 0 and 10%, the adjective used to describe the relative amount of the minor constituent is “trace” (e.g., silty sand with trace brick fragments).

When the percentage of minor constituents of soil is between approximately 10 and 30%, the adjective used to describe the relative amount of the minor constituent is “some” (e.g., silty sand with some concrete fragments).

When the percentage of the “natural” minor soil constituents is between approximately 30 and 50%, the minor soil type is described by adding a ‘y’ or ‘ey’ to the soil type (e.g., silty, sandy, clayey) but note that these descriptors are covered by the soil texture analysis.

When the percentage of the “man-made” minor soil constituents is between approximately 30 and 50%, describe the soil as per the normal procedure and add “with” the minor constituent type(s) (e.g., silty sand with coal ash and brick fragments).

5.1.4 Noticeable Odours

Field staff are not expected to directly smell soil samples to assess the presence/absence of odours.

If it is possible to identify the likely type of odour then this information should be recorded along with a comment on the severity of the odour (e.g., slight, strong, etc.). Identification of specific chemical compounds, such as petroleum hydrocarbons (PHCs) or solvents is acceptable; however, this identification should be referenced as “xxxx-like” (e.g., PHC-like, solvent-like, etc.). This principal also applies when describing staining and free-phase product.

If the odour cannot be readily identified, it should be described in the field notes as “unidentified odour”. If no noticeable odours are observed, this needs to be recorded in the field notes as “no odour”.

5.1.5 Noticeable Staining

Describe the colour and possible source of the staining (e.g., black PHC-like staining).

If no noticeable staining is observed, this needs to be recorded in the field notes as “no staining”.

5.1.6 Noticeable Free-Phase Product/Sheen

Describe the colour, odour, possible composition and relative viscosity (if sufficient product is present to assess) of the product (e.g., dark brown, viscous, motor oil-like product). Identification of the composition of the product is acceptable but needs to be described as PHC-like, motor oil-like. Alternatively, the product can be described as “resembling” a substance (e.g., “resembling motor oil”).

The presence of any observed iridescent sheen is to be recorded in the field notes. Note that the presence of an iridescent sheen by itself in the soil does not constitute the presence of free-phase product but may be an indicator that free-phase product is present within the vicinity of the borehole.

5.1.7 Moisture Content

Describe the moisture content of the soil sample using one of the following three terms:

- Dry – no visible evidence of water and the soil is dry to the touch;
- Moist – visible evidence of water but the soil is relatively dry to the touch. Do not use the term “damp” to describe this type of soil; and
- Wet – visible evidence of water and the soil is wet to the touch. Free water is evident when sandy soil is squeezed. Do not use the term “saturated” to describe this type of soil.

5.1.8 Recording Soil Sample Descriptions in Field Notes

Recording the information in the field notes consistently in the above order will make it easier to prepare the borehole logs for the site investigation report.

Example soil sample descriptions are as follows:

- Sand, grey, trace gravel, PHC-like odours, free-phase PHC-like product, wet;
- Silty sand, brownish-grey, some gravel, trace asphalt and brick fragments, no odours or staining, moist; and
- Silty clay, brown, trace gravel, no odours or staining, moist to wet at 2.4 mbgs.

5.2 General Considerations

Where any physical properties change within a soil sample, the depth at which this transition takes place needs to be recorded. For example, for a soil sample collected from 1.8 to 2.4 metres below ground surface (mbgs), if the upper 0.3 metres has no odours but PHC-like odours are present below this depth then the field notes need to state "no odours from 1.8 to 2.1 mbgs, PHC-like odours from 2.1 to 2.4 mbgs".

Some soil samples will contain a thin seam of a different soil type, such as a sand seam within a silty clay. The depth interval of any such seam is to be recorded in the field notes, and the material comprising the seam should be described separately using the logging procedure outlined above.

Avoid the use of geotechnical terms (e.g., stiff, dense, high plasticity, etc.) when logging soil samples. EDR staff are not trained or expected to assess soil conditions from a geotechnical perspective. If any geotechnical terms are inadvertently included in the field notes, they must not be included in the borehole logs provided in our report.

5.3 Additional Considerations for Ontario Regulation 153/04 Phase Two ESA Compliance

None. Following this SOP will be sufficient to comply with the Ontario Regulation 153/04 requirements for Phase Two ESAs with respect to field logging. Risk assessments completed in accordance with Ontario Regulation 153/04 will typically require soil samples to be submitted to a laboratory for full soil texture analysis, but this is beyond the scope of field logging.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff is trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

American Society for Testing and Materials, *ASTM D2487-11 - Standard Practice for Classification of Soils for Engineering Purposes (United Soil Classification System)*, 2011.

Association of Professional Geoscientists of Ontario, *Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended)*, April 2011.

9.0 APPENDICES

Appendix 1 Soil Texture by Feel Chart

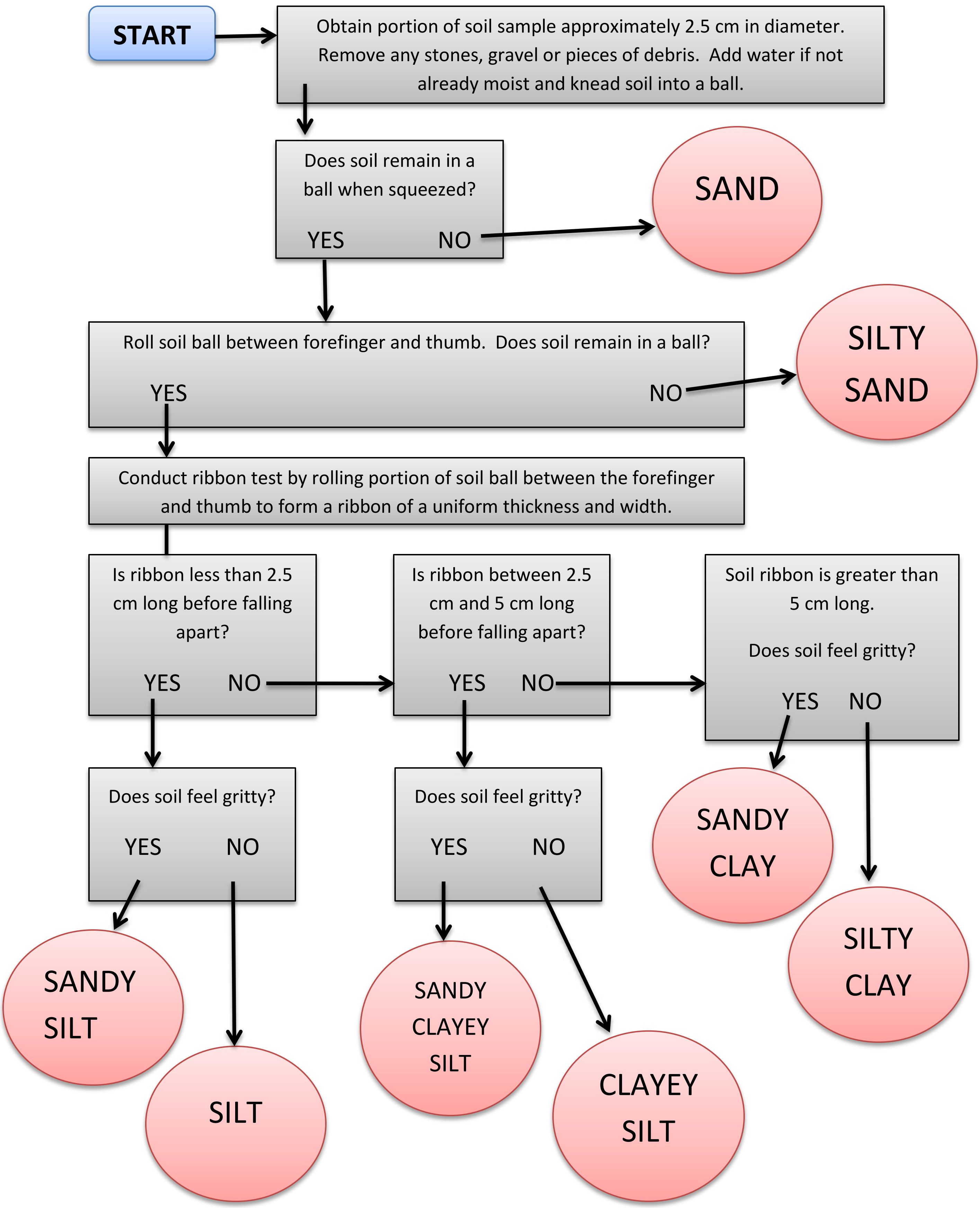
I:\2017 SOP Updates\SOP - EDR019 - REV003 - Soil Sampling Logging.docx

Template: Master SOP Template – February 2014

APPENDIX I

Soil Texture by Feel Chart

Key to Soil Texture by Feel



SOP – EDR023 – REV005 – LOW FLOW GROUNDWATER SAMPLING

Title:	Low Flow Groundwater Sampling
Practice:	EDR
First Effective Date:	July 08, 2011
Version:	005
Version Date:	April 28, 2017
Author:	Paresh Patel and Robert MacKenzie
Authorized by:	Robert MacKenzie
Signature:	

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1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	July 08, 2011	N/A	PDP
001	April 15, 2013	Streamlined background section/Provided step-by-step summary of field procedure/Added O. Reg. 153/04 compliance items	RLM
002	September 11, 2013	Added centrifugal submersible pump to list of pumps suitable for low flow sampling	RLM
003	January 26, 2015	Adjusted well development, sampling and field parameter measurement procedures to reflect Pinchin West practices.	RLM
004	April 29, 2016	Updated Section 4.0/Updated Section 5.3 to reflect current field documentation requirements and new document retention policy	RLM
005	April 28, 2017	Removed reference to Pinchin West/In Section 5.2, removed the requirement to complete a post-sampling water level and total purge volume, and added requirement to record pump intake depth at the time of sampling	RLM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) describes the standard procedures for collecting groundwater samples from monitoring wells using low flow (low stress) sampling techniques and provides a description of the equipment required and field procedures.

Low flow sampling provides an alternative to the conventional groundwater purge and sampling technique using inertial pumps, submersible pumps and/or bailers, and emphasizes the need to minimize hydraulic stress at the well-aquifer interface by maintaining low water level drawdown, and by using low pumping rates during purging and sampling. Rather than removing a specified number of well volumes or purging a well to dryness a specified number of times prior to sampling, purging is completed at a low pumping rate until field parameters such as pH, temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), specific conductance and turbidity, which are monitored during purging, have stabilized indicating that representative formation groundwater is being purged. It is important that field parameter stabilization be achieved prior to groundwater sampling as this indicates that fresh formation water is being purged and not stagnant groundwater from within the well itself.

Low flow groundwater sampling methods work best for moderate to high yield wells (i.e., wells installed in permeable soils such as sand, silty sand and some silts). For low yield wells (e.g., wells installed in silty clay), low flow groundwater sampling may not be suitable and alternate purging and sampling procedures will be required (see SOP-EDR008 for low yield well sampling procedures).

Conventional sampling can result in sediment entrainment in samples which can result in “positive bias” (i.e., reported concentrations greater than actual groundwater concentrations). This is particularly an issue with petroleum hydrocarbons (PHCs) in the F3 and F4 Fraction ranges and polycyclic aromatic hydrocarbons (PAHs) and low flow sampling as per this SOP is strongly recommended when sampling for these parameters unless the hybrid sampling method described in SOP-EDR008 is employed.

This SOP is based primarily on the procedures described in the United States Environmental Protection Agency Region 1 document *“Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells”*, revised January 19, 2010.

3.0 OVERVIEW

The low flow sampling technique can be implemented for any size of monitoring well that can accommodate a positive lift pump or tubing assembly. Note that low flow sampling can be conducted for bedrock monitoring wells without well screens (i.e., with an open interval below the well casing) but for simplicity the screen interval or open interval will be referred to collectively in this SOP as the “screen interval”.

Advantages of the low flow sampling technique over conventional groundwater sampling techniques include:

- Minimal disturbance at the sampling point, reducing the potential for sediment to be entrained during the purging process which can result in positive bias (elevated and unrepresentative concentrations) of parameters such as heavy fraction range PHCs and PAHs;
- Reduced operator variability resulting in greater operator control;
- Reduced purge water volumes resulting in reduced investigation derived waste disposal costs; and
- Improved sample consistency resulting in more representative (unbiased) and reproducible sample results.

Disadvantages of the low flow sampling technique over conventional groundwater sampling techniques include:

- Purging and sampling typically requires more time than conventional sampling methods;

- Use of non-dedicated equipment (e.g., submersible pumps) that requires cleaning before initial use and between monitoring well locations; and
- Overall project costs for low flow groundwater sampling programs are typically higher than groundwater sampling programs completed using conventional sampling methods.

It is imperative that the monitoring wells to be sampled are properly developed prior to conducting low flow groundwater sampling. This often includes redevelopment of previously installed wells that have not been sampled for a prolonged period of time (i.e., more than one year). During well development or redevelopment, the hydraulic characteristics of each well should be assessed to provide guidance on the suitability of using the low flow groundwater sampling procedure. Well development procedures are provided in SOP-EDR017.

When groundwater conditions are known, sample the background monitoring wells (i.e., outside of the impacted groundwater area) and wells with low concentrations of contaminants of concern first prior to sampling wells with known impacts. Leave impacted wells to the last to minimize the potential for cross contamination.

In Ontario and Manitoba, or where otherwise specified by provincial guidance documents, a peristaltic pump is not to be used for the collection of groundwater samples for analysis of volatile parameters (i.e., volatile organic compounds (VOCs) and PHCs F1 Fraction). When sampling for volatile parameters using low flow groundwater sampling methods, a bladder pump or centrifugal submersible pump (collectively referred to herein as “submersible pumps”) must be used. A “hybrid” groundwater purging and sampling procedure using a peristaltic pump to undertake low flow groundwater sampling for non-volatile parameters as described in this SOP followed by conventional purging and sampling methods for volatile parameters is an acceptable alternative to using a bladder pump or centrifugal submersible pump.

Peristaltic pumps cannot be used where the suction lift (i.e., vertical distance between the pump and groundwater level) is more than 8.5 metres (28 feet).

It is very important to maintain consistency in applying low flow groundwater sampling procedures to purging and sampling for each monitoring well and for each sampling event. Any deviation from the field procedures described in this SOP can induce variability in the analytical results.

Our primary objective is to obtain unbiased groundwater samples whose analytical results are representative of actual groundwater quality at the property being investigated.

4.0 DISTRIBUTION

This is an on-line document. Paper copies are valid only on the day they are printed. Refer to the author if you are in any doubt about the accuracy of this document.

This SOP will be distributed to all Pinchin staff and others as follows:

- Posted to the SOP section of the Environmental Due Diligence and Remediation (EDR) Practice Line on the Pinchin Orchard; and
- Distributed to senior staff at Le Groupe Gesfor Poirier and Pinchin LeBlanc for distribution as appropriate.

5.0 PROCEDURE

5.1 Equipment and Supplies

5.1.1 Documents and Information Gathering

The following documents and information are required to complete low flow groundwater sampling:

- A copy of the proposal or work plan;
- Monitoring well construction details;
- A copy of this SOP;
- Field data from the last sampling event (if available);
- Operation, maintenance and calibration manuals for the multi-parameter water quality meter;
- A site-specific Health and Safety Plan (as per the project requirements); and
- Client or site representative's contact details.

5.1.2 Extraction Devices and Tubing

This SOP will not discuss in detail the various pumps and tubing options that are available for completing low flow groundwater sampling. The following section provides some general guidelines for the use of this equipment and it is recommended that the equipment supplier be consulted when selecting the appropriate pump and tubing, taking into account site-specific parameters (e.g., well depth, well diameter, site accessibility) and the parameters that will be sampled.

5.1.3 Extraction Devices

For purging and sampling using the low flow sampling procedure, submersible pumps (e.g., centrifugal, bladder) and peristaltic pumps are the most commonly used extraction devices. Regardless of the type of extraction device used, the low flow sampling procedure requires precise control over the flow rate during purging and sample collection. A battery-operated pump controller is required to operate submersible pumps and to control the extraction flow rate. Peristaltic pumps have built-in flow rate adjusters.

Submersible pumps with internal parts constructed of stainless-steel or Teflon are preferred. If the internal parts are constructed of other materials, adequate information must be provided by the equipment supplier to show that the substituted materials do not leach contaminants nor cause interference to the analytical procedures to be used. The use of any such substituted materials must be approved by the Project Manager prior to the field program.

If a bladder pump is selected for the collection of samples for volatile parameters analysis, it should be capable of delivering a water volume sufficient to fill a VOC sample vial in one pulse.

5.1.4 Tubing

Teflon, Teflon-lined polyethylene or polyethylene 1/4-inch interior diameter (ID) or 3/8-inch ID tubing is to be used to connect to the pump and the flow-through cell. In the winter time, the use of 3/8-inch ID tubing is recommended to avoid groundwater freezing in the tubing during severe cold weather conditions.

If the tubing is constructed of other materials (other than mentioned above), adequate information must be provided to show that the substitute materials do not leach contaminants nor cause interference with the analytical procedures. The use of any such substituted materials must be approved by the Project Manager prior to the field program.

Direct sunlight and hot ambient air temperatures may cause groundwater in the tubing to heat up and degas resulting into loss of volatile parameters. When sampling under these conditions, the length of the tubing between the top of the monitoring well and the flow-through cell should be kept as short as possible to minimize exposure to sunlight or ambient air and heating of the groundwater.

5.1.5 Groundwater Monitoring, Purging and Sampling

The following equipment is required to complete the low flow purging and sampling procedure described in this SOP:

- Well keys;
- Interface probe;
- Assorted tools (e.g., knife, screwdriver, etc.);
- Equipment cleaning reagents required as per SOP-EDR009 (e.g., distilled water, phosphate-free detergent, etc.);
- Multi-parameter water quality meter (including calibration solutions);
- Graduated cylinder, graduated measuring cup or graduated bucket;
- Stopwatch;
- Flow-through cell;
- Peristaltic pump, submersible centrifugal pump or bladder pump;

- Tubing;
- Pails or drums for storing purge water;
- Paper towels or wipes;
- Calculator;
- Field forms (see Section 5.3) and/or field notebook (hereafter the “field notes”);
- Waterproof and permanent markers;
- Disposable gloves and appropriate personal protective equipment based on site-specific conditions;
- Cooler and ice packs;
- Sample bottles and labels. Several extra sample bottles of each type should be available in case of breakage or other problems; and
- Laboratory Chain of Custody forms.

The following equipment may be used during well sampling, in addition to the above:

- Disposable field filtration units/filters (if appropriate).

5.2 Low Flow Groundwater Sampling Procedures

The following is the summary of the procedures to be followed for low flow groundwater sampling:

1. Develop the monitoring wells to be sampled (if required) prior to sampling by removing between three and five well volumes or by purging them to dryness between one and three times. Further details regarding well development are provided in SOP-EDR017. Well development is to be completed for all newly installed wells prior to low flow sampling and may be required for previously installed monitoring wells that have not been sampled in more than one year. Ideally, well development should occur at least one day prior to low flow sampling. At the discretion of the Project Manager, low flow sampling can occur on the same day as the well is developed but the well must be allowed to fully recover to its original static level prior to the start of purging;
2. Decontaminate all non-dedicated monitoring and sampling equipment that will be used, including the interface probe, submersible pump (if used), water quality meter probes and flow-through cell in accordance with the procedures described in SOP-EDR009;
3. Calibrate the water quality meter used for field parameter measurement in accordance with the manufacturer’s specifications. Wherever possible, arrange for the equipment rental company to calibrate the water quality meter and provide a calibration sheet that contains information such as calibration date and calibration measurements for each

parameter. If the water quality meter is to be used for more than a one day, a calibration check shall be performed using standard calibration solutions at the start of each day at a minimum. If the calibration check shows deviations from the standard values that exceed the ranges provided in bullet 10 below, the instrument shall be calibrated prior to further use. A calibration check should also be performed during the course of purging and sampling if the parameter measurements suggest that calibration drift has occurred. Document all calibration activities in the field notes, including date and time of calibration/calibration check, calibration solutions used, probe readings and make, model and serial number of the water quality meter. Note that if the water quality meter manufacturer recommends more frequent calibration/calibration checks than specified above, the manufacturer's recommendations are to be followed. See SOP-EDR016 for additional procedures regarding water quality meter calibration.

Extra care must be taken when calibrating the multi-parameter probe to prevent cross-contamination. Specifically, following immersion of the probes into each calibration standard, all probes should be thoroughly rinsed in distilled or de-ionized water and the excess water shaken off or blotted dry with a lint-free wipe. Conductivity standards are much more sensitive to cross contamination/dilution than other standards. Besides being easily diluted, conductivity standards also affect other parameters (specifically DO), and the conductivity probe should always be the first probe calibrated. The following order for calibration of a multi-parameter probe is to be followed:

- Specific Conductance;
- pH;
- DO;
- Turbidity; and
- All other parameters (there is no recommended order for these parameters).

4. Review the well construction details provided in the borehole logs or well construction summary table from a previous report. Determine the well depth, well stick up, length of the screen interval, and depth to the top of the screen interval. If the well depth is unavailable, measure it with the interface probe;
5. Measure the initial water level (i.e., static water level) from the reference point on the well (which should be marked at the top of the well casing) with an interface probe. If measurable free-phase product is present in the well, discuss this with the Project Manager before proceeding further. Using the known well depth, confirm that at least 0.6

metres of water is present within the well. If less than 0.6 metres of water is present, low flow sampling may not be appropriate and the Project Manager is to be contacted before proceeding further;

6. Following decontamination, slowly install the pump or tubing (for peristaltic pumps) to the appropriate depth within the well. Do not connect the pump discharge tubing to the flow-through cell at this time. If the water level in the well is above the top of the screen interval, the pump or tubing intake depth will be the mid-point of the screen interval. If the water level is below the top of the screen interval, the pump or tubing intake will be set at the mid-point of the wetted interval (i.e., the distance between the static water level and the bottom of the well) or 0.6 metres from the bottom of the well, whichever is a greater distance from the bottom of the well. Pumping from within 0.6 metres of the bottom of the well has a higher potential to entrain sediment from the bottom of the well and is not to be completed unless authorized by the Project Manager.

   The pump intake depth may vary from that described above at the discretion of the Project Manager depending on the specific purpose of the groundwater sampling program. For example, if chlorinated solvents that are denser than water are being assessed, it may be desirable to position the pump intake as close to the bottom of the well as possible, or if PHC-related parameters which are lighter than water are being assessed, it may be preferable to position the pump intake as close to the water table as possible. Pump intake depth should be confirmed with the Project Manager prior to the field program;

7. Turn on the pump and discharge groundwater into a purge bucket. Purge initially at a flow rate of approximately 250 millilitres/minute (mL/min). Increase or decrease the flow rate until the water level in the well reaches a steady state condition (i.e., a stabilized water level). The goal is to purge at as high a pumping rate as the well will sustain and still maintain a stabilized water level; however, purging rates should not exceed 500 mL/min during purging and sampling. Also, it is important that during the early phase of purging, emphasis should be put on minimizing pumping stress (i.e., rapid fluctuations in pumping rates).

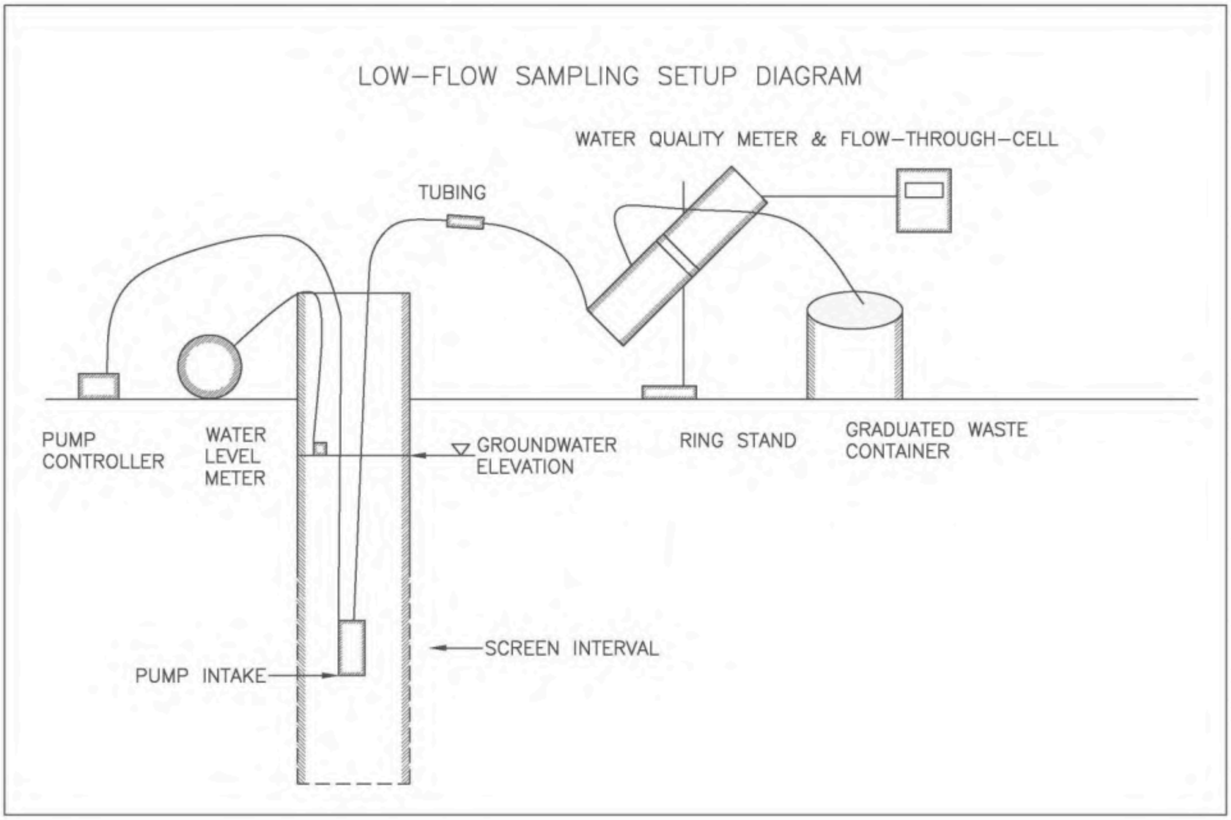
   Whenever possible, purge at a pumping rate low enough to keep the total drawdown in the well to less than 10 centimetres although this may not be achievable for low to moderate yield wells. Once a steady state condition is achieved, the purge rate must be maintained constant and should not be changed. Determine the flow rate using a graduated bucket, graduated measuring cup or graduated cylinder and a stop watch. If the well is purged dry even after reducing the flow rate to the minimum practical purging rate of approximately 50 mL/min to 100 mL/min, then low flow sampling procedures will not work for the well and the sampling procedure described in SOP-EDR008 for sampling low yield wells is to be followed. During purging and sampling, it is important to keep the pump intake below the water level in the well at all times to avoid aeration of the groundwater;

8. If the visual appearance of the groundwater is highly turbid once a stabilized water level is achieved, continue to discharge purged water directly into the purge bucket until the groundwater clears, as highly turbid groundwater may foul the flow-through cell. Once the turbidity clears up, connect the flow-through cell to the pump discharge tubing. If the groundwater remains highly turbid after approximately 15 minutes of purging, contact the Project Manager to discuss whether sampling should occur. Further well development may be required to remove excess sediment from the monitoring well before sampling can proceed;

9. Confirm the volume of the flow-through cell excluding the volume of the water quality meter probes. If this information is not readily available, fill the cell with water and empty its contents into a graduated cylinder or measuring cup to determine the volume. After connecting the discharge tubing to the flow-through cell, continue purging until the flow-through cell is full and turn on the multi-parameter meter. Record the initial field parameter readings in the field notes. At a minimum, the field parameters that are to be monitored are pH, specific conductance, temperature, DO and ORP. The monitoring of turbidity is also a minimum requirement in Ontario and Manitoba. Field parameter readings are to be obtained at a frequency of a minimum of once every 5 minutes. Obtaining field parameter readings at a spacing of greater than 5 minutes apart may be required if the volume of the flow-through cell is large or pumping occurs at a low rate (e.g., 50 or 100 mL/min). For example, if the flow-through cell has a volume of 300 mL and the pumping rate is 50 mL/min, it will take 6 minutes for the volume of water equivalent to the flow-through cell volume to pass through the cell and field parameter readings should be taken 6 minutes apart.

   Figure 1 shows a typical low flow groundwater sampling set up using a submersible pump. The set up when using a peristaltic pump is similar except that the only part of the extraction system in the well is tubing that is connected to the peristaltic pump at the ground surface (i.e., there is no pump mechanism within the well), and a second section of tubing connects the discharge of the peristaltic pump to the flow-through cell.

Figure 1: Low Flow Sampling Set Up Diagram



Reference: USEPA Region I EQASOP-GW 001, July 30, 1996, Revised January 19, 2010.

Air bubbles in the flow-through cell can result in inaccurate field parameter measurements, in particular for DO. If air bubbles appear in the flow-through cell, check that the discharge tubing is properly connected to the flow-through cell and check that the pump intake is located below the water table by confirming the pump intake depth and checking the water level in the well. If air bubbles persist in the flow-through cell, position the flow-through cell at a 45-degree angle with the ports facing upwards. This configuration should keep any gas bubbles entering the cell away from the multimeter probes and allow the air bubbles to exit the cell easily;

10. Regardless of the frequency of field parameter readings, purging is to be completed until field parameter stabilization is achieved, which occurs when the field parameter measurements for all of the parameters are within the following ranges for three consecutive sets of readings:

pH	±0.1 pH units

Specific Conductance	±3%
Temperature	±3%
DO	±10% for values greater than 0.5 milligrams per litres (mg/L), or three consecutive values less than 0.5 mg/L
ORP	±10 millivolts
Turbidity	±10% for values greater than 5 Nephelometric Turbidity Units (NTUs), or three consecutive values less than 5 NTU

11. Check the water level in the well during purging a minimum of once every 10 minutes to confirm that steady state conditions are being maintained. Although not mandatory, more frequent water level measurements can be made (e.g., at the time of each set of water quality parameters). Reduce the pumping rate if the water level measurements indicate that drawdown is occurring;
12. Record the time of all water level and field parameter measurements in the field notes;
13. Should field parameter stabilization not occur within one hour of the start of purging, contact the Project Manager to discuss whether to continue purging to attempt to achieve field parameter stabilization or whether to proceed with groundwater sample collection. The Project Manager will consider the total volume of water purged to this point and may deem it suitable to collect the groundwater sample if, for example, three or more well volumes in total have been purged despite the lack of field parameter stability. Note that achieving stabilization of some parameters is more important with respect to certain contaminant types. For example, the stabilization of DO readings is important for volatile parameter sampling because fluctuations in DO concentrations may indicate that the groundwater is being aerating during the purging process which could result in volatile loss from the groundwater samples;
14. Following field parameter stabilization, disconnect the tubing from the flow-through cell and collect the groundwater samples by filling the appropriate laboratory-supplied sample containers directly from the discharge tubing. Note that it is important not to sample groundwater that has passed through the flow-through cell. If pumping at a moderate to high pumping (i.e., > 200 mL/min), the pumping rate should be reduced to prevent overfilling or the splashing of preservatives out of the sample containers. The order of sample collection should be most volatile parameters to least volatile parameters as follows:
    - VOCs and PHCs F1 Fraction;

- PHCs F2-F4 Fraction;
- PAHs and Base/Neutral/Acid Extractables;
- Metals and Inorganics; and
- Polychlorinated Biphenyls and Organochlorine Pesticides.

Special Notes for Volatile Parameter Sampling

When collecting samples for volatile parameter analysis (i.e., VOCs and PHCs F1 Fraction), the tubing must be filled completely and must not contain air bubbles prior to sample collection. If this is observed, increase the pumping rate slightly prior to sample collection until the tubing is filled and/or there are no longer any air bubbles, and then collect the sample. When collecting the groundwater samples for volatile parameter analysis, the sample vials should be tilted to avoid agitation and bubbling to minimize the potential for volatilization.

Special Notes for Metals Sampling

Groundwater samples collected for metals analysis will require filtering prior to preservation if dissolved metals concentrations are sought. Depending on the type and diameter of the discharge tubing used, in-line filters can be used for field filtering. Disposable filtration kits (e.g., Nalgene 0.45 micron filters) can also be used for field filtering. When collecting samples in containers that are pre-charged with preservatives, care must be taken not to overfill the containers as some of the preservative may be lost which will result in the sample not being properly preserved. Also, sample containers for metals analysis typically have a fill line marked on the container and the container must not be filled to above this line as this will cause dilution of the preservative and the sample may not be properly preserved.

If field filtering cannot be completed, then the groundwater samples are to be collected in sample containers that do not contain preservatives, and the analytical laboratory is to be instructed to filter and preserve the samples immediately upon receipt. The procedure and necessary equipment required to filter and preserve metals samples using the low flow methods should be discussed with the Project Manager prior to mobilization to the field; and

15. Record the pump intake depth at the time of sample collection. Remove the pump and/or tubing from the well and decontaminate the sampling equipment.

5.3 Fieldwork Records

The purging and sampling of a monitoring well using the low flow groundwater sampling procedure described in this SOP are to be documented through the completion in full of the following field forms located in the Pinchin Orchard:

- EDR-GW-Low Flow Sampling; and
- EDR-GW-Water Quality Parameters.

Any deviations from this SOP along with the rationale for these deviations must be recorded on the forms.

Upon completion of the sampling event, the field notes must be submitted to the Project Manager for review. The field notes must also be scanned and a copy of the scan placed in the project folder on the server.

5.4 Additional Considerations for O. Reg. 153/04 Phase Two ESA Compliance

When completing a Phase Two Environmental Assessment (ESA) in accordance with Ontario Regulation 153/04, the following must be undertaken:

- Calibration checks must be made for the water quality meter used for field parameter measurements at the frequency specified in Step 3 of Section 5.2. Records of the calibration checks must be kept and appended to the Phase Two ESA report;
- At least one field duplicate groundwater sample must be collected for every ten samples submitted for analysis. The frequency is one for one to 10 samples, two for 11 to 20 samples, etc. for all parameters analyzed. For example, even if only one groundwater sample is collected for PAHs analysis, a duplicate of this sample must be collected; and
- When sampling for VOCs, one trip blank sample must be submitted to the laboratory for VOCs analysis for each submission to the laboratory. In other words, if a groundwater sampling program lasts three days and samples are submitted to the laboratory at the end of each day, there must be a total of three trip blanks submitted with the samples (i.e., one per day of sampling). Note that analysis of trip blank samples for other volatile parameters (e.g., PHCs (F1 Fraction)) is not mandatory but can be completed at the discretion of the Qualified Person.

In addition, low flow groundwater sampling using a bladder pump or centrifugal submersible pump should be completed whenever well yields are high enough to permit it for all Phase Two ESAs undertaken to support the filing of a Record of Site Condition. This will minimize potential issues the Ministry of the Environment and Climate Change may have regarding the representativeness of the groundwater analytical data.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

U.S. Environmental Protection Agency Region I, *Low Stress ('low flow') Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells,* EQASOP-GW 001, July 30, 1996, Revised January 19, 2010.

9.0 APPENDICES

None.

I:\2017 SOP Updates\SOP - EDR023 - REV005 - Low Flow Groundwater Sampling.docx

Template: Master SOP Template – February 2014

SOP – EDR025 – REV003 – QA/QC SAMPLING

Title:	QA/QC Sampling
Practice:	EDR
First Effective Date:	January 17, 2014
Version:	003
Version Date:	April 28, 2017
Author:	Robert MacKenzie
Authorized by:	Robert MacKenzie
Signature:	

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1.0 VERSION HISTORY

Version	Date	Summary of Changes	Author
Original	January 17, 2014	N/A	RLM
001	June 26, 2014	Amended blind duplicate sampling requirements	RLM
002	April 29, 2016	Updated Section 4.0/Amended O.Reg. 153/04 trip blank requirements	RLM
003	April 28, 2017	Removed reference to Pinchin West	RLM

2.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) describes the standard procedures for collecting soil, water and sediment samples for quality assurance/quality control (QA/QC) purposes.

A QA/QC program is essentially a management system that ensures that quality standards are met within a stated level of confidence. The QC component of the program comprises daily activities in the field and laboratory that are used to control the quality of both the samples collected and the sample analytical data. The QA component of the program is made up of measures used to determine whether the QC activities are effective.

When completing a site investigation, one of our primary goals is to obtain analytical data that are representative of actual soil, water and/or sediment conditions at the site. The completion of a QA/QC program, consisting of the collection and analysis of various QA/QC samples, provides information for use in evaluating the accuracy of the analytical data used to assess the environmental quality of the site.

The type and number of samples comprising the QA/QC program will be determined by the Project Manager on a site-by-site basis, but will typically include at a minimum a trip blank when collecting water samples for volatile parameter analysis and duplicate soil, sediment and/or groundwater samples. Other types of QA/QC samples may be collected (e.g., equipment or field blanks) to meet project-specific requirements at the discretion of the Project Manager.

The QA/QC sampling requirements and procedures for indoor air, soil vapour and sorbent tube samples are described in SOP-EDR012, SOP-EDR018 and SOP-EDR027, respectively.

3.0 OVERVIEW

The types of samples collected for the QA/QC program during site investigations may include the following:

- Trip blanks;
- Field blanks;

- Equipment blanks; and
- Field duplicates.

Trip blanks are used to assess whether ambient air conditions may have resulted in positive bias of water samples collected for volatile parameter analysis during transportation of the sample containers to and from a project site. Note that the term “positive bias” means that reported sample concentrations are greater than actual in situ sample concentrations due to some form of “cross-contamination”.

Field blanks are collected to assess whether ambient air conditions may have resulted in positive bias of samples collected at a project site for volatile parameter analysis at the time of sampling.

Equipment blanks are collected to assess the efficiency of non-dedicated monitoring/sampling equipment cleaning procedures.

Duplicate samples are collected to assess whether field sampling and laboratory analytical methods are suitable and reproducible.

The analytical results of the QA/QC samples are reviewed by the Project Manager to assess whether any data quality issues are evident which may affect the interpretation of the soil, water and/or sediment sample analytical data.

4.0 DISTRIBUTION

This is an on-line document. Paper copies are valid only on the day they are printed. Refer to the author if you are in any doubt about the accuracy of this document.

This SOP will be distributed to all Pinchin staff and others as follows:

- Posted to the SOP section of the Environmental Due Diligence and Remediation (EDR) Practice Line on the Pinchin Orchard; and
- Distributed to senior staff at Le Groupe Gesfor Poirier and Pinchin LeBlanc for distribution as appropriate.

5.0 PROCEDURE

5.1 Equipment and Supplies

The equipment/supplies required for QA/QC sample collection are the same as that used for regular investigative sampling, except for the following:

- Volatile organic compound (VOC)-free distilled water supplied by the analytical laboratory for use in the collection of field blanks and/or equipment blanks;
- Additional sample jars supplied by the analytical laboratory for the collection of field blanks, equipment blanks and field duplicates; and

- Trip blanks supplied by the analytical laboratory.

5.2 QA/QC Sampling Procedures

5.2.1 General Procedures for QA/QC Blank Sampling

The analytical laboratory that will be completing the analysis of the regular investigative samples and QA/QC samples for a project must supply the water used to collect field blanks and equipment blanks. Water provided by another analytical laboratory or store-bought distilled water must not be used.

5.2.2 Trip Blanks

A trip blank is a set of VOC sample vials filled by the analytical laboratory with VOC-free distilled water and shipped with the sample containers. A trip blank is to be stored with the sample containers provided by the analytical laboratory during travel to the project site, while on the project site, and during travel from the project site back to the analytical laboratory. The sample containers comprising a trip blank are not to be opened in the field.

For some projects, submissions of volatile parameter samples to the analytical laboratory over several days will be required. In this case, a trip blank sample should accompany each submission to the laboratory. If this situation is anticipated, the Project Manager must request that the analytical laboratory provide sufficient trip blanks so that a trip blank can accompany the submission of each set of samples to the laboratory.

Trip blanks are to be analyzed for the same volatile parameters (i.e., VOCs and/or petroleum hydrocarbons (PHCs) (F1 fraction)) as the regular investigative samples. For example, if the groundwater sampling program includes analysis of VOCs and PHCs (F1-F4 fractions), then the trip blank(s) require analysis of VOCs and PHCs (F1 fraction). If the groundwater sampling program only includes VOC analysis, then the trip blank(s) require analysis of VOCs only.

Unless specified by the Project Manager, trip blanks are not required for soil and sediment sampling, or for water sampling involving only non-volatile parameters. At the discretion of the Project Manager and to meet project-specific requirements, trip blanks for non-volatile parameters can be prepared and analyzed using the same principals as for volatile parameter trip blanks.

5.2.3 Field Blanks

A field blank is a set of VOC sample vials filled during a sampling event at a project site with VOC-free distilled water supplied by the analytical laboratory and submitted for analysis of volatile parameters (i.e., VOCs and/or PHCs (F1 fraction)).

Field blanks are to be collected at a sample location considered "worst case" with respect to ambient air conditions (e.g., adjacent to and downwind of the pump island of an active retail fuel outlet, inside an active on-the-premises dry cleaner, etc.). At project sites where there is no obvious "worst case" ambient air location, the field blank can be collected at a sampling location picked randomly. The field blank collection location and rationale for selecting it must be documented in the field notes.

If a groundwater sampling event at a project site occurs over more than one day, a field blank is to be collected for each day of sampling.

Some project sites may have an isolated area where the ambient air conditions are significantly poorer than the remainder of the site and a field blank collected from this area may not be representative of conditions elsewhere on the site. In this case, at the discretion of the Project Manager, the collection of two field blanks may be appropriate, with one field blank collected from the poor ambient air area and one field blank collected from a location outside of this area.

Unless specified by the Project Manager, field blanks are not required for soil and sediment sampling, or for water sampling involving only non-volatile parameters. At the discretion of the Project Manager and to meet project-specific requirements, field blanks for non-volatile parameters can be collected and analyzed using the same principals as for volatile parameter field blanks.

5.2.4 Equipment Blanks

An equipment blank is collected by pouring VOC-free distilled water supplied by the analytical laboratory either over or through non-dedicated sampling/monitoring equipment that has been cleaned following sampling/monitoring using the procedures outlined in SOP-EDR009. The resulting rinsate is then captured in sample containers appropriate for the intended analysis. Note that the surface over which the distilled water is poured must be the surface from which samples are collected from or that is in contact with the medium being monitored. For example, if an equipment blank is being collected from a split-spoon sampler, the distilled water must be poured through the interior of the sampler, and not the exterior of the sampler.

The Project Manager will be responsible for determining the sampling/monitoring equipment from which equipment blanks will be obtained, the number of equipment blanks and the parameters to be analyzed. Regarding the latter, the parameters analyzed for equipment blanks are typically the parameters of concern for a given project site.

5.2.5 Evaluation of Blank Sample Results

The Project Manager will evaluate the results of the blank sample analysis to assess whether these results show that bias may have been introduced to investigative samples collected during the field sampling activities. Judgement by the Project Manager will be required to assess whether the blank sample results have any effect on the interpretation of the investigative sample results. This is assessed on a case-by-case basis, but the following general principals can be applied:

- If all soil, groundwater and/or sediment samples collected for a site investigation meet the applicable environmental standards/criteria, the presence of detectable or elevated parameter concentrations in the blanks has no effect on the interpretation of the investigative sample results;
- If parameters have detectable or elevated concentrations in the blank samples but none of these parameters are present in the regular investigative samples at concentrations exceeding the applicable environmental standards/criteria, the blank sample results have no effect on the interpretation of the investigative sample results;
- If parameters have detectable or elevated parameter concentrations in the blank samples and one or more of these parameters are present in the regular investigative samples at concentrations exceeding the applicable environmental standards/criteria, then positive bias of the regular investigative samples may have occurred. The Project Manager will need to assess a number of variables, including the relative parameter concentrations in the blank and regular investigative samples, to determine whether the regular investigative sample data is considered representative and usable for assessing the environmental quality of the site. If the regular investigative sample data is questionable, then resampling may be required; and
- If the regular investigative samples have exceedances of the applicable environmental standards/criteria and the blank samples have non-detectable parameter concentrations, the blank sample results have no effect on the interpretation of the investigative sample results.

5.2.6 General Procedures for QA/QC Duplicate Sampling

Whenever possible, duplicate samples are to be collected from "worst case" sample locations. The reason for this is that Relative Percent Differences (RPDs) are calculated using the analytical results of the duplicate and regular investigative samples to evaluate the suitability and reproducibility of field sampling and laboratory analytical methods. However, RPDs for a given parameter can only be calculated if there are detectable concentrations in both samples, and "worst case" sample locations are the most likely to have detectable levels of parameters of concern. The calculation and evaluation of RPDs is discussed at the end of this section.

When filling sample containers, the order of collection is regular investigative sample first and duplicate sample second.

5.2.7 Field Duplicate Samples – Soil/Sediment

Soils/sediments are frequently heterogeneous because they are typically deposited in horizontal layers over time, causing both small scale and large scale grain size variations that can often result in significant variations in contaminant concentrations between layers. Because of this, it is important that duplicate soil/sediment samples be collected from the same vertical depths as the regular investigative samples in sample cores or at discrete sampling locations (e.g., grab samples).

When collecting a duplicate soil/sediment sample from a sampling device that provides a soil core (e.g., dual-tube sampler, split-spoon sampler), the soil core is to be split in half vertically (i.e., longitudinally). A portion of one half of the core is used for the regular investigative sample and a portion of the other half of the core is used for the duplicate sample. The portion of each core placed in sample jars for analysis must be obtained from the same depth interval within the cores.

When collecting a duplicate soil/sediment sample from a grab sample (e.g., excavation floor or sidewall), the field duplicate sample must be collected as close as possible to the regular investigative sample location at the sample depth and within the same soil layer.

There are no special procedures for collecting field duplicates of composite soil/sediment samples given that the soil/sediment is homogenized during the composite sample collection procedure.

A field duplicate soil/sediment sample must be collected at the same time as the regular investigative sample. Retroactively splitting a soil/sediment sample to obtain a field duplicate sample is not permitted.

5.2.8 Field Duplicate Samples – Surface Water/Potable Water/Groundwater

There are no special procedures for collecting surface water/potable water/groundwater field duplicate samples with the following exceptions:

- When collecting a duplicate water sample for metals analysis and field filtering is required, a new filter is to be used to collect the duplicate sample unless the groundwater has a low sediment content; and
- When collecting a duplicate surface water sample, the sample containers for the same parameter(s) should be immersed in the surface water body at the same location and at the same time whenever possible.

5.2.9 Duplicate Sample Labelling

The duplicate sample should have the term "DUP" in the sample identifier to distinguish it as a duplicate sample.

5.2.10 Evaluation of Duplicate Sample Results

Duplicate sample results are evaluated by calculating RPDs using the following equation:

$$RPD = \frac{\text{Absolute Value (Original Concentration – Duplicate Concentration)}}{\text{(Original Concentration + Duplicate Concentration)/2}} \times 100\%$$

RPDs are not calculated unless the parameter concentrations in both the regular investigative sample and duplicate sample are detectable concentrations above the corresponding practical quantitation limit (PQL) for the parameter, which is equal to five times the lowest laboratory reportable detection limit (RDL).

For example, if the RDL for a parameter is 0.1 parts per million (ppm), and the concentration in the regular investigative sample is 0.4 ppm and the concentration in the duplicate sample is 0.6 ppm, the RPD cannot be calculated because the concentration in the regular investigative sample (0.4 ppm) is less than the PQL of 0.5 ppm (5 times the RDL of 0.1 ppm).

Also, if the regular investigative sample concentration is 2 ppm and the duplicate sample concentration is <1 ppm, then the RPD cannot be calculated regardless of the PQL since detectable concentrations were not reported for both samples.

Calculated RPDs for the regular investigative and field duplicate samples are compared to established performance standards to evaluate the suitability and reproducibility of field sampling and laboratory analytical methods. In Ontario, the Ontario Ministry of the Environment and Climate Change (formerly the Ontario Ministry of the Environment) provides duplicate sample performance standards in the document *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act,* dated March 9, 2004, amended as of July 1, 2011. Although these performance standards only strictly apply to laboratory duplicate samples, they are considered suitable for comparison to field duplicate samples. Other provinces provide their own similar guidance.

When calculated RPDs exceed the performance standards, the Project Manager will evaluate whether these results have any effect on the interpretation of the investigative sample results. This is judged on a case-by-case basis, but in many situations RPD values above the performance standards can be attributed to small scale heterogeneity inherent in soil samples or variations in the quantity of sediment in groundwater or surface water samples, and are not indicative of poor field sampling or laboratory procedures. The results of internal laboratory QA/QC sampling may provide additional information as to the precision of the data. Furthermore, if all soil, water and/or sediment samples collected for a site investigation meet the applicable environmental standards/criteria, the apparent lack of precision shown by elevated RPD values should not affect the interpretation of the investigative sample results.

Sometimes a regular investigative sample will meet the applicable environmental standards/criteria and its corresponding duplicate sample will fail the applicable environmental standards/criteria (or vice versa).

In Ontario, it is permitted to average the parameter concentrations of two samples provided they are collected at the same time and from the same sample location and depth. The resulting average parameter concentrations are then compared with the applicable standards to determine whether the sample meets or fails the standards. This approach is not acceptable in all jurisdictions. In situations where averaging is not acceptable to the regulatory agency, the "worst case" sample result is to be used in assessing the environmental condition of the project site.

5.3 Fieldwork Records

The field notes must include the following information with respect to QA/QC samples:

- The date and time of sampling for all blank/duplicate samples;
- The sample location for field blanks and the rationale for selecting the field blank locations;
- The type of equipment from which a rinsate was collected for equipment blanks and the parameters to be analyzed; and
- The corresponding regular investigative sample location/sample interval for duplicate samples and the parameters to be analyzed.

5.4 Additional Considerations for Ontario Regulation 153/04 Phase Two ESA Compliance

When completing a Phase Two ESA in accordance with Ontario Regulation 153/04, the QA/QC sampling program must consist of the following as a minimum:

- At least one field duplicate soil, sediment or groundwater sample must be collected for every ten samples submitted for analysis. The frequency is one duplicate sample for one to 10 regular investigative samples, two duplicate samples for 11 to 20 samples, etc. for <u>all</u> parameters analyzed. For example, even if only one groundwater sample is collected for PAHs analysis, a duplicate of this sample must be collected.

When sampling for VOCs, one trip blank sample must be submitted to the laboratory for VOCs analysis for <u>each submission</u> to the laboratory. In other words, if a groundwater sampling program lasts three days and samples are submitted to the laboratory at the end of each day, there must be a total of three trip blanks submitted with the samples (i.e., one per day of sampling). Note that analysis of trip blank samples for other volatile parameters (e.g., PHCs (F1 Fraction)) is not mandatory but can be completed at the discretion of the Qualified Person.

6.0 TRAINING

The Practice Leader is responsible for identifying the training needs of EDR staff and ensuring that staff are trained and competent before undertaking work assignments.

All trained personnel are responsible for identifying coaching or re-training needs (if they are uncomfortable with work assignments that have been assigned).

The careful application of *Health & Safety Training* by each employee is an integral part of all activities and is assumed as part of this SOP.

7.0 MAINTENANCE OF SOP

1 Year.

8.0 REFERENCES

Association of Professional Geoscientists of Ontario, *Guidance for Environmental Site Assessments under Ontario Regulation 153/04 (as amended),* April 2011.

Ontario Ministry of the Environment and Climate Change, *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*, March 9, 2004, as amended as of July 1, 2011.

Water, Air and Climate Change Branch, Ministry of Water, Land and Air Protection, Province of British Columbia, *British Columbia Field Sampling Manual*, 2003.

9.0 APPENDICES

None.

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Template: Master SOP Template – February 2014

APPENDIX C

Borehole Logs

Log of Borehole: BH101

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 26, 2021

SUBSURFACE PROFILE				SAMPLE			
Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis	
Ground Surface	0.00	No Monitoring Well Installed					
Asphalt ~50mm	0.00 / -0.61		45	SS1	0/0		
Fill Brown sand and gravel with brick and slag, damp, no staining or odours	0.61 / -1.22			SS2	5/15	PHCs, BTEX, PAHs, Metals	
Silty Clay Silty clay, damp, no staining, PHC like odour	1.22 / -1.68		45	SS3	10/1		
Sand and Gravel Brown sand and gravel with brick and slag, damp, no staining or odours	1.68 / -3.05			SS4	0/0		
trace silt			100	SS5	0/0		
Silty Clay Grey silty clay, moist, no staining or odours	3.05 / -5.18			SS6	0/0	PHCs, PAHs	
Moist to wet	5.18 / -6.10		90	SS7	0/0		
				SS8	0/0		
End of Borehole (No Refusal)	6.10						

Depth scale: 0–28 ft; 0–8 m

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a photoionization detector (PID) and a combustible gas indicator (CGI).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BH102

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 26, 2021

SUBSURFACE PROFILE

Depth (m)	Description	Measured Depth (m)
0	Ground Surface	0.00
0.00	**Asphalt** ~50mm	0.00
	Fill Brown sand and gravel, damp, no staining or odours	-0.91 / 0.91
	Fill Sand and gravel trace silt trace clay, slag and glass, no staining or odours	-1.52 / 1.52
	no glass	-2.44 / 2.44
	Gravel layer	-3.05 / 3.05
	Silty Clay Grey silty clay, damp, no staining or odours	-4.57 / 4.57
	Moist	-5.79 / 5.79
	Wet	
	End of Borehole (No Refusal)	

Monitoring Well Details: No Monitoring Well Installed

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
30	SS1	0/0	PHCs, BTEX, PAHs, and Metals
	SS2	0/1	
50	SS3	0/0	
	SS4	0/0	
100	SS5	0/0	
	SS6	0/0	PHCs, and PAHs
100	SS7	0/0	
	SS8	0/0	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a photoionization detector (PID) and a combustible gas indicator (CGI).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BH103

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 26, 2021

SUBSURFACE PROFILE					SAMPLE			
Depth (ft / m)	Symbol	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 / 0		Ground Surface	0.00					
0–5 ft / 0–1.52 m		**Asphalt** ~50mm; **Fill** Brown sand and gravel, no staining or odours	0.00 / -1.52	No Monitoring Well Installed	15	SS1	0/0	
						SS2	0/0	PHCs, BTEX, PAHs, Metals, pH, Grain size
5–10 ft / 1.52–3.05 m		Trace silt trace clay	1.52 / -3.05		20	SS3	0/0	
						SS4	0/0	
10–15 ft / 3.05–4.57 m		**Silty Clay** Grey silty clay, moist, no staining or odours	3.05 / -4.57		<5	SS5	0/0	
						SS6	0/0	
15–20 ft / 4.57–6.10 m		Wet	4.57 / -6.10		60	SS7	0/0	PHCs, PAHs, pH, Grain size
						SS8	0/0	
20 ft / 6.10 m		End of Borehole (No Refusal)	6.10					

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a photoionization detector (PID) and a combustible gas indicator (CGI).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BH104

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 26, 2021

SUBSURFACE PROFILE

Description	Measured Depth (m)
Ground Surface	0.00
Asphalt ~50mm	0.00
Fill Brown sand and gravel, damp, no staining or odours	
some slag	-2.74 / 2.74
Silty Clay Grey silty clay, damp, no staining or odours	
Slight PHC like odour	-4.57 / 4.57
Wet, no odour	-5.49 / 5.49
End of Borehole (No Refusal)	-6.10 / 6.10

Depth scale: ft 0–26; m 0–7

Monitoring Well Details: No Monitoring Well Installed

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
20	SS1	0/0	
	SS2	0/0	
20	SS3	0/0	
	SS4	0/0	PHCs, BTEX, PAHs, Metals
100	SS5	0/0	
	SS6	0/0	
100	SS7	0/20	PHCs, PAHs
	SS8	0/0	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a photoionization detector (PID) and a combustible gas indicator (CGI).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BH105

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 26, 2021

SUBSURFACE PROFILE / SAMPLE

Depth (ft / m)	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 / 0	Ground Surface	0.00	No Monitoring Well Installed				
0–2 ft	***Asphalt*** ~50mm	0.00		20	SS1	0/0	
0–15 ft / 0–4.57 m	***Fill*** Brown sand and gravel, damp, no staining or odours			20	SS2	0/0	PHCs, BTEX, PAHs, Metals
				10	SS3	0/0	
				10	SS4	0/0	
				5	SS5	0/0	
				5	SS6	0/0	
15 ft / 4.57 m	***Silty Clay*** Silty clay, damp, no staining, slight PHC-like odour	-4.57 / 4.57		100	SS7	0/58	PHCs, PAHs
17.5 ft / 5.33 m	No odour, moist to wet	-5.33 / 5.33		100	SS8	0/1	
20 ft / 6.10 m	End of Borehole (No Refusal)	-6.10 / 6.10					

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a photoionization detector (PID) and a combustible gas indicator (CGI).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BH106

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 26, 2021

SUBSURFACE PROFILE					SAMPLE			
Depth (ft / m)	Symbol	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 ft / 0 m		Ground Surface	0.00					
0–2 ft		**Asphalt** ~50mm	0.00	No Monitoring Well Installed	20	SS1	0/0	
		Fill Brown sand and gravel, damp, no staining or odours				SS2	0/0	
					20	SS3	0/0	
						SS4	0/0	PHCs, BTEX, PAHs, Metals
			-4.11		60	SS5	0/0	
		Moist	4.11			SS6	0/0	
			-5.33		100	SS7	0/0	
		Grey silt clay, wet, no staining or odours	5.33			SS8	0/0	PHCs, PAHs
			-6.10					
		End of Borehole (No Refusal)	6.10					

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a photoionization detector (PID) and a combustible gas indicator (CGI).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BH107

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 26, 2021

SUBSURFACE PROFILE / SAMPLE

Depth (ft / m)	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 / 0	Ground Surface	0.00	No Monitoring Well Installed				
0–5 ft / 0–1.52 m	***Asphalt*** ~50mm ***Fill*** Brown/Black sand and gravel, damp, no staining or odours	0.00 – -1.52		20	SS1	0/0	
					SS2	0/0	
5–12.5 ft / 1.52–3.81 m	***Sand and Gravel*** Brown sand and gravel, damp no staining or odours	1.52 – -3.81		70	SS3	0/0	
					SS4	0/0	PHCs, BTEX, PAHs, Metals
12.5–16 ft / 3.81–4.88 m	***Silty Clay*** Grey silt clay, wet, no staining or odours	3.81 – -4.88		90	SS5	0/0	
					SS6	0/0	
16–20 ft / 4.88–6.10 m	Trace gravel	4.88 – -6.10		70	SS7	0/0	
					SS8	0/0	PHCs, PAHs
20 ft / 6.10 m	End of Borehole (No Refusal)	6.10					

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a photoionization detector (PID) and a combustible gas indicator (CGI).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BHMW108

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

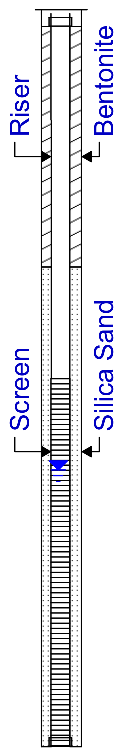
Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 26, 2021

SUBSURFACE PROFILE / SAMPLE

Description	Measured Depth (m)
Ground Surface	0.00
Asphalt ~50mm	0.00
Fill Brown sand and gravel, damp, no staining or odours	-1.52 / 1.52
Silty Clay Brown silty clay, damp, no staining or odours	-3.81 / 3.81
With gravel	-4.27 / 4.27
PHC-like odour	
Silty Clay with Gravel Grey silty clay with gravel, no staining, PHC-like odours	-6.86 / 6.86
Slight PHC-like odours	-7.32 / 7.32
End of Borehole (Refusal on Inferred Bedrock)	

Monitoring Well Details:



Groundwater Level = 5.46 mbgs. on June 23, 2021

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
25	SS1	0/0	
	SS2	0/0	PAHs, Metals
100	SS3	0/0	
	SS4	0/0	
100	SS5	0/0	
	SS6	2300/1513	
100	SS7	895/800	
	SS8	3500/1915	PHCs, VOCs, PAHs
100	SS9	70/17	
	SS10	70/6	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 3.8 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a photoionization detector (PID) and a combustible gas indicator (CGI).

Grade Elevation: 67.05 mamsl

Top of Casing Elevation: 66.98 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW109

PINCHIN

Project #: 285722.003 ***Logged By:*** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 27, 2021

SUBSURFACE PROFILE				SAMPLE			
Depth (ft / m)	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 / 0	Ground Surface	0.00					
0	***Asphalt*** ~50mm	0.00	Riser, Bentonite	10	SS1	0/0	
	Fill Brown sand and gravel, damp, no staining or odours				SS2	0/0	
5 / 1.52	***Silty Clay*** Brown/Grey silty clay, damp, no staining or odours	-1.52 / 1.52		50	SS3	0/0	
					SS4	0/0	
10 / 3.05	With gravel, moist	-3.05 / 3.05	Screen, Silica Sand	100	SS5	0/0	
12.5 / 3.81	Turning wet	-3.81 / 3.81			SS6	0/0	
15.5 / 4.72	Wet	-4.72 / 4.72		100	SS7	0/0	PHCs, VOCs, PAHs, pH, Grain Size
18 / 5.49	End of Borehole (Refusal on inferred Bedrock)	-5.49 / 5.49	Groundwater Level = 4.98 mbgs. on June 23, 2021				

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a photoionization detector (PID) and a combustible gas indicator (CGI).

Grade Elevation: 67.27 mamsl

Top of Casing Elevation: 67.14 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW110

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

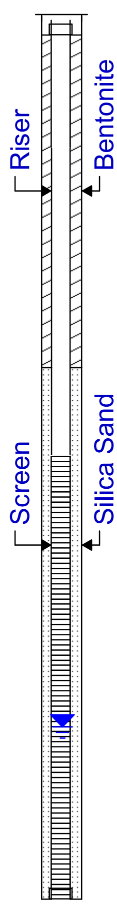
Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 27, 2021

SUBSURFACE PROFILE

Depth (ft / m)	Description	Measured Depth (m)
0 ft / 0 m	Ground Surface	0.00
0 – ~0.05 m	**Asphalt** ~50mm	0.00
~0.05 – 1.52 m	**Fill** Brown sand and gravel, damp, no staining or odours	-1.52
1.52 – 4.11 m	**Silty Clay** Grey silty clay, damp, no staining or odours	1.52 / -4.11
4.11 – 6.10 m	**Silty Clay with Gravel** Grey silty clay with gravel, moist to wet, no staining, PHC-like odours	4.11 / -6.10
6.10 m	End of Borehole (Refusal on inferred Bedrock)	6.10

Monitoring Well Details



Groundwater Level = 4.90 mbgs. on June 23, 2021

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
10	SS1	0/0	
	SS2	0/0	
60	SS3	0/0	
	SS4	0/0	
100	SS5	0/0	
	SS6	0/0	
100	SS7	5200/1925	PHCs, VOCs, PAHs
	SS8	70/66	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 66.97 mamsl

Top of Casing Elevation: 66.88 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW111

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

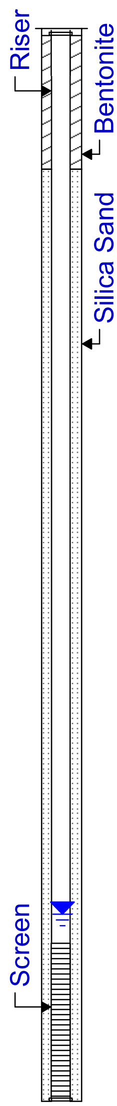
Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 30, 2021

SUBSURFACE PROFILE

Description	Measured Depth (m)
Ground Surface	0.00
Asphalt ~50mm	0.00 – -1.52
Fill Brown sand and gravel, damp, no staining or odours	1.52 – -3.81
Silty Clay Grey silty clay, damp, no staining or odours PHC like odours	3.81
Silty Clay with Gravel Silty clay with gravel, wet, no staining, PHC like odours	-6.40 / 6.40
End of Borehole (Refusal on inferred Bedrock)	

Monitoring Well Details:



SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
10	SS1	0/0	
	SS2	0/0	
75	SS3	0/0	
	SS4	0/0	
100	SS5	0/2	
	SS6	8000/>2000	PHCs, VOCs, PAHs
100	SS7	3200/1842	
	SS8	115/200	
	SS9	105/90	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push, Air Rotary

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 66.55 mamsl

Top of Casing Elevation: 66.45 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW112

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

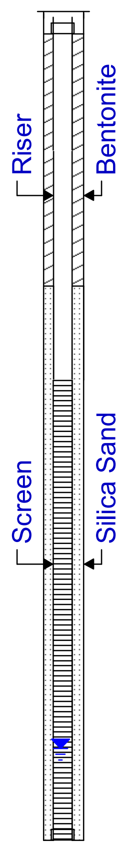
Drill Date: April 27, 2021

SUBSURFACE PROFILE

Depth (ft / m)	Description	Measured Depth (m)
0 ft / 0 m	Ground Surface	0.00
0	***Asphalt*** ~50mm	0.00
	Fill Brown sand and gravel, damp, no staining or odours	
		-2.29
2.29 m	***Silty Clay*** Grey/Brown silty clay, damp, no staining or odours	2.29
		-4.88
4.88 m	***Silty Clay with Gravel*** Silty clay with gravel, moist to wet, no staining or odours	4.88
		-5.49
5.49 m	End of Borehole (Refusal on inferred Bedrock)	5.49

Depth scale: 0–24 ft; 0–7 m.

Monitoring Well Details



Groundwater Level = 4.82 mbgs. on June 23, 2021

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
15	SS1	0/0	
	SS2	0/0	
50	SS3	0/0	PAHs, Metals
	SS4	0/0	
100	SS5	0/0	
	SS6	0/0	
80	SS7	0/12	PHCs, VOCs, PAHs

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 66.23 mamsl

Top of Casing Elevation: 66.32 mamsl

PINCHIN

Log of Borehole: BH113

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 28, 2021

SUBSURFACE PROFILE

Depth (ft / m)	Symbol	Description	Measured Depth (m)	Monitoring Well Details
0 ft / 0 m		Ground Surface	0.00	No Monitoring Well Installed
0–7.5 ft / 0–2.29 m	Fill	***Fill*** Gravel surface, Brown sand and gravel, damp, no staining or odours.	0.00 / -2.29	
7.5–14.5 ft / 2.29–4.42 m	Silty Clay	***Silty Clay*** Grey silty clay, damp, no staining or odours	2.29 / -4.42	
		Slight PHC-like odour		
14.5–17.5 ft / 4.42–5.33 m	Silty Clay	***Silty Clay*** Grey silty clay with gravel, wet, no staining, PHC-like odours	4.42 / -5.33	
17.5–22 ft / 5.33–6.71 m	Silty Clay	No odours	5.33 / -6.71	
22 ft / 6.71 m		End of Borehole (Refusal on inferred Bedrock)	6.71	

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
10	SS1	0/0	
	SS2	0/0	
75	SS3	0/0	PHCs, VOCs
	SS4	0/0	
100	SS5	6/0	
	SS6	0/0	
-	SS7	25/1	PHCs, Metals, PAHs, VOCs
	SS8	0/20	
	SS9	0/0	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BHMW114

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

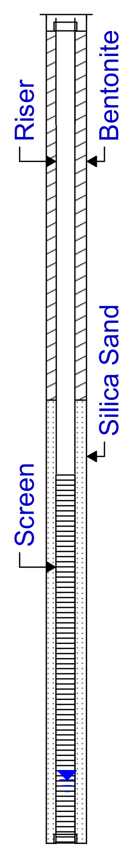
Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 29, 2021

SUBSURFACE PROFILE

Depth (m)	Description	Measured Depth (m)
0	Ground Surface	0.00
0–4.57	***Fill*** Brown sand and gravel, damp, no staining or odours	0.00 / -4.57
4.57–6.10	***No Recovery***	4.57 / -6.10
6.10–7.16	***Silty Clay with Sand and Gravel*** Grey silty clay with sand and gravel, wet, no staining or odours	6.10 / -7.16
7.16	End of Borehole (Refusal on inferred Bedrock)	7.16

Monitoring Well Details:



Groundwater Level = 6.33 mbgs. on June 23, 2021

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
15	SS1	0/0	
	SS2	0/0	
20	SS3	0/0	PAHs, VOCs
	SS4	0/0	
100	SS5	0/0	
	SS6	0/0	
0	SS7	N/A	
	SS8	N/A	
100	SS9	0/0	PHCs, Metals

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 64.72 mamsl

Top of Casing Elevation: 64.56 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW115

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 28, 2021

SUBSURFACE PROFILE				SAMPLE			
Description	Measured Depth (m)	Monitoring Well Details		Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
Ground Surface	0.00						
Fill Brown sand and gravel, damp, no staining or odours	0.00 -1.98	Riser; Bentonite		10	SS1	0/0	
					SS2	0/0	
Silty Clay Grey silty clay, damp, no staining or odours	1.98 -3.20	Screen; Silica Sand		100	SS3	0/0	PAHs, VOCs
					SS4	0/0	
Moist	3.20 -4.42			100	SS5	0/0	
					SS6	0/2	
Turning wet	4.42			100	SS7	65/30	PHCs, VOCs, PAHs, Metals
Wet, PHC like odours	-5.64				SS8	45/5	
Trace gravel	5.64						
With Gravel	-6.55	Groundwater Level = 5.16 mbgs. on June 23, 2021		100	SS9	0/20	
End of Borehole (Refusal on inferred Bedrock)	6.55						

Depth scale: 0–25 ft; 0–7 m

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 65.25 mamsl

Top of Casing Elevation: 65.16 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW116

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 30, 2021

SUBSURFACE PROFILE				SAMPLE			
Depth (ft / m)	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0	Ground Surface	0.00					
0–0.05	***Asphalt*** ~50mm	0.00	Riser, Bentonite	50	SS1	0/0	
0.05–1.52	***Fill*** Brown sand and gravel, damp, no staining or odours	-1.52	Riser, Bentonite	50	SS2	0/0	
1.52–2.29	***Silty Clay*** Grey silty clay, damp, no staining or odours	1.52 / -2.29	Screen, Silica Sand	100	SS3	0/0	
2.29–2.90	PHC-like odours	2.29 / -2.90	Screen, Silica Sand	100	SS4	0/64	PAHs, VOCs, PAHs
2.90–5.18	No odours	2.90	Screen, Silica Sand	100	SS5	0/1	
	Silty Clay with Gravel some Sand Grey silty clay with gravel some sand, wet, no staining or odours		Screen, Silica Sand	100	SS6	0/0	
		-5.18	Screen, Silica Sand	60	SS7	0/0	PHCs, Metals
5.18	End of Borehole (Refusal on inferred Bedrock)	5.18	Groundwater Level = 2.91 mbgs. on June 23, 2021				

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 62.28 mamsl

Top of Casing Elevation: 62.14 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW117

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

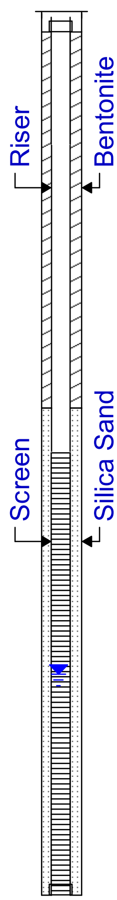
Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 30, 2021

SUBSURFACE PROFILE

Depth (m)	Description	Measured Depth (m)
0	Ground Surface	0.00
0.00 – 1.52	***Asphalt*** ~50mm ***Fill*** Brown sand and gravel, damp, no staining or odours	0.00 -1.52
1.52 – 3.05	Some clay and cobbles	1.52 -3.05
3.05 – 4.57	***No Recovery***	3.05 -4.57
4.57 – 6.10	***Silty Clay with Gravel*** Silty clay with gravel, wet, no staining or odours	4.57 -6.10
6.10	End of Borehole (Refusal on inferred Bedrock)	6.10

Monitoring Well Details



Groundwater Level = 5.16 mbgs. on June 23, 2021

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
50	SS1	0/0	
	SS2	0/0	
48	SS3	0/0	PAHs, VOCs, PAHs, Metals
	SS4	0/0	
0	SS5	0/0	
	SS6	0/0	
50	SS7	0/0	
	SS8	0/0	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 64.42 mamsl

Top of Casing Elevation: 64.3 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW118

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

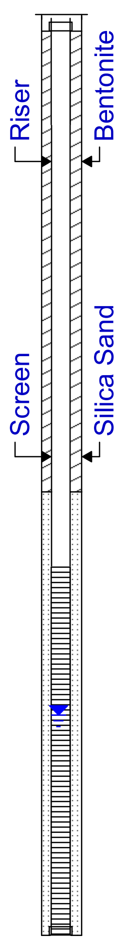
Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 30, 2021

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Description	Measured Depth (m)
0	0	Ground Surface	0.00
0	0	***Asphalt*** ~50mm	0.00
2.5	0.76	***Fill*** Brown sand and gravel, damp, no staining or odours; Asphalt layer	-0.76 / 0.76
10	3.05	With cobbles, trace clay	-3.05 / 3.05
15	4.57	***Silty Clay some Gravel*** Silty clay some gravel, moist, no staining or odours	-4.57 / 4.57
19	5.79	Turning wet	-5.79 / 5.79
20		***No Recovery***	
25	7.62	End of Borehole (Refusal on inferred Bedrock)	-7.62 / 7.62

Monitoring Well Details:



Groundwater Level = 4.69 mbgs. on June 23, 2021

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
50	SS1	0/0	
	SS2	10/1	PAHs, VOCs, PAHs, metals
15	SS3	0/0	
	SS4	0/0	
100	SS5	0/0	
	SS6	0/0	
20	SS7	0/0	
	SS8	0/0	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 64.83 mamsl

Top of Casing Elevation: 64.66 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW119

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

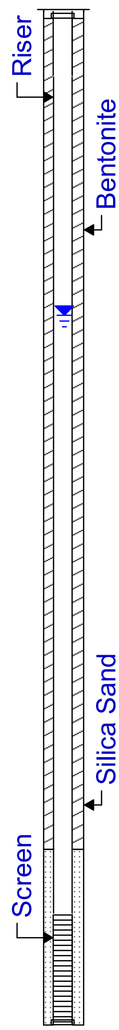
Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 30, 2021

SUBSURFACE PROFILE / SAMPLE

Depth (ft / m)	Symbol	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 / 0		Ground Surface	0.00					
0 – 27 ft / 0 – 8.23 m		***No Sample***	0.00 – -8.23			NO SAMPLES		
27 – 46 ft / 8.23 – 14.02 m		***Bedrock*** Limestone, shale	8.23 – -14.02					
46 ft / 14.02 m		End of Borehole	14.02	Groundwater Level = 4.22 mbgs. on June 23, 2021				



Groundwater Level = 4.22 mbgs. on June 23, 2021

Contractor: Strata Drilling Group Inc.

Drilling Method: Air Rotary

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 64.49 mamsl

Top of Casing Elevation: 64.4 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW120

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

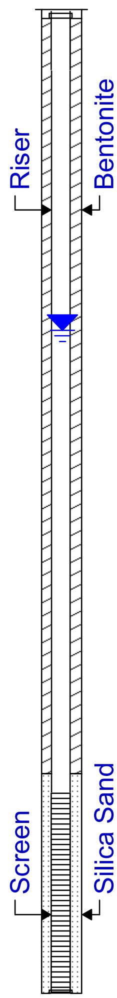
Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: April 30, 2021

SUBSURFACE PROFILE / SAMPLE

Depth (ft / m)	Symbol	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 / 0		Ground Surface	0.00					
0 / 0		***No Sample***	0.00			NO SAMPLES		
24 / 7.32		***Bedrock*** Limestone, shale	-7.32 / 7.32					
49 / 14.94		End of Borehole	-14.94 / 14.94	Groundwater Level = 4.87 mbgs. on June 23, 2021				



Contractor: Strata Drilling Group Inc.

Drilling Method: Air Rotary

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 65.02 mamsl

Top of Casing Elevation: 64.92 mamsl

Sheet: 1 of 1

Log of Borehole: BH121

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: May 25, 2021

SUBSURFACE PROFILE					SAMPLE			
Depth (ft / m)	Symbol	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 ft / 0 m		Ground Surface	0.00					
0–7 ft / 0–2.13 m		***Sand and Gravel trace Silt*** Brown sand and gravel trace silt, damp, no staining or odours	0.00 / -2.13	No Monitoring Well Installed	60	SS1	0/1	PHCs, PAHs,PCBs
						SS2	0/1	
7–10 ft / 2.13–3.05 m		***Silty Clay*** Grey silty clay, damp, no staining or odours	2.13 / -3.05		90	SS3	0/1	
						SS4	0/0	
10 ft / 3.05 m		End of Borehole (No Refusal)	3.05					

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BHMW122

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

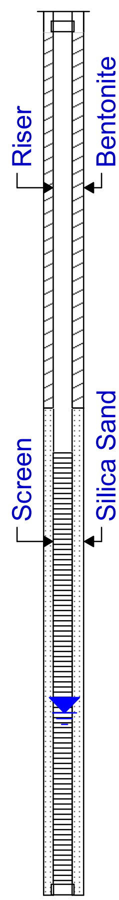
Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: May 25, 2021

SUBSURFACE PROFILE / SAMPLE

Depth (ft)	Depth (m)	Description	Measured Depth (m)	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0	0	Ground Surface	0.00				
0–2	0–0.5	***Asphalt*** ~50mm	0.00	35	SS1	0/0	
2–11	0.5–3.35	***Fill*** Brown sand and gravel trace silt, damp, no staining or odours		35	SS2	0/0	
				40	SS3	0/0	
			-3.35	40	SS4	0/0	
11–14	3.35–4.27	***Silty Clay*** Grey silty clay, damp to moist, no staining or odours	3.35	100	SS5	0/0	
			-4.27	100	SS6	0/42	PHCs, VOCs,PAHs, Metals
14–15	4.27	PHC like odours	4.27				
15–20	4.57–6.10	***Silty Clay with Gravel*** Silty clay with gravel, wet, no staining, or odours		100	SS7	0/0	
			-6.10	100	SS8	0/0	PHCs,VOCs, PAHs, Metals
20	6.10	End of Borehole (No Refusal)	6.10				



Groundwater Elevation = 4.84 mbgs. on June 23, 2021

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 65.09 mamsl

Top of Casing Elevation: 64.95 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW123

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

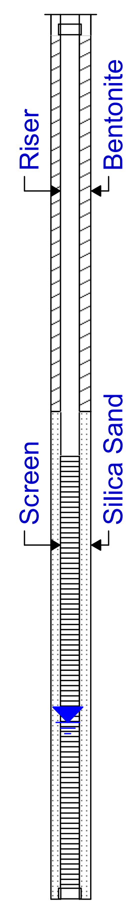
Drill Date: May 25, 2021

SUBSURFACE PROFILE

Description	Measured Depth (m)
Ground Surface	0.00
Asphalt ~50mm	0.00
Fill Brown sand and gravel trace silt, damp, no staining or odours	-1.52
Large gravel	1.52 / -4.27
Silty Clay with Gravel Silty clay with gravel, moist, no staining or odours	4.27
Boulders	-6.10
End of Borehole (No Refusal)	6.10

Depth scale: 0–25 ft; 0–7 m

Monitoring Well Details:



Groundwater Level = 4.88 mbgs. on June 23, 2021

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
25	SS1	0/0	
	SS2	0/0	
100	SS3	0/0	
	SS4	0/0	
30	SS5	0/0	PHCs, VOCs,PAHs, Metals
	SS6	0/0	
N/A	SS7	N/A	
	SS8	N/A	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 65.11 mamsl

Top of Casing Elevation: 64.98 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW124

Project #: 285722.003 **Logged By:** MK

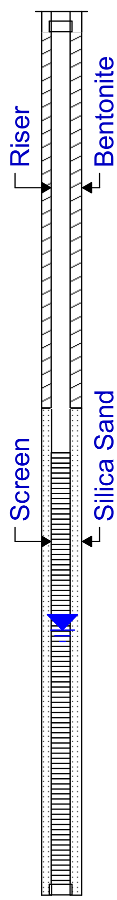
Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: May 25, 2021

SUBSURFACE PROFILE				SAMPLE			
Depth (ft / m)	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 ft / 0 m	Ground Surface	0.00					
0–0.05 m	***Asphalt*** ~50mm	0.00		75	SS1	0/0	PHCs, VOCs, PAHs, Metals, EC, SAR
0.05–3.05 m	***Fill*** Brown sand and gravel trace silt, damp, no staining or odours	-3.05			SS2	0/0	
				45	SS3	0/0	
					SS4	0/0	
3.05–4.57 m	***Silty Clay some Sand and Gravel*** Brown/Grey silty clay some sand and gravels, moist, no staining or odours	3.05 / -4.57		70	SS5	0/0	
					SS6	0/0	
4.57–6.10 m	***Silty Clay trace Gravel*** Grey silty clay trace gravel, moist, no staining or odours	4.57 / -6.10		100	SS7	0/0	
					SS8	0/0	PHCs, VOCs, PAHs, Metals, EC, SAR
6.10 m	End of Borehole (Refusal on inferred Bedrock)	6.10	Groundwater Level = 4.27 mbgs. on June 23, 2021				



Depth scale: ft 0–25; m 0–7

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 64.38 mamsl

Top of Casing Elevation: 64.3 mamsl

Sheet: 1 of 1

Log of Borehole: BHMW125

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

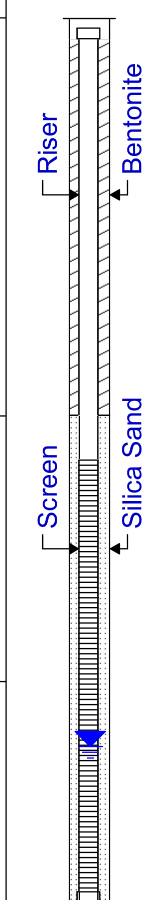
Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: October 6, 2021

SUBSURFACE PROFILE

Description	Measured Depth (m)
Ground Surface	0.00
Topsoil	0.00
Sand and Gravel Brown, damp, large stones throughout, no staining or odours	-2.74
Silty Clay Grey, damp, no staining or odours	2.74 -4.57
Silty Clay with large Gravel Grey, wet, no staining or odours	4.57 -6.10
End of Borehole (Refusal on inferred Bedrock)	6.10

Monitoring Well Details



Groundwater Level = 5.02 mbgs. on October 12, 2021

SAMPLE

Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
50	SS1	0/0	
	SS2	0/0	
60	SS3	0/0	
	SS4	0/0	
100	SS5	0/0	
	SS6	0/0	
100	SS7	0/0	PHCs, VOCs, PAHs
	SS8	0/0	

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 65.74 mamsl

Top of Casing Elevation: 65.62 mamsl

Sheet: 1 of 1

Log of Borehole: BH126

Project #: 285722.003 ***Logged By:*** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership

Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: May 25, 2021

SUBSURFACE PROFILE					SAMPLE			
Depth (ft / m)	Symbol	Description	Measured Depth (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 / 0		Ground Surface	0.00					
0 – 5 ft / 0 – 1.52 m		***Gravel***	0.00	No Monitoring Well Installed	30	SS1	0/0	PHCs, PAHs,VOCs
		Fill Brownish black sand and gravel, damp, no staining, slight VOC like odours				SS2	0/0	
5 ft		End of Borehole (Rig refusal on inferred Concrete)	-1.52 / 1.52					

Depth scale: ft 0–10; m 0–3.

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: N/A

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: N/A

Top of Casing Elevation: N/A

Sheet: 1 of 1

Log of Borehole: BHMW127

Project #: 285722.003 **Logged By:** MK

Project: Phase Two Environmental Site Assessment

Client: TIP Gladstone Limited Partnership C/O

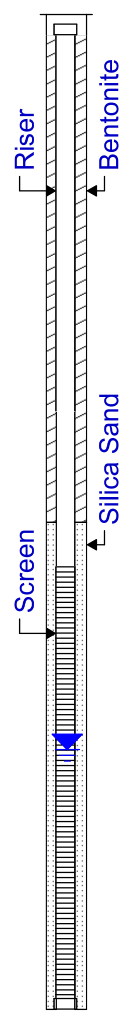
Location: 951 Gladstone Ave. and 145 Loretta Ave. N, Ottawa, Ontario

Drill Date: October 6, 2021

SUBSURFACE PROFILE / SAMPLE

Depth (ft / m)	Description	Measured Depth (m)	Recovery (%)	Sample ID	Soil Vapour Concentration* (ppm) CGI/PID	Laboratory Analysis
0 / 0	Ground Surface	0.00				
0	***Gravel***	0.00	55	SS1	0/0	
	Fill Brown sand and gravel, trace bricks, damp, no staining or odours			SS2	0/0	
5	Large gravel stones	-1.52 / 1.52	55	SS3	0/0	
				SS4	0/0	
11	***Silty Clay*** Grey, damp, no staining or odours	-3.35 / 3.35	75	SS5	0/0	
				SS6	0/0	PHCs, VOCs, PAHs
15	Trace gravel	-4.57 / 4.57	100	SS7	0/0	
				SS8	0/0	
			100	SS9	0/0	
22.5 / 7	End of Borehole (Refusal on inferred Bedrock)	-6.86 / 6.86				

Monitoring Well Details



Groundwater Level = 5.07 mbgs. on October 12, 2021

Contractor: Strata Drilling Group Inc.

Drilling Method: Direct Push

Well Casing Size: 5.1 cm

Note:
* Soil vapour concentrations measured using a RKI Eagle 2 equipped with a combustible gas indicator (CGI) and a photoionization detector (PID).

Grade Elevation: 64.92 mamsl

Top of Casing Elevation: 64.82 mamsl

Sheet: 1 of 1

APPENDIX D

Laboratory Certificates of Analysis

Your Project #: 285722.003
Your C.O.C. #: 791448-01-01, C#831272-01-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/06/18
Report #: R6682264
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G1158
Received: 2021/06/10, 14:20

Sample Matrix: Ground Water
Samples Received: 15

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	13	N/A	2021/06/16	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	7	N/A	2021/06/17		EPA 8260C m
1,3-Dichloropropene Sum (1)	8	N/A	2021/06/18		EPA 8260C m
Chloride by Automated Colourimetry (1)	2	N/A	2021/06/15	CAM SOP-00463	SM 23 4500-Cl E m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	13	2021/06/15	2021/06/15	CAM SOP-00316	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	1	2021/06/16	2021/06/16	CAM SOP-00316	CCME PHC-CWS m
Dissolved Metals by ICPMS (1)	2	N/A	2021/06/17	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM) (1)	9	2021/06/15	2021/06/15	CAM SOP-00318	EPA 8270D m
PAH Compounds in Water by GC/MS (SIM) (1)	4	2021/06/15	2021/06/16	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	15	N/A	2021/06/17	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 285722.003
Your C.O.C. #: 791448-01-01, C#831272-01-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/06/18
Report #: R6682264
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G1158
Received: 2021/06/10, 14:20

(1) This test was performed by Bureau Veritas Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

RESULTS OF ANALYSES OF GROUND WATER

BV Labs ID		PUW586	PUW587		
Sampling Date		2021/06/09	2021/06/09		
COC Number		C#831272-01-01	C#831272-01-01		
	UNITS	BHMW124	GWDUP-2	RDL	QC Batch
Inorganics					
Dissolved Chloride (Cl-)	mg/L	3500	3700	40	7408977

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

BV Labs ID		PUW588		
Sampling Date		2021/06/09		
COC Number		C#831272-01-01		
	UNITS	**TRIP BLANK LOT # 3700**	**RDL**	**QC Batch**
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	7405641
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	7406720
Benzene	ug/L	<0.20	0.20	7406720
Bromodichloromethane	ug/L	<0.50	0.50	7406720
Bromoform	ug/L	<1.0	1.0	7406720
Bromomethane	ug/L	<0.50	0.50	7406720
Carbon Tetrachloride	ug/L	<0.20	0.20	7406720
Chlorobenzene	ug/L	<0.20	0.20	7406720
Chloroform	ug/L	<0.20	0.20	7406720
Dibromochloromethane	ug/L	<0.50	0.50	7406720
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7406720
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7406720
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7406720
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7406720
1,1-Dichloroethane	ug/L	<0.20	0.20	7406720
1,2-Dichloroethane	ug/L	<0.50	0.50	7406720
1,1-Dichloroethylene	ug/L	<0.20	0.20	7406720
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7406720
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7406720
1,2-Dichloropropane	ug/L	<0.20	0.20	7406720
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7406720
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7406720
Ethylbenzene	ug/L	<0.20	0.20	7406720
Ethylene Dibromide	ug/L	<0.20	0.20	7406720
Hexane	ug/L	<1.0	1.0	7406720
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7406720
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7406720
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7406720
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7406720
Styrene	ug/L	<0.50	0.50	7406720
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7406720
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7406720
Tetrachloroethylene	ug/L	<0.20	0.20	7406720
Toluene	ug/L	<0.20	0.20	7406720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

BV Labs ID		PUW588		
Sampling Date		2021/06/09		
COC Number		C#831272-01-01		
	UNITS	**TRIP BLANK LOT # 3700**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7406720
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7406720
Trichloroethylene	ug/L	<0.20	0.20	7406720
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7406720
Vinyl Chloride	ug/L	<0.20	0.20	7406720
p+m-Xylene	ug/L	<0.20	0.20	7406720
o-Xylene	ug/L	<0.20	0.20	7406720
Total Xylenes	ug/L	<0.20	0.20	7406720
F1 (C6-C10)	ug/L	<25	25	7406720
F1 (C6-C10) - BTEX	ug/L	<25	25	7406720
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	89		7406720
D4-1,2-Dichloroethane	%	114		7406720
D8-Toluene	%	90		7406720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 DISSOLVED ICPMS METALS (WATER)

BV Labs ID		PUW586	PUW587		
Sampling Date		2021/06/09	2021/06/09		
COC Number		C#831272-01-01	C#831272-01-01		
	UNITS	**BHMW124**	**GWDUP-2**	**RDL**	**QC Batch**
Metals					
Dissolved Antimony (Sb)	ug/L	<2.5	<2.5	2.5	7407329
Dissolved Arsenic (As)	ug/L	<5.0	<5.0	5.0	7407329
Dissolved Barium (Ba)	ug/L	310	320	10	7407329
Dissolved Beryllium (Be)	ug/L	<2.0	<2.0	2.0	7407329
Dissolved Boron (B)	ug/L	82	82	50	7407329
Dissolved Cadmium (Cd)	ug/L	<0.45	<0.45	0.45	7407329
Dissolved Chromium (Cr)	ug/L	<25	<25	25	7407329
Dissolved Cobalt (Co)	ug/L	<2.5	<2.5	2.5	7407329
Dissolved Copper (Cu)	ug/L	<4.5	<4.5	4.5	7407329
Dissolved Lead (Pb)	ug/L	<2.5	<2.5	2.5	7407329
Dissolved Molybdenum (Mo)	ug/L	7.1	6.9	2.5	7407329
Dissolved Nickel (Ni)	ug/L	14	13	5.0	7407329
Dissolved Selenium (Se)	ug/L	<10	<10	10	7407329
Dissolved Silver (Ag)	ug/L	<0.45	<0.45	0.45	7407329
Dissolved Sodium (Na)	ug/L	1300000	1400000	500	7407329
Dissolved Thallium (Tl)	ug/L	<0.25	<0.25	0.25	7407329
Dissolved Uranium (U)	ug/L	8.9	9.1	0.50	7407329
Dissolved Vanadium (V)	ug/L	<2.5	<2.5	2.5	7407329
Dissolved Zinc (Zn)	ug/L	<25	<25	25	7407329
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

O.REG 153 PAHS (GROUND WATER)

BV Labs ID		PUW561	PUW563	PUW564		PUW565		PUW566		
Sampling Date		2021/06/09	2021/06/09	2021/06/09		2021/06/09		2021/06/09		
COC Number		791448-01-01	791448-01-01	791448-01-01		791448-01-01		791448-01-01		
	UNITS	**BHMW108**	**BHMW110**	**BHMW112**	**RDL**	**BHMW115**	**RDL**	**BHMW116**	**RDL**	**QC Batch**
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/L	2.3	1.8	<0.071	0.071	<0.071	0.071	<0.071	0.071	7405979
Polyaromatic Hydrocarbons										
Acenaphthene	ug/L	<0.050	<0.050	<0.050	0.050	<0.20 (1)	0.20	<0.050	0.050	7407914
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	0.050	0.13	0.050	<0.050	0.050	7407914
Anthracene	ug/L	<0.050	<0.050	<0.050	0.050	0.067	0.050	<0.050	0.050	7407914
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	0.14	0.050	<0.050	0.050	7407914
Benzo(a)pyrene	ug/L	0.011	<0.0090	<0.0090	0.0090	0.12	0.0090	<0.0090	0.0090	7407914
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	0.20	0.050	<0.050	0.050	7407914
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	0.050	0.076	0.050	<0.050	0.050	7407914
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	0.060	0.050	<0.050	0.050	7407914
Chrysene	ug/L	<0.050	<0.050	<0.050	0.050	0.13	0.050	<0.050	0.050	7407914
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7407914
Fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	0.37	0.050	0.080	0.050	7407914
Fluorene	ug/L	<0.050	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7407914
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	0.050	0.071	0.050	<0.050	0.050	7407914
1-Methylnaphthalene	ug/L	0.97	1.2	<0.050	0.050	<0.050	0.050	<0.050	0.050	7407914
2-Methylnaphthalene	ug/L	1.3	0.60	<0.050	0.050	<0.050	0.050	<0.050	0.050	7407914
Naphthalene	ug/L	5.5	1.2	<0.050	0.050	<0.050	0.050	<0.050	0.050	7407914
Phenanthrene	ug/L	<0.030	<0.030	<0.030	0.030	0.27	0.030	0.16	0.030	7407914
Pyrene	ug/L	<0.050	<0.050	<0.050	0.050	0.29	0.050	0.058	0.050	7407914
Surrogate Recovery (%)										
D10-Anthracene	%	101	101	108		108		106		7407914
D14-Terphenyl (FS)	%	67	82	84		76		66		7407914
D8-Acenaphthylene	%	104	96	93		101		101		7407914

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (GROUND WATER)

BV Labs ID		PUW567			PUW567			PUW568		
Sampling Date		2021/06/09			2021/06/09			2021/06/09		
COC Number		791448-01-01			791448-01-01			791448-01-01		
	UNITS	BHMW117	RDL	QC Batch	BHMW117 Lab-Dup	RDL	QC Batch	BHMW118	RDL	QC Batch
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/L	<0.071	0.071	7405979				<0.071	0.071	7405979
Polyaromatic Hydrocarbons										
Acenaphthene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Acenaphthylene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Anthracene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Benzo(a)anthracene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Benzo(a)pyrene	ug/L	0.013	0.0090	7407914	<0.0090	0.0090	7407914	0.010	0.0090	7407914
Benzo(b/j)fluoranthene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Benzo(k)fluoranthene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Chrysene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Dibenzo(a,h)anthracene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Fluoranthene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Fluorene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
1-Methylnaphthalene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
2-Methylnaphthalene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Naphthalene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Phenanthrene	ug/L	0.054	0.030	7407914	0.046	0.030	7407914	0.031	0.030	7407914
Pyrene	ug/L	<0.050	0.050	7407914	<0.050	0.050	7407914	<0.050	0.050	7407914
Surrogate Recovery (%)										
D10-Anthracene	%	113		7407914	102		7407914	101		7407914
D14-Terphenyl (FS)	%	94		7407914	88		7407914	77		7407914
D8-Acenaphthylene	%	102		7407914	90		7407914	86		7407914

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (GROUND WATER)

BV Labs ID		PUW569	PUW570	PUW584	PUW585	PUW586		
Sampling Date		2021/06/09	2021/06/09	2021/06/09	2021/06/09	2021/06/09		
COC Number		791448-01-01	791448-01-01	C#831272-01-01	C#831272-01-01	C#831272-01-01		
	UNITS	**BHMW120**	**GWDUP-1**	**BHMW122**	**BHMW123**	**BHMW124**	**RDL**	**QC Batch**
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.084	<0.071	<0.071	0.071	7405979
Polyaromatic Hydrocarbons								
Acenaphthene	ug/L	<0.050	<0.050	0.14	<0.050	<0.050	0.050	7407914
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	0.0090	7407914
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Chrysene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.084	<0.050	<0.050	0.050	7407914
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Naphthalene	ug/L	<0.050	<0.050	0.072	<0.050	<0.050	0.050	7407914
Phenanthrene	ug/L	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	7407914
Pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7407914
Surrogate Recovery (%)								
D10-Anthracene	%	115	104	111	98	112		7407914
D14-Terphenyl (FS)	%	97	87	89	69	86		7407914
D8-Acenaphthylene	%	99	89	104	87	100		7407914

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PAHS (GROUND WATER)

BV Labs ID		PUW587		
Sampling Date		2021/06/09		
COC Number		C#831272-01-01		
	UNITS	GWDUP-2	RDL	QC Batch
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/L	<0.071	0.071	7405979
Polyaromatic Hydrocarbons				
Acenaphthene	ug/L	<0.050	0.050	7407914
Acenaphthylene	ug/L	<0.050	0.050	7407914
Anthracene	ug/L	<0.050	0.050	7407914
Benzo(a)anthracene	ug/L	<0.050	0.050	7407914
Benzo(a)pyrene	ug/L	<0.0090	0.0090	7407914
Benzo(b/j)fluoranthene	ug/L	<0.050	0.050	7407914
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	7407914
Benzo(k)fluoranthene	ug/L	<0.050	0.050	7407914
Chrysene	ug/L	<0.050	0.050	7407914
Dibenzo(a,h)anthracene	ug/L	<0.050	0.050	7407914
Fluoranthene	ug/L	<0.050	0.050	7407914
Fluorene	ug/L	<0.050	0.050	7407914
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	7407914
1-Methylnaphthalene	ug/L	<0.050	0.050	7407914
2-Methylnaphthalene	ug/L	<0.050	0.050	7407914
Naphthalene	ug/L	<0.050	0.050	7407914
Phenanthrene	ug/L	<0.030	0.030	7407914
Pyrene	ug/L	<0.050	0.050	7407914
Surrogate Recovery (%)				
D10-Anthracene	%	101		7407914
D14-Terphenyl (FS)	%	79		7407914
D8-Acenaphthylene	%	89		7407914

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

BV Labs ID		PUW561			PUW562		PUW563	PUW564		
Sampling Date		2021/06/09			2021/06/09		2021/06/09	2021/06/09		
COC Number		791448-01-01			791448-01-01		791448-01-01	791448-01-01		
	UNITS	BHMW108	RDL	QC Batch	BHMW109	QC Batch	BHMW110	BHMW112	RDL	QC Batch
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	7405641	<0.50	7405641	<0.50	<0.50	0.50	7405641
Volatile Organics										
Acetone (2-Propanone)	ug/L	160	10	7406720	28	7406720	59	<10	10	7406720
Benzene	ug/L	37	0.20	7406720	<0.20	7406720	0.24	<0.20	0.20	7406720
Bromodichloromethane	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
Bromoform	ug/L	<1.0	1.0	7406720	<1.0	7406720	<1.0	<1.0	1.0	7406720
Bromomethane	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
Carbon Tetrachloride	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
Chlorobenzene	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
Chloroform	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
Dibromochloromethane	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7406720	<1.0	7406720	<1.0	<1.0	1.0	7406720
1,1-Dichloroethane	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
1,2-Dichloroethane	ug/L	<0.50	0.50	7406720	<0.50	7406720	0.55	<0.50	0.50	7406720
1,1-Dichloroethylene	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
1,2-Dichloropropane	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7406720	<0.30	7406720	<0.30	<0.30	0.30	7406720
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7406720	<0.40	7406720	<0.40	<0.40	0.40	7406720
Ethylbenzene	ug/L	16	0.20	7406720	<0.20	7406720	12	<0.20	0.20	7406720
Ethylene Dibromide	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
Hexane	ug/L	3.6	1.0	7406720	<1.0	7406720	<1.0	<1.0	1.0	7406720
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7406720	<2.0	7406720	<2.0	<2.0	2.0	7406720
Methyl Ethyl Ketone (2-Butanone)	ug/L	24	10	7406720	<10	7406720	<10	<10	10	7406720
Methyl Isobutyl Ketone	ug/L	7.8	5.0	7406720	<5.0	7406720	10	<5.0	5.0	7406720
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
Styrene	ug/L	<2.0 (1)	2.0	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
Tetrachloroethylene	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
Toluene	ug/L	250	0.50	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) The detection limit was raised due to interference from coeluting o-xylene.

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

BV Labs ID		PUW561			PUW562		PUW563	PUW564		
Sampling Date		2021/06/09			2021/06/09		2021/06/09	2021/06/09		
COC Number		791448-01-01			791448-01-01		791448-01-01	791448-01-01		
	UNITS	BHMW108	RDL	QC Batch	BHMW109	QC Batch	BHMW110	BHMW112	RDL	QC Batch
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
Trichloroethylene	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7406720	<0.50	7406720	<0.50	<0.50	0.50	7406720
Vinyl Chloride	ug/L	<0.20	0.20	7406720	<0.20	7406720	<0.20	<0.20	0.20	7406720
p+m-Xylene	ug/L	150	0.20	7406720	<0.20	7406720	11	<0.20	0.20	7406720
o-Xylene	ug/L	130	0.20	7406720	<0.20	7406720	1.8	<0.20	0.20	7406720
Total Xylenes	ug/L	280	0.20	7406720	<0.20	7406720	13	<0.20	0.20	7406720
F1 (C6-C10)	ug/L	1200	63	7406720	<25	7406720	490	<25	25	7406720
F1 (C6-C10) - BTEX	ug/L	630	63	7406720	<25	7406720	470	<25	25	7406720
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	410	100	7407924	<100	7410416	380	<100	100	7407924
F3 (C16-C34 Hydrocarbons)	ug/L	250	200	7407924	<200	7410416	<200	<200	200	7407924
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	7407924	<200	7410416	<200	<200	200	7407924
Reached Baseline at C50	ug/L	Yes		7407924	Yes	7410416	Yes	Yes		7407924
Surrogate Recovery (%)										
o-Terphenyl	%	94		7407924	96	7410416	97	96		7407924
4-Bromofluorobenzene	%	87		7406720	79	7406720	90	77		7406720
D4-1,2-Dichloroethane	%	105		7406720	122	7406720	103	123		7406720
D8-Toluene	%	110		7406720	86	7406720	94	90		7406720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

BV Labs ID		PUW565	PUW566	PUW567			PUW567		
Sampling Date		2021/06/09	2021/06/09	2021/06/09			2021/06/09		
COC Number		791448-01-01	791448-01-01	791448-01-01			791448-01-01		
	UNITS	**BHMW115**	**BHMW116**	**BHMW117**	**RDL**	**QC Batch**	**BHMW117 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	0.50	7405641			
Volatile Organics									
Acetone (2-Propanone)	ug/L	<10	<10	<10	10	7406720			
Benzene	ug/L	8.1	<0.20	<0.20	0.20	7406720			
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	7406720			
Bromomethane	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
Chloroform	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	1.0	7406720			
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
1,2-Dichloroethane	ug/L	<0.50	8.1	<0.50	0.50	7406720			
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	0.30	7406720			
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	0.40	7406720			
Ethylbenzene	ug/L	0.26	<0.20	<0.20	0.20	7406720			
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
Hexane	ug/L	<1.0	<1.0	<1.0	1.0	7406720			
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	2.0	7406720			
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	10	7406720			
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	5.0	7406720			
Methyl t-butyl ether (MTBE)	ug/L	5.8	140	<0.50	0.50	7406720			
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
Toluene	ug/L	0.43	<0.20	<0.20	0.20	7406720			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

BV Labs ID		PUW565	PUW566	PUW567			PUW567		
Sampling Date		2021/06/09	2021/06/09	2021/06/09			2021/06/09		
COC Number		791448-01-01	791448-01-01	791448-01-01			791448-01-01		
	UNITS	**BHMW115**	**BHMW116**	**BHMW117**	**RDL**	**QC Batch**	**BHMW117 Lab-Dup**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	0.50	7406720			
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
Total Xylenes	ug/L	<0.20	<0.20	<0.20	0.20	7406720			
F1 (C6-C10)	ug/L	51	<25	<25	25	7406720			
F1 (C6-C10) - BTEX	ug/L	42	<25	<25	25	7406720			
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	240	120	<100	100	7407924	<100	100	7407924
F3 (C16-C34 Hydrocarbons)	ug/L	740	320	<200	200	7407924	<200	200	7407924
F4 (C34-C50 Hydrocarbons)	ug/L	<200	240	<200	200	7407924	<200	200	7407924
Reached Baseline at C50	ug/L	Yes	Yes	Yes		7407924	Yes		7407924
Surrogate Recovery (%)									
o-Terphenyl	%	95	97	93		7407924	96		7407924
4-Bromofluorobenzene	%	95	94	92		7406720			
D4-1,2-Dichloroethane	%	110	109	114		7406720			
D8-Toluene	%	90	91	89		7406720			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

BV Labs ID		PUW568	PUW569	PUW570	PUW584	PUW585		
Sampling Date		2021/06/09	2021/06/09	2021/06/09	2021/06/09	2021/06/09		
COC Number		791448-01-01	791448-01-01	791448-01-01	C#831272-01-01	C#831272-01-01		
	UNITS	BHMW118	BHMW120	GWDUP-1	BHMW122	BHMW123	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7405641
Volatile Organics								
Acetone (2-Propanone)	ug/L	<10	<10	<10	<10	<10	10	7406720
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7406720
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
Chloroform	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7406720
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
1,2-Dichloroethane	ug/L	<0.50	5.2	5.0	<0.50	<0.50	0.50	7406720
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	7406720
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7406720
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7406720
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	7406720
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	<10	10	7406720
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	7406720
Methyl t-butyl ether (MTBE)	ug/L	2.4	39	37	<0.50	<0.50	0.50	7406720
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

BV Labs ID		PUW568	PUW569	PUW570	PUW584	PUW585		
Sampling Date		2021/06/09	2021/06/09	2021/06/09	2021/06/09	2021/06/09		
COC Number		791448-01-01	791448-01-01	791448-01-01	C#831272-01-01	C#831272-01-01		
	UNITS	**BHMW118**	**BHMW120**	**GWDUP-1**	**BHMW122**	**BHMW123**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7406720
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7406720
p+m-Xylene	ug/L	<0.20	0.22	0.22	<0.20	<0.20	0.20	7406720
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.86	<0.20	0.20	7406720
Total Xylenes	ug/L	<0.20	0.22	0.22	0.86	<0.20	0.20	7406720
F1 (C6-C10)	ug/L	<25	34	<25	<25	<25	25	7406720
F1 (C6-C10) - BTEX	ug/L	<25	34	<25	<25	<25	25	7406720
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	170	120	100	7407924
F3 (C16-C34 Hydrocarbons)	ug/L	220	<200	220	<200	250	200	7407924
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	7407924
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes		7407924
Surrogate Recovery (%)								
o-Terphenyl	%	94	94	92	94	94		7407924
4-Bromofluorobenzene	%	93	77	78	78	93		7406720
D4-1,2-Dichloroethane	%	115	126	126	127	114		7406720
D8-Toluene	%	87	90	89	90	88		7406720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

BV Labs ID		PUW586	PUW587		
Sampling Date		2021/06/09	2021/06/09		
COC Number		C#831272-01-01	C#831272-01-01		
	UNITS	**BHMW124**	**GWDUP-2**	**RDL**	**QC Batch**
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	7405641
Volatile Organics					
Acetone (2-Propanone)	ug/L	<10	<10	10	7406720
Benzene	ug/L	<0.20	<0.20	0.20	7406720
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	7406720
Bromoform	ug/L	<1.0	<1.0	1.0	7406720
Bromomethane	ug/L	<0.50	<0.50	0.50	7406720
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	7406720
Chlorobenzene	ug/L	<0.20	<0.20	0.20	7406720
Chloroform	ug/L	<0.20	<0.20	0.20	7406720
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	7406720
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	7406720
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	7406720
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	7406720
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	7406720
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	7406720
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	7406720
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	7406720
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	7406720
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	7406720
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	7406720
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	7406720
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	7406720
Ethylbenzene	ug/L	<0.20	<0.20	0.20	7406720
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	7406720
Hexane	ug/L	<1.0	<1.0	1.0	7406720
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	7406720
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	7406720
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	7406720
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	7406720
Styrene	ug/L	<0.50	<0.50	0.50	7406720
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	7406720
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	7406720
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	7406720
Toluene	ug/L	<0.20	<0.20	0.20	7406720
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	7406720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

BV Labs ID		PUW586	PUW587		
Sampling Date		2021/06/09	2021/06/09		
COC Number		C#831272-01-01	C#831272-01-01		
	UNITS	**BHMW124**	**GWDUP-2**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	7406720
Trichloroethylene	ug/L	<0.20	<0.20	0.20	7406720
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	7406720
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	7406720
p+m-Xylene	ug/L	<0.20	<0.20	0.20	7406720
o-Xylene	ug/L	<0.20	<0.20	0.20	7406720
Total Xylenes	ug/L	<0.20	<0.20	0.20	7406720
F1 (C6-C10)	ug/L	<25	<25	25	7406720
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	7406720
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	<100	130	100	7407924
F3 (C16-C34 Hydrocarbons)	ug/L	<200	240	200	7407924
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	7407924
Reached Baseline at C50	ug/L	Yes	Yes		7407924
Surrogate Recovery (%)					
o-Terphenyl	%	93	93		7407924
4-Bromofluorobenzene	%	89	90		7406720
D4-1,2-Dichloroethane	%	113	116		7406720
D8-Toluene	%	90	90		7406720

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

BV Labs ID: PUW561
Sample ID: BHMW108
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/17	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW562
Sample ID: BHMW109
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/17	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7410416	2021/06/16	2021/06/16	Jeevaraj Jeevaratrnam
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW563
Sample ID: BHMW110
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/17	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW564
Sample ID: BHMW112
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/17	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW565
Sample ID: BHMW115
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/18	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

TEST SUMMARY

BV Labs ID: PUW566
Sample ID: BHMW116
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/18	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW567
Sample ID: BHMW117
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/18	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW567 Dup
Sample ID: BHMW117
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon

BV Labs ID: PUW568
Sample ID: BHMW118
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/18	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW569
Sample ID: BHMW120
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/17	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

TEST SUMMARY

BV Labs ID: PUW570 **Collected:** 2021/06/09
Sample ID: GWDUP-1 **Shipped:**
Matrix: Ground Water **Received:** 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/17	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/15	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW584 **Collected:** 2021/06/09
Sample ID: BHMW122 **Shipped:**
Matrix: Ground Water **Received:** 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/17	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/16	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW585 **Collected:** 2021/06/09
Sample ID: BHMW123 **Shipped:**
Matrix: Ground Water **Received:** 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/18	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/16	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW586 **Collected:** 2021/06/09
Sample ID: BHMW124 **Shipped:**
Matrix: Ground Water **Received:** 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/18	Automated Statchk
Chloride by Automated Colourimetry	KONE	7408977	N/A	2021/06/15	Avneet Kour Sudan
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
Dissolved Metals by ICPMS	ICP/MS	7407329	N/A	2021/06/17	Prempal Bhatti
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/16	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW587 **Collected:** 2021/06/09
Sample ID: GWDUP-2 **Shipped:**
Matrix: Ground Water **Received:** 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7405979	N/A	2021/06/16	Automated Statchk

TEST SUMMARY

BV Labs ID: PUW587
Sample ID: GWDUP-2
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/18	Automated Statchk
Chloride by Automated Colourimetry	KONE	7408977	N/A	2021/06/15	Avneet Kour Sudan
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7407924	2021/06/15	2021/06/15	Ravinder Gaidhu
Dissolved Metals by ICPMS	ICP/MS	7407329	N/A	2021/06/17	Prempal Bhatti
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7407914	2021/06/15	2021/06/16	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

BV Labs ID: PUW588
Sample ID: TRIP BLANK LOT # 3700
Matrix: Ground Water

Collected: 2021/06/09
Shipped:
Received: 2021/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7405641	N/A	2021/06/18	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7406720	N/A	2021/06/17	Yang (Philip) Yu

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.0°C

Cooler custody seal was present and intact.

All 40 ml vials for F1BTEX and VOC analyses contained visible sediment, except for the Trip Blank .
All 100 ml amber glass bottles for F2-F4 and PAH analyses contained visible sediment, which was included in the extraction.
All 250mL plastic General bottles contained visible sediment.

Sample PUW561 [BHMW108] : VOCF1 Analysis: Due to high concentrations of target analytes, the sample required dilution. The detection limits were adjusted accordingly. In order to meet required regulatory criteria, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Sample PUW586 [BHMW124] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample PUW587 [GWDUP-2] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7406720	YY	Matrix Spike	4-Bromofluorobenzene	2021/06/16		99	%	70 - 130
			D4-1,2-Dichloroethane	2021/06/16		109	%	70 - 130
			D8-Toluene	2021/06/16		106	%	70 - 130
			Acetone (2-Propanone)	2021/06/16		81	%	60 - 140
			Benzene	2021/06/16		77	%	70 - 130
			Bromodichloromethane	2021/06/16		91	%	70 - 130
			Bromoform	2021/06/16		82	%	70 - 130
			Bromomethane	2021/06/16		73	%	60 - 140
			Carbon Tetrachloride	2021/06/16		85	%	70 - 130
			Chlorobenzene	2021/06/16		80	%	70 - 130
			Chloroform	2021/06/16		85	%	70 - 130
			Dibromochloromethane	2021/06/16		76	%	70 - 130
			1,2-Dichlorobenzene	2021/06/16		77	%	70 - 130
			1,3-Dichlorobenzene	2021/06/16		75	%	70 - 130
			1,4-Dichlorobenzene	2021/06/16		89	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/06/16		52 (1)	%	60 - 140
			1,1-Dichloroethane	2021/06/16		84	%	70 - 130
			1,2-Dichloroethane	2021/06/16		84	%	70 - 130
			1,1-Dichloroethylene	2021/06/16		80	%	70 - 130
			cis-1,2-Dichloroethylene	2021/06/16		72	%	70 - 130
			trans-1,2-Dichloroethylene	2021/06/16		80	%	70 - 130
			1,2-Dichloropropane	2021/06/16		85	%	70 - 130
			cis-1,3-Dichloropropene	2021/06/16		75	%	70 - 130
			trans-1,3-Dichloropropene	2021/06/16		80	%	70 - 130
			Ethylbenzene	2021/06/16		74	%	70 - 130
			Ethylene Dibromide	2021/06/16		82	%	70 - 130
			Hexane	2021/06/16		86	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/06/16		100	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/06/16		80	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/16		86	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/06/16		71	%	70 - 130
			Styrene	2021/06/16		87	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/06/16		87	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/06/16		89	%	70 - 130
			Tetrachloroethylene	2021/06/16		71	%	70 - 130
			Toluene	2021/06/16		81	%	70 - 130
			1,1,1-Trichloroethane	2021/06/16		89	%	70 - 130
			1,1,2-Trichloroethane	2021/06/16		87	%	70 - 130
			Trichloroethylene	2021/06/16		81	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/06/16		80	%	70 - 130
			Vinyl Chloride	2021/06/16		69 (1)	%	70 - 130
			p+m-Xylene	2021/06/16		76	%	70 - 130
			o-Xylene	2021/06/16		79	%	70 - 130
			F1 (C6-C10)	2021/06/16		90	%	60 - 140
7406720	YY	Spiked Blank	4-Bromofluorobenzene	2021/06/16		95	%	70 - 130
			D4-1,2-Dichloroethane	2021/06/16		107	%	70 - 130
			D8-Toluene	2021/06/16		117	%	70 - 130
			Acetone (2-Propanone)	2021/06/16		92	%	60 - 140
			Benzene	2021/06/16		92	%	70 - 130
			Bromodichloromethane	2021/06/16		105	%	70 - 130
			Bromoform	2021/06/16		89	%	70 - 130
			Bromomethane	2021/06/16		86	%	60 - 140
			Carbon Tetrachloride	2021/06/16		102	%	70 - 130
			Chlorobenzene	2021/06/16		95	%	70 - 130

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chloroform	2021/06/16		102	%	70 - 130
			Dibromochloromethane	2021/06/16		86	%	70 - 130
			1,2-Dichlorobenzene	2021/06/16		94	%	70 - 130
			1,3-Dichlorobenzene	2021/06/16		91	%	70 - 130
			1,4-Dichlorobenzene	2021/06/16		110	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/06/16		59 (1)	%	60 - 140
			1,1-Dichloroethane	2021/06/16		96	%	70 - 130
			1,2-Dichloroethane	2021/06/16		98	%	70 - 130
			1,1-Dichloroethylene	2021/06/16		95	%	70 - 130
			cis-1,2-Dichloroethylene	2021/06/16		101	%	70 - 130
			trans-1,2-Dichloroethylene	2021/06/16		95	%	70 - 130
			1,2-Dichloropropane	2021/06/16		99	%	70 - 130
			cis-1,3-Dichloropropene	2021/06/16		91	%	70 - 130
			trans-1,3-Dichloropropene	2021/06/16		107	%	70 - 130
			Ethylbenzene	2021/06/16		92	%	70 - 130
			Ethylene Dibromide	2021/06/16		93	%	70 - 130
			Hexane	2021/06/16		102	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/06/16		115	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/06/16		102	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/16		101	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/06/16		81	%	70 - 130
			Styrene	2021/06/16		108	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/06/16		102	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/06/16		102	%	70 - 130
			Tetrachloroethylene	2021/06/16		79	%	70 - 130
			Toluene	2021/06/16		105	%	70 - 130
			1,1,1-Trichloroethane	2021/06/16		106	%	70 - 130
			1,1,2-Trichloroethane	2021/06/16		99	%	70 - 130
			Trichloroethylene	2021/06/16		97	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/06/16		93	%	70 - 130
			Vinyl Chloride	2021/06/16		82	%	70 - 130
			p+m-Xylene	2021/06/16		95	%	70 - 130
			o-Xylene	2021/06/16		97	%	70 - 130
			F1 (C6-C10)	2021/06/16		90	%	60 - 140
7406720	YY	Method Blank	4-Bromofluorobenzene	2021/06/16		86	%	70 - 130
			D4-1,2-Dichloroethane	2021/06/16		117	%	70 - 130
			D8-Toluene	2021/06/16		88	%	70 - 130
			Acetone (2-Propanone)	2021/06/16	<10		ug/L	
			Benzene	2021/06/16	<0.20		ug/L	
			Bromodichloromethane	2021/06/16	<0.50		ug/L	
			Bromoform	2021/06/16	<1.0		ug/L	
			Bromomethane	2021/06/16	<0.50		ug/L	
			Carbon Tetrachloride	2021/06/16	<0.20		ug/L	
			Chlorobenzene	2021/06/16	<0.20		ug/L	
			Chloroform	2021/06/16	<0.20		ug/L	
			Dibromochloromethane	2021/06/16	<0.50		ug/L	
			1,2-Dichlorobenzene	2021/06/16	<0.50		ug/L	
			1,3-Dichlorobenzene	2021/06/16	<0.50		ug/L	
			1,4-Dichlorobenzene	2021/06/16	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2021/06/16	<1.0		ug/L	
			1,1-Dichloroethane	2021/06/16	<0.20		ug/L	
			1,2-Dichloroethane	2021/06/16	<0.50		ug/L	
			1,1-Dichloroethylene	2021/06/16	<0.20		ug/L	
			cis-1,2-Dichloroethylene	2021/06/16	<0.50		ug/L	

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			trans-1,2-Dichloroethylene	2021/06/16	<0.50		ug/L	
			1,2-Dichloropropane	2021/06/16	<0.20		ug/L	
			cis-1,3-Dichloropropene	2021/06/16	<0.30		ug/L	
			trans-1,3-Dichloropropene	2021/06/16	<0.40		ug/L	
			Ethylbenzene	2021/06/16	<0.20		ug/L	
			Ethylene Dibromide	2021/06/16	<0.20		ug/L	
			Hexane	2021/06/16	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2021/06/16	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2021/06/16	<10		ug/L	
			Methyl Isobutyl Ketone	2021/06/16	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2021/06/16	<0.50		ug/L	
			Styrene	2021/06/16	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2021/06/16	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2021/06/16	<0.50		ug/L	
			Tetrachloroethylene	2021/06/16	<0.20		ug/L	
			Toluene	2021/06/16	<0.20		ug/L	
			1,1,1-Trichloroethane	2021/06/16	<0.20		ug/L	
			1,1,2-Trichloroethane	2021/06/16	<0.50		ug/L	
			Trichloroethylene	2021/06/16	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2021/06/16	<0.50		ug/L	
			Vinyl Chloride	2021/06/16	<0.20		ug/L	
			p+m-Xylene	2021/06/16	<0.20		ug/L	
			o-Xylene	2021/06/16	<0.20		ug/L	
			Total Xylenes	2021/06/16	<0.20		ug/L	
			F1 (C6-C10)	2021/06/16	<25		ug/L	
			F1 (C6-C10) - BTEX	2021/06/16	<25		ug/L	
7406720	YY	RPD	Acetone (2-Propanone)	2021/06/16	NC		%	30
			Benzene	2021/06/16	NC		%	30
			Bromodichloromethane	2021/06/16	NC		%	30
			Bromoform	2021/06/16	NC		%	30
			Bromomethane	2021/06/16	NC		%	30
			Carbon Tetrachloride	2021/06/16	NC		%	30
			Chlorobenzene	2021/06/16	NC		%	30
			Chloroform	2021/06/16	NC		%	30
			Dibromochloromethane	2021/06/16	NC		%	30
			1,2-Dichlorobenzene	2021/06/16	NC		%	30
			1,3-Dichlorobenzene	2021/06/16	NC		%	30
			1,4-Dichlorobenzene	2021/06/16	NC		%	30
			Dichlorodifluoromethane (FREON 12)	2021/06/16	NC		%	30
			1,1-Dichloroethane	2021/06/16	NC		%	30
			1,2-Dichloroethane	2021/06/16	NC		%	30
			1,1-Dichloroethylene	2021/06/16	NC		%	30
			cis-1,2-Dichloroethylene	2021/06/16	NC		%	30
			trans-1,2-Dichloroethylene	2021/06/16	NC		%	30
			1,2-Dichloropropane	2021/06/16	NC		%	30
			cis-1,3-Dichloropropene	2021/06/16	NC		%	30
			trans-1,3-Dichloropropene	2021/06/16	NC		%	30
			Ethylbenzene	2021/06/16	NC		%	30
			Ethylene Dibromide	2021/06/16	NC		%	30
			Hexane	2021/06/16	NC		%	30
			Methylene Chloride(Dichloromethane)	2021/06/16	NC		%	30
			Methyl Ethyl Ketone (2-Butanone)	2021/06/16	NC		%	30
			Methyl Isobutyl Ketone	2021/06/16	NC		%	30
			Methyl t-butyl ether (MTBE)	2021/06/16	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Styrene	2021/06/16	NC		%	30
			1,1,1,2-Tetrachloroethane	2021/06/16	NC		%	30
			1,1,2,2-Tetrachloroethane	2021/06/16	NC		%	30
			Tetrachloroethylene	2021/06/16	NC		%	30
			Toluene	2021/06/16	NC		%	30
			1,1,1-Trichloroethane	2021/06/16	NC		%	30
			1,1,2-Trichloroethane	2021/06/16	NC		%	30
			Trichloroethylene	2021/06/16	NC		%	30
			Trichlorofluoromethane (FREON 11)	2021/06/16	NC		%	30
			Vinyl Chloride	2021/06/16	NC		%	30
			p+m-Xylene	2021/06/16	NC		%	30
			o-Xylene	2021/06/16	NC		%	30
			Total Xylenes	2021/06/16	NC		%	30
			F1 (C6-C10)	2021/06/16	NC		%	30
			F1 (C6-C10) - BTEX	2021/06/16	NC		%	30
7407329	PBA	Matrix Spike	Dissolved Antimony (Sb)	2021/06/17		111	%	80 - 120
			Dissolved Arsenic (As)	2021/06/17		104	%	80 - 120
			Dissolved Barium (Ba)	2021/06/17		103	%	80 - 120
			Dissolved Beryllium (Be)	2021/06/17		105	%	80 - 120
			Dissolved Boron (B)	2021/06/17		95	%	80 - 120
			Dissolved Cadmium (Cd)	2021/06/17		101	%	80 - 120
			Dissolved Chromium (Cr)	2021/06/17		104	%	80 - 120
			Dissolved Cobalt (Co)	2021/06/17		103	%	80 - 120
			Dissolved Copper (Cu)	2021/06/17		110	%	80 - 120
			Dissolved Lead (Pb)	2021/06/17		94	%	80 - 120
			Dissolved Molybdenum (Mo)	2021/06/17		115	%	80 - 120
			Dissolved Nickel (Ni)	2021/06/17		98	%	80 - 120
			Dissolved Selenium (Se)	2021/06/17		99	%	80 - 120
			Dissolved Silver (Ag)	2021/06/17		97	%	80 - 120
			Dissolved Sodium (Na)	2021/06/17		NC	%	80 - 120
			Dissolved Thallium (Tl)	2021/06/17		95	%	80 - 120
			Dissolved Uranium (U)	2021/06/17		101	%	80 - 120
			Dissolved Vanadium (V)	2021/06/17		108	%	80 - 120
			Dissolved Zinc (Zn)	2021/06/17		95	%	80 - 120
7407329	PBA	Spiked Blank	Dissolved Antimony (Sb)	2021/06/17		103	%	80 - 120
			Dissolved Arsenic (As)	2021/06/17		100	%	80 - 120
			Dissolved Barium (Ba)	2021/06/17		101	%	80 - 120
			Dissolved Beryllium (Be)	2021/06/17		99	%	80 - 120
			Dissolved Boron (B)	2021/06/17		91	%	80 - 120
			Dissolved Cadmium (Cd)	2021/06/17		100	%	80 - 120
			Dissolved Chromium (Cr)	2021/06/17		99	%	80 - 120
			Dissolved Cobalt (Co)	2021/06/17		102	%	80 - 120
			Dissolved Copper (Cu)	2021/06/17		105	%	80 - 120
			Dissolved Lead (Pb)	2021/06/17		98	%	80 - 120
			Dissolved Molybdenum (Mo)	2021/06/17		104	%	80 - 120
			Dissolved Nickel (Ni)	2021/06/17		100	%	80 - 120
			Dissolved Selenium (Se)	2021/06/17		99	%	80 - 120
			Dissolved Silver (Ag)	2021/06/17		101	%	80 - 120
			Dissolved Sodium (Na)	2021/06/17		101	%	80 - 120
			Dissolved Thallium (Tl)	2021/06/17		97	%	80 - 120
			Dissolved Uranium (U)	2021/06/17		99	%	80 - 120
			Dissolved Vanadium (V)	2021/06/17		100	%	80 - 120
			Dissolved Zinc (Zn)	2021/06/17		101	%	80 - 120
7407329	PBA	Method Blank	Dissolved Antimony (Sb)	2021/06/17	<0.50		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Arsenic (As)	2021/06/17	<1.0		ug/L	
			Dissolved Barium (Ba)	2021/06/17	<2.0		ug/L	
			Dissolved Beryllium (Be)	2021/06/17	<0.40		ug/L	
			Dissolved Boron (B)	2021/06/17	<10		ug/L	
			Dissolved Cadmium (Cd)	2021/06/17	<0.090		ug/L	
			Dissolved Chromium (Cr)	2021/06/17	<5.0		ug/L	
			Dissolved Cobalt (Co)	2021/06/17	<0.50		ug/L	
			Dissolved Copper (Cu)	2021/06/17	<0.90		ug/L	
			Dissolved Lead (Pb)	2021/06/17	<0.50		ug/L	
			Dissolved Molybdenum (Mo)	2021/06/17	<0.50		ug/L	
			Dissolved Nickel (Ni)	2021/06/17	<1.0		ug/L	
			Dissolved Selenium (Se)	2021/06/17	<2.0		ug/L	
			Dissolved Silver (Ag)	2021/06/17	<0.090		ug/L	
			Dissolved Sodium (Na)	2021/06/17	<100		ug/L	
			Dissolved Thallium (Tl)	2021/06/17	<0.050		ug/L	
			Dissolved Uranium (U)	2021/06/17	<0.10		ug/L	
			Dissolved Vanadium (V)	2021/06/17	<0.50		ug/L	
			Dissolved Zinc (Zn)	2021/06/17	<5.0		ug/L	
7407329	PBA	RPD	Dissolved Lead (Pb)	2021/06/17	NC		%	20
7407914	JYO	Matrix Spike [PUW565-02]	D10-Anthracene	2021/06/15		101	%	50 - 130
			D14-Terphenyl (FS)	2021/06/15		69	%	50 - 130
			D8-Acenaphthylene	2021/06/15		102	%	50 - 130
			Acenaphthene	2021/06/15		105	%	50 - 130
			Acenaphthylene	2021/06/15		100	%	50 - 130
			Anthracene	2021/06/15		101	%	50 - 130
			Benzo(a)anthracene	2021/06/15		104	%	50 - 130
			Benzo(a)pyrene	2021/06/15		87	%	50 - 130
			Benzo(b/j)fluoranthene	2021/06/15		106	%	50 - 130
			Benzo(g,h,i)perylene	2021/06/15		97	%	50 - 130
			Benzo(k)fluoranthene	2021/06/15		98	%	50 - 130
			Chrysene	2021/06/15		105	%	50 - 130
			Dibenzo(a,h)anthracene	2021/06/15		90	%	50 - 130
			Fluoranthene	2021/06/15		109	%	50 - 130
			Fluorene	2021/06/15		108	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/06/15		96	%	50 - 130
			1-Methylnaphthalene	2021/06/15		108	%	50 - 130
			2-Methylnaphthalene	2021/06/15		111	%	50 - 130
			Naphthalene	2021/06/15		96	%	50 - 130
			Phenanthrene	2021/06/15		109	%	50 - 130
			Pyrene	2021/06/15		106	%	50 - 130
7407914	JYO	Spiked Blank	D10-Anthracene	2021/06/15		109	%	50 - 130
			D14-Terphenyl (FS)	2021/06/15		92	%	50 - 130
			D8-Acenaphthylene	2021/06/15		102	%	50 - 130
			Acenaphthene	2021/06/15		101	%	50 - 130
			Acenaphthylene	2021/06/15		97	%	50 - 130
			Anthracene	2021/06/15		102	%	50 - 130
			Benzo(a)anthracene	2021/06/15		102	%	50 - 130
			Benzo(a)pyrene	2021/06/15		87	%	50 - 130
			Benzo(b/j)fluoranthene	2021/06/15		110	%	50 - 130
			Benzo(g,h,i)perylene	2021/06/15		99	%	50 - 130
			Benzo(k)fluoranthene	2021/06/15		97	%	50 - 130
			Chrysene	2021/06/15		106	%	50 - 130
			Dibenzo(a,h)anthracene	2021/06/15		84	%	50 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Fluoranthene	2021/06/15		104	%	50 - 130
			Fluorene	2021/06/15		102	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/06/15		96	%	50 - 130
			1-Methylnaphthalene	2021/06/15		107	%	50 - 130
			2-Methylnaphthalene	2021/06/15		102	%	50 - 130
			Naphthalene	2021/06/15		95	%	50 - 130
			Phenanthrene	2021/06/15		102	%	50 - 130
			Pyrene	2021/06/15		105	%	50 - 130
7407914	JYO	Method Blank	D10-Anthracene	2021/06/16		110	%	50 - 130
			D14-Terphenyl (FS)	2021/06/16		96	%	50 - 130
			D8-Acenaphthylene	2021/06/16		89	%	50 - 130
			Acenaphthene	2021/06/16	<0.050		ug/L	
			Acenaphthylene	2021/06/16	<0.050		ug/L	
			Anthracene	2021/06/16	<0.050		ug/L	
			Benzo(a)anthracene	2021/06/16	<0.050		ug/L	
			Benzo(a)pyrene	2021/06/16	<0.0090		ug/L	
			Benzo(b/j)fluoranthene	2021/06/16	<0.050		ug/L	
			Benzo(g,h,i)perylene	2021/06/16	<0.050		ug/L	
			Benzo(k)fluoranthene	2021/06/16	<0.050		ug/L	
			Chrysene	2021/06/16	<0.050		ug/L	
			Dibenzo(a,h)anthracene	2021/06/16	<0.050		ug/L	
			Fluoranthene	2021/06/16	<0.050		ug/L	
			Fluorene	2021/06/16	<0.050		ug/L	
			Indeno(1,2,3-cd)pyrene	2021/06/16	<0.050		ug/L	
			1-Methylnaphthalene	2021/06/16	<0.050		ug/L	
			2-Methylnaphthalene	2021/06/16	<0.050		ug/L	
			Naphthalene	2021/06/16	<0.050		ug/L	
			Phenanthrene	2021/06/16	<0.030		ug/L	
			Pyrene	2021/06/16	<0.050		ug/L	
7407914	JYO	RPD [PUW567-02]	Acenaphthene	2021/06/15	NC		%	30
			Acenaphthylene	2021/06/15	NC		%	30
			Anthracene	2021/06/15	NC		%	30
			Benzo(a)anthracene	2021/06/15	NC		%	30
			Benzo(a)pyrene	2021/06/15	NC		%	30
			Benzo(b/j)fluoranthene	2021/06/15	NC		%	30
			Benzo(g,h,i)perylene	2021/06/15	NC		%	30
			Benzo(k)fluoranthene	2021/06/15	NC		%	30
			Chrysene	2021/06/15	NC		%	30
			Dibenzo(a,h)anthracene	2021/06/15	NC		%	30
			Fluoranthene	2021/06/15	NC		%	30
			Fluorene	2021/06/15	NC		%	30
			Indeno(1,2,3-cd)pyrene	2021/06/15	NC		%	30
			1-Methylnaphthalene	2021/06/15	NC		%	30
			2-Methylnaphthalene	2021/06/15	NC		%	30
			Naphthalene	2021/06/15	NC		%	30
			Phenanthrene	2021/06/15	16		%	30
			Pyrene	2021/06/15	NC		%	30
7407924	RGA	Matrix Spike [PUW566-02]	o-Terphenyl	2021/06/15		95	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/15		78	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/06/15		76	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/06/15		77	%	60 - 130
7407924	RGA	Spiked Blank	o-Terphenyl	2021/06/15		95	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/15		99	%	60 - 130

BV Labs Job #: C1G1158
Report Date: 2021/06/18

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F3 (C16-C34 Hydrocarbons)	2021/06/15		97	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/06/15		98	%	60 - 130
7407924	RGA	Method Blank	o-Terphenyl	2021/06/15		97	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/15	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/06/15	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/06/15	<200		ug/L	
7407924	RGA	RPD [PUW567-02]	F2 (C10-C16 Hydrocarbons)	2021/06/15	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/06/15	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/06/15	NC		%	30
7408977	AKD	Matrix Spike	Dissolved Chloride (Cl-)	2021/06/15		NC	%	80 - 120
7408977	AKD	Spiked Blank	Dissolved Chloride (Cl-)	2021/06/15		103	%	80 - 120
7408977	AKD	Method Blank	Dissolved Chloride (Cl-)	2021/06/15	<1.0		mg/L	
7408977	AKD	RPD	Dissolved Chloride (Cl-)	2021/06/15	0.67		%	20
7410416	JJE	Matrix Spike	o-Terphenyl	2021/06/16		95	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/16		101	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/06/16		99	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/06/16		103	%	60 - 130
7410416	JJE	Spiked Blank	o-Terphenyl	2021/06/16		96	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/16		100	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/06/16		100	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/06/16		102	%	60 - 130
7410416	JJE	Method Blank	o-Terphenyl	2021/06/16		96	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/16	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/06/16	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/06/16	<200		ug/L	
7410416	JJE	RPD	F2 (C10-C16 Hydrocarbons)	2021/06/16	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/06/16	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/06/16	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

10-Jun-21 14:20
Antonella Brasil
C1G1158
URE ENV-589

Maxxam Analytics
CAM FCD-01013/5
Page 1 of 1

Presence of Visible Particulate/Sediment

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

Bottle Types

			Inorganics					Organics											Hydrocarbons							Volatiles				Other
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/ Herb 1 of 2	Pest/ Herb 2 of 2	SVOC/ ABN 1 of 2	SVOC/ ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	BHMW108	S																												
2	BHMW110	TS																												
3	BHMW112	TS																												
4	BHMW115	S																												
5	BHMW116	TS																												
6	BHMW117	TS																												
7	BHMW118	TS																												
8	BHMW122	TS																												
9	BHMW123	TS																												
10	BHMW124	TS																												
11	BHGW Dup-2	TS																												

Comments: except NISM.

Legend:	
P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print) [illegible]

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

10-Jun-21 14:20
Antonella Brasil
C1G1158
ENV-580

Page 1 of 2

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#982 Pinchin Ltd	Company Name:		Quotation #:	A70927	Bottle Order #:	791448
Attention:	Accounts Payable	Attention:	Matt, Mike	P.O. #:			
Address:	1 Hines Road Suite 200, Kanata ON K2K 3C7	Address:		Project:	285722.003	COC #: C#791448-01-01	Project Manager: Antonella Brasil
Tel:	(613) 592-3387 Fax: (613) 592-5897	Tel:	Fax:	Project Name:			
Email:	ap@pinchin.com	Email:		Site #:			
				Sampled By:	M.Kosiw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☒ Res/Park ☒ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☒ Table 3 ☐ Agri/Other ☒ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? N

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Metals Package (Water) ICPMS	[struck out]	PHCs F1-F4	VOCs	PAHs	—	# of Bottles	Comments
1		BHMW108	June 9 2021	AM	GW				X	X	X		5	
2		BHMW109							X	X			4	*(Low volume)
3		BHMW110							X	X	X		5	
4		BHMW112							X	X	X		5	
5		BHMW115							X	X	X		5	
6		BHMW116		PM					X	X	X		5	RECEIVED IN OTTAWA
7		BHMW117							X	X	X		5	
8		BHMW118							X	X	X		5	
9		BHMW120							X	X	X		5	ON Ice
10		GW Dup-1							X	X	X		5	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Laboratory Use Only: Temperature (°C) on Recei	Custody Seal	Yes	No
Mike Kosiw	June 10 2021	2:00 PM	[signature]	2021/06/10	14:20			8, 7, 6	Present	✓	
			[signature]	21/06/11	08:00				Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS. 1/4/4°C

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free 800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

Page 2 of 2

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#982 Pinchin Ltd	Company Name		Quotation #	A70927	BV Labs Job #:	Bottle Order #: 831272
Attention	Accounts Payable	Attention	Matt, Ryan, Mike	P.O. #			
Address	1 Hines Road Suite 200	Address		Project	285722.003	COC #: C#831272-01-01	Project Manager: Antonella Brasil
	Kanata ON K2K 3C7			Project Name			
Tel	(613) 592-3387 Fax (613) 592-5897	Tel	Fax	Site #			
Email	ap@pinchin.com	Email	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By	M. Kosiw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☑ Res/Park ☒ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☒ Table 3 ☐ Agri/Other ☒ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? N

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Chloride by Automated Colourimetry	PHCs (F1-F4)	VOCs	PAHs	Metals (ICPMS)	Sodium					# of Bottles	Comments
1		BHMW122	June 2021	PM	GW			X	X	X							5	
2		BHMW123	↓	↓	↓			X	X	X							5	
3		BHMW124	↓	↓	↓	X	X	X	X	X	X	X					7	
4		GWDup-2	↓	↓	↓	X	X	X	X	X	X	X					7	
5		Trip Blank	↓	↓	↓				X								2	VOCs/F1 for Trip Blank
6																		
7																		
8																		RECEIVED IN OTTAWA
9																		
10																		

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ (call lab for #)

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
Mike Kosiw	June 9 2021	2:00 pm	See p1 / see page 1						Present / Intact		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

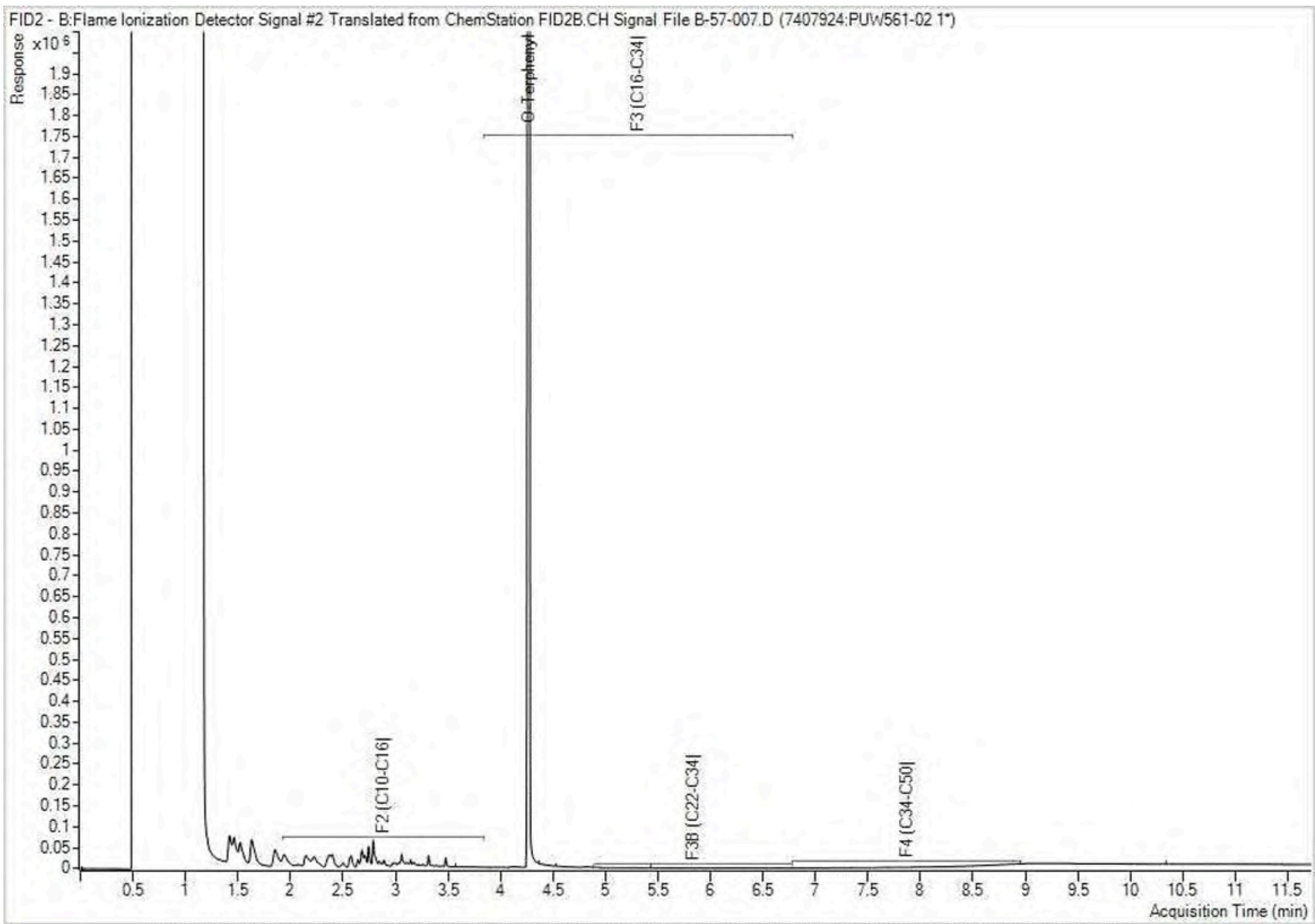
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW561

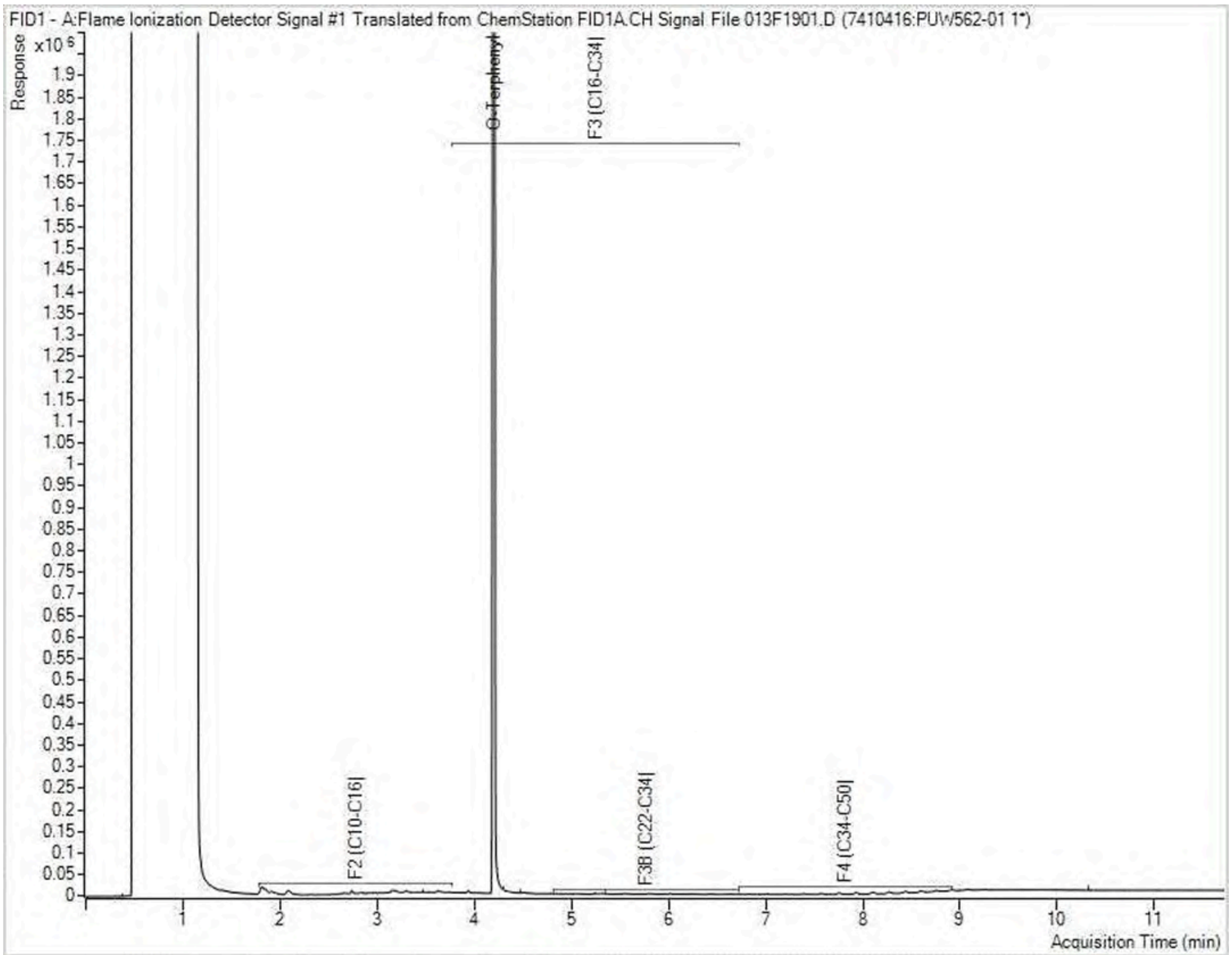
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW108

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

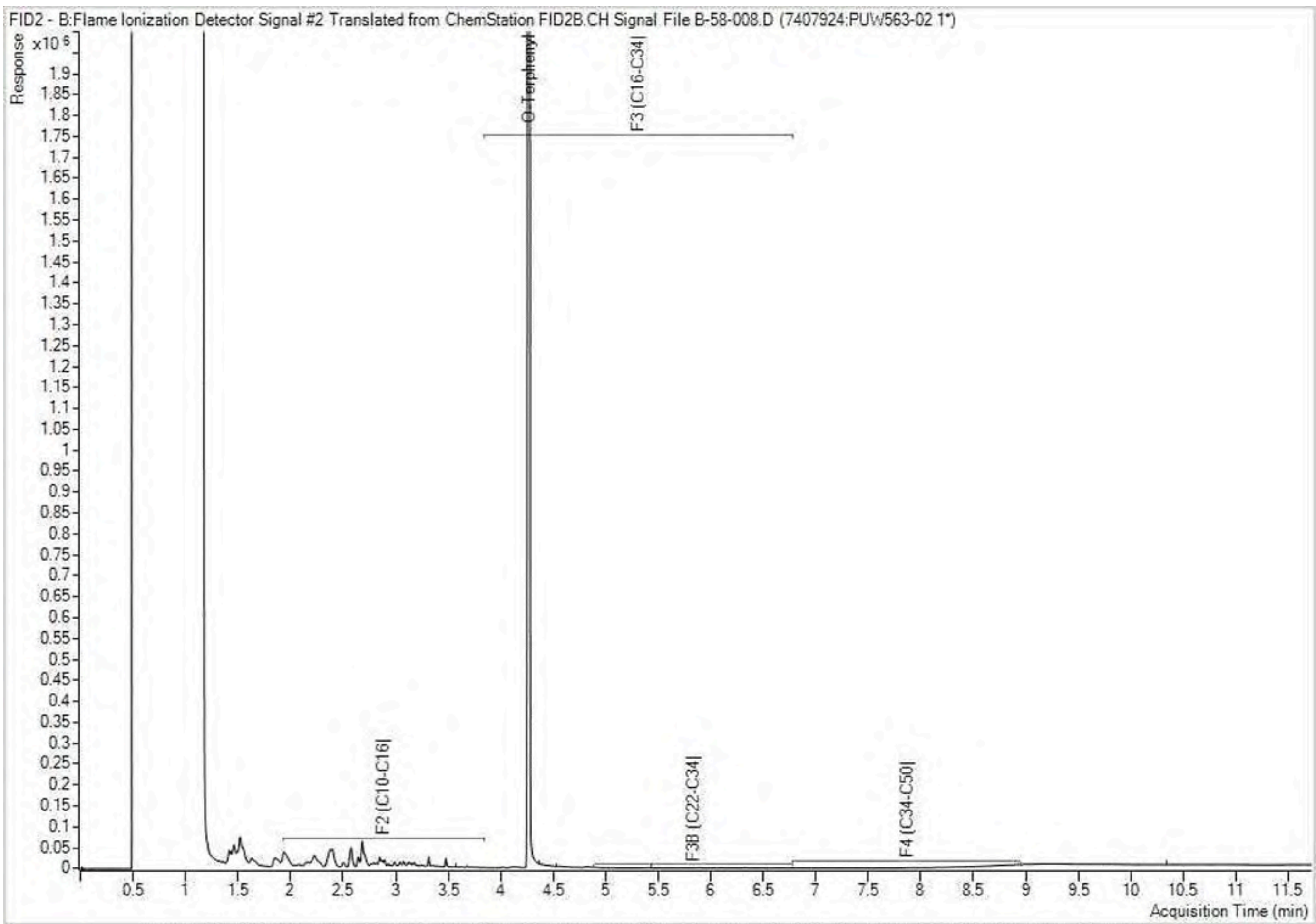


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW563

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW110

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

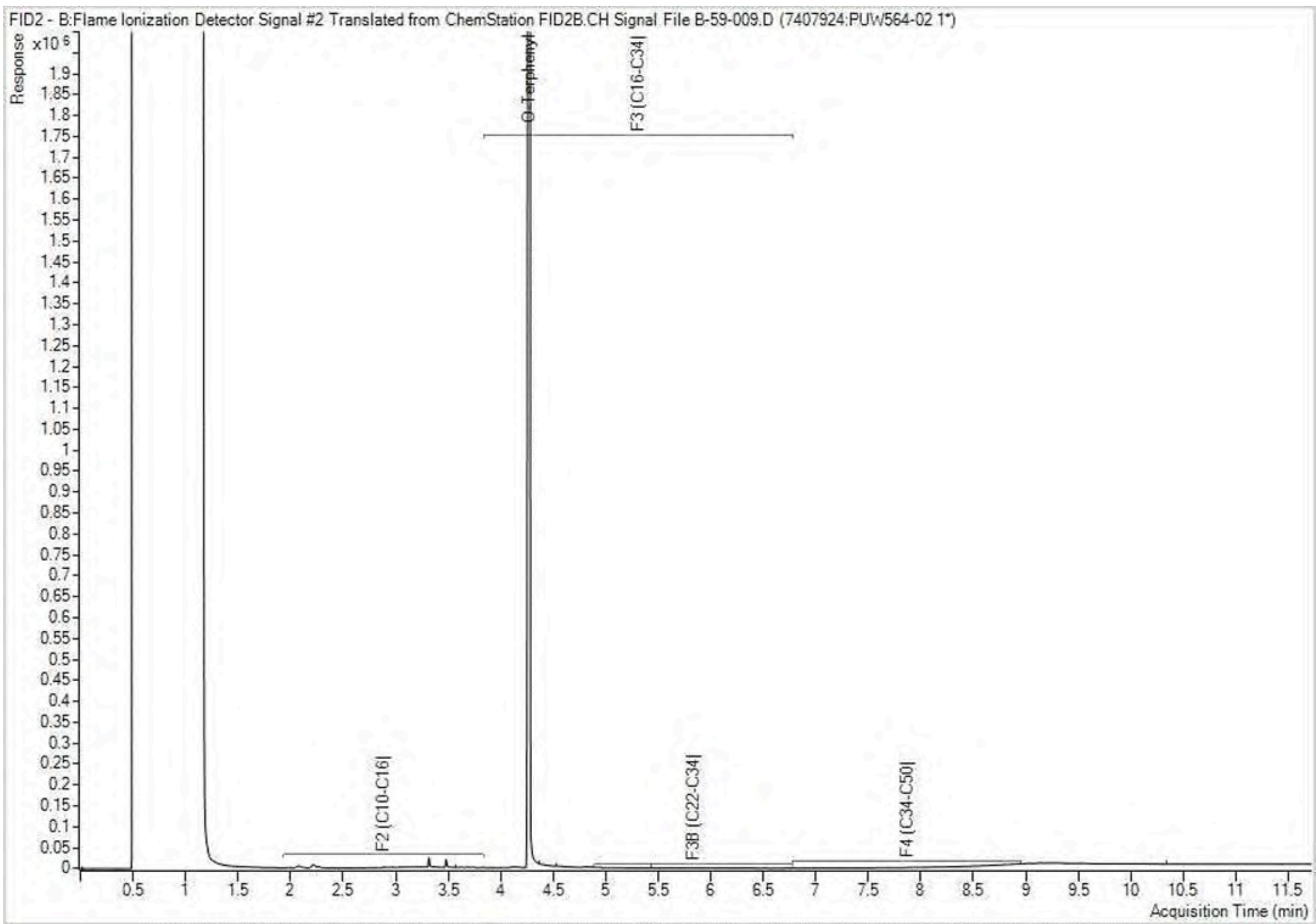


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW564

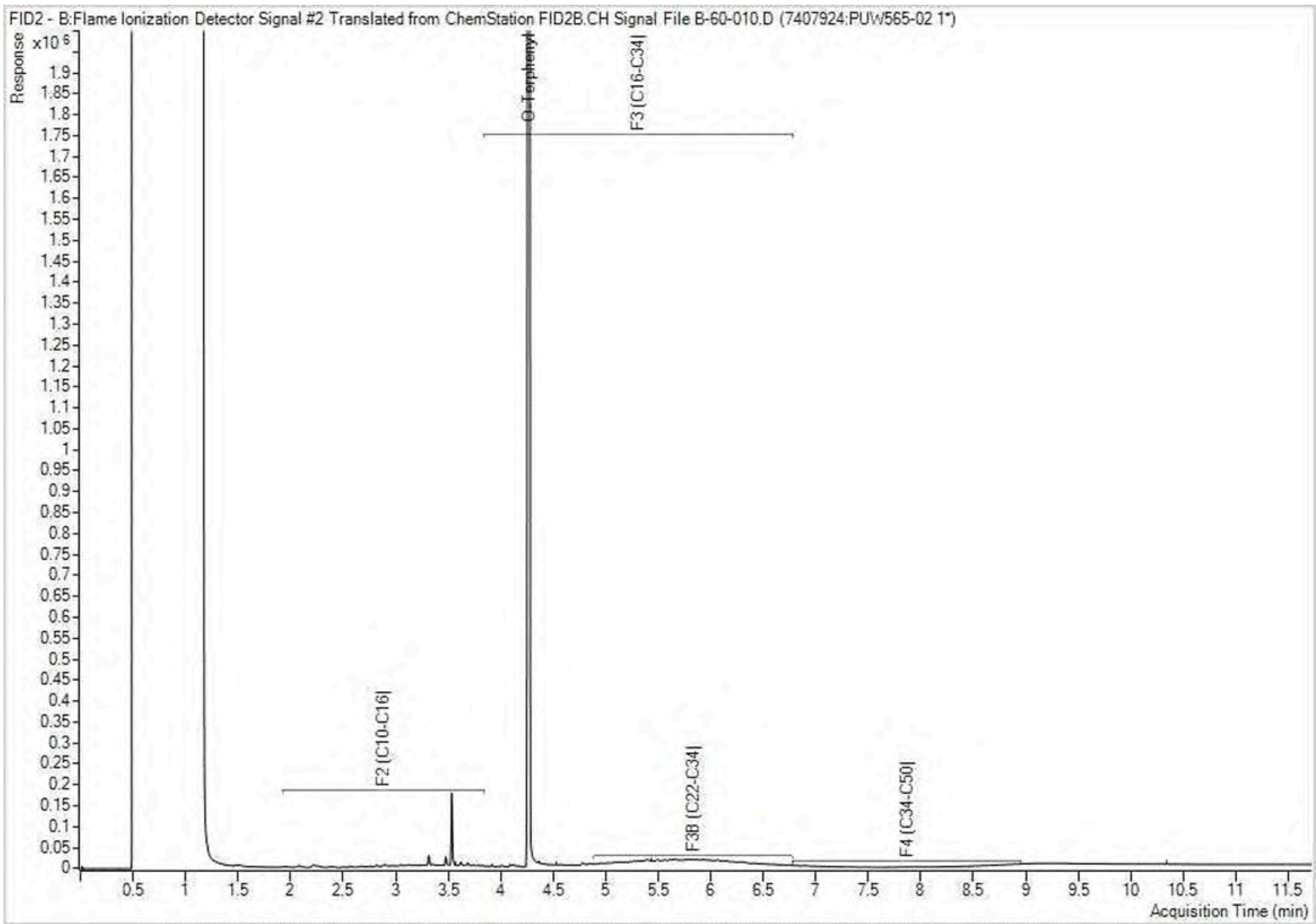
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW112

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

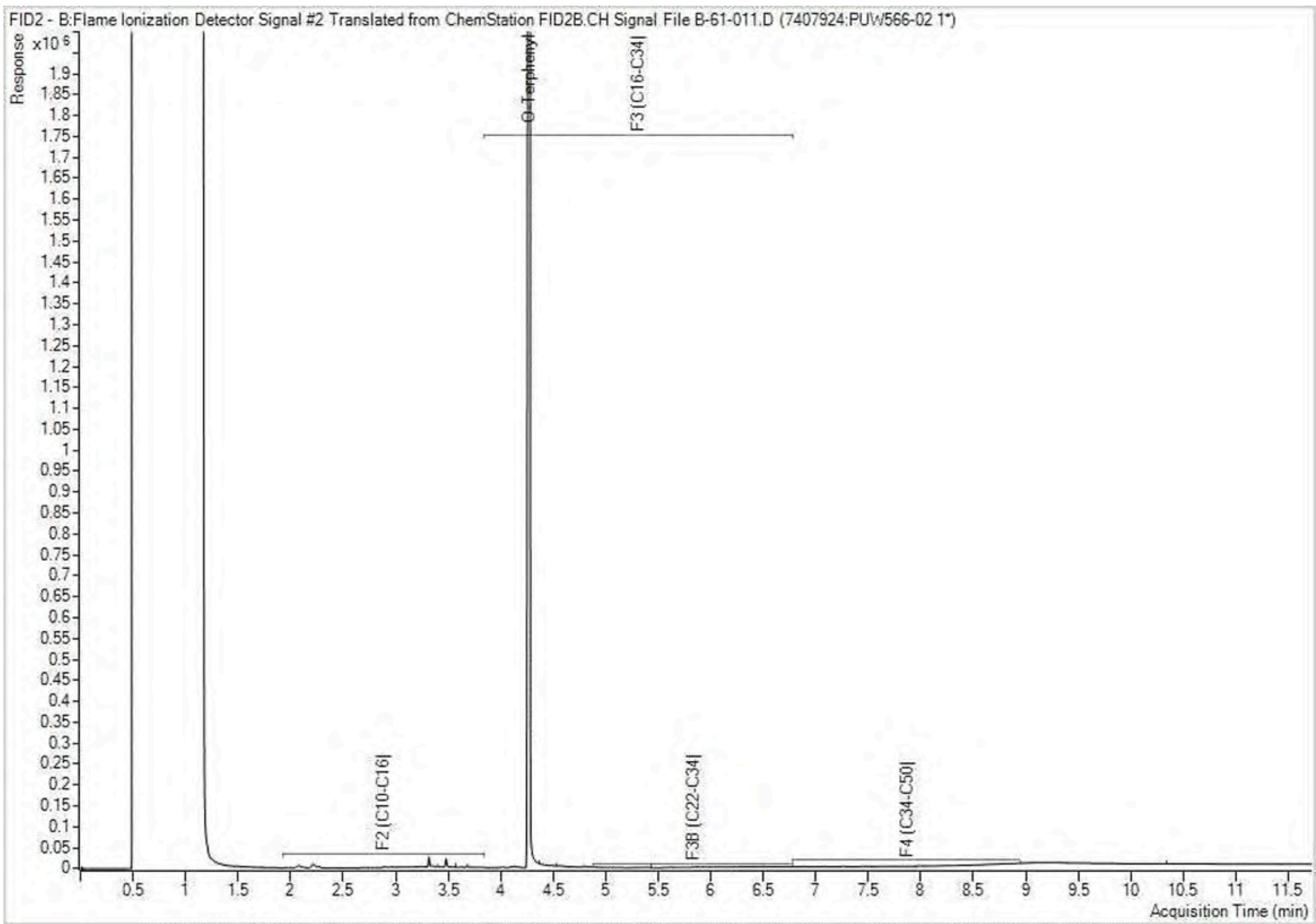


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW566

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW116

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

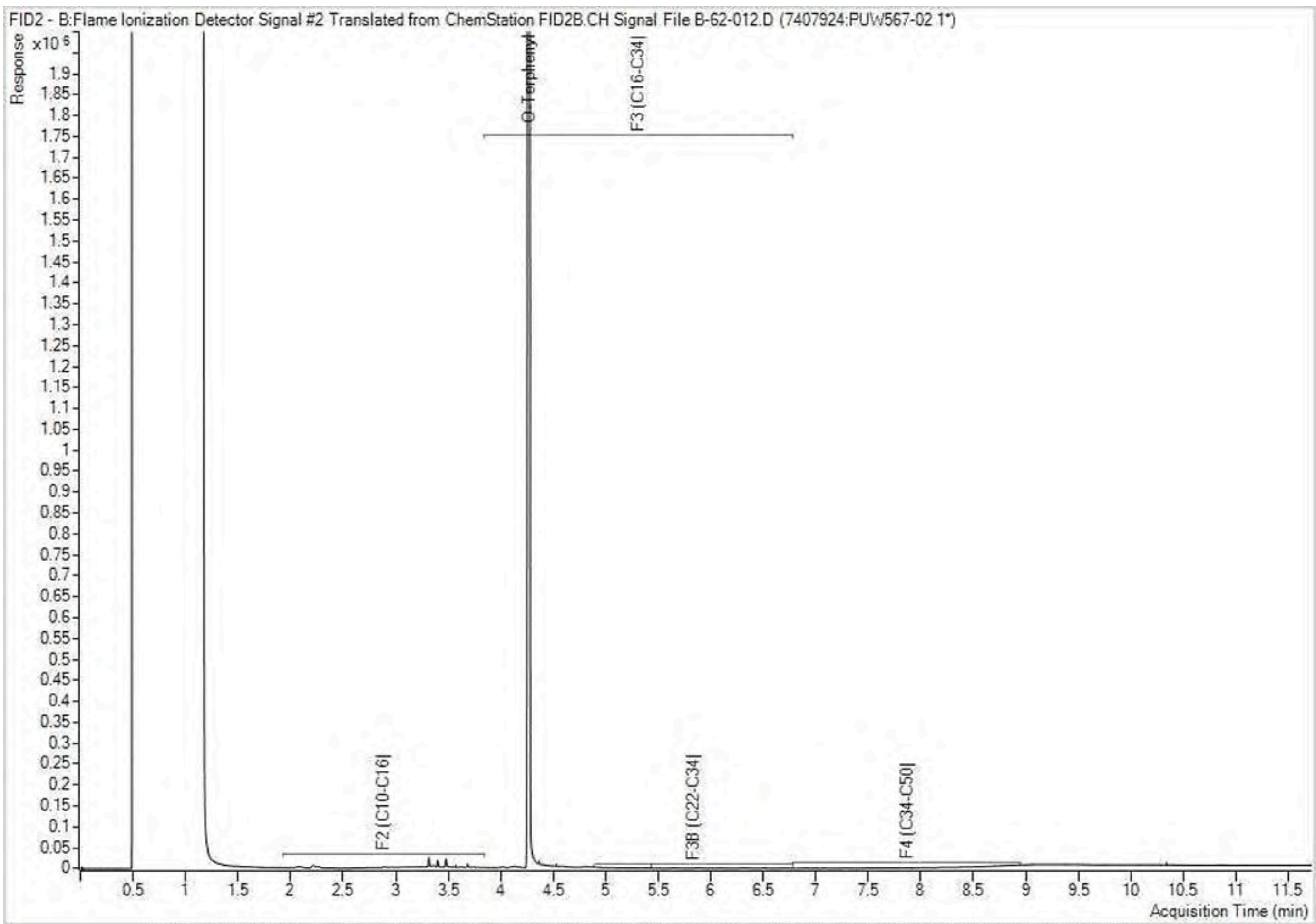


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW567

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW117

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

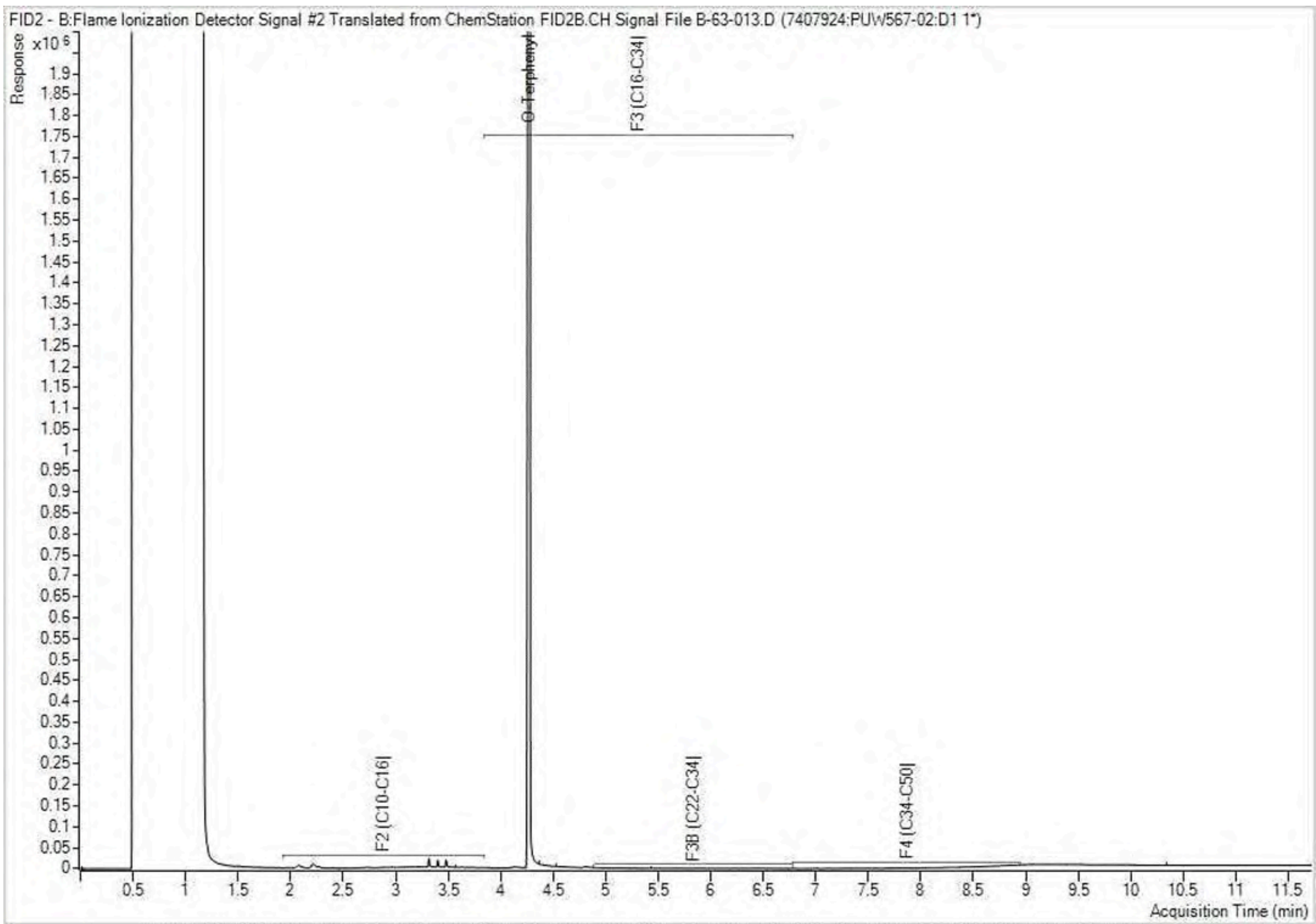


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW567 Lab-Dup

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW117

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

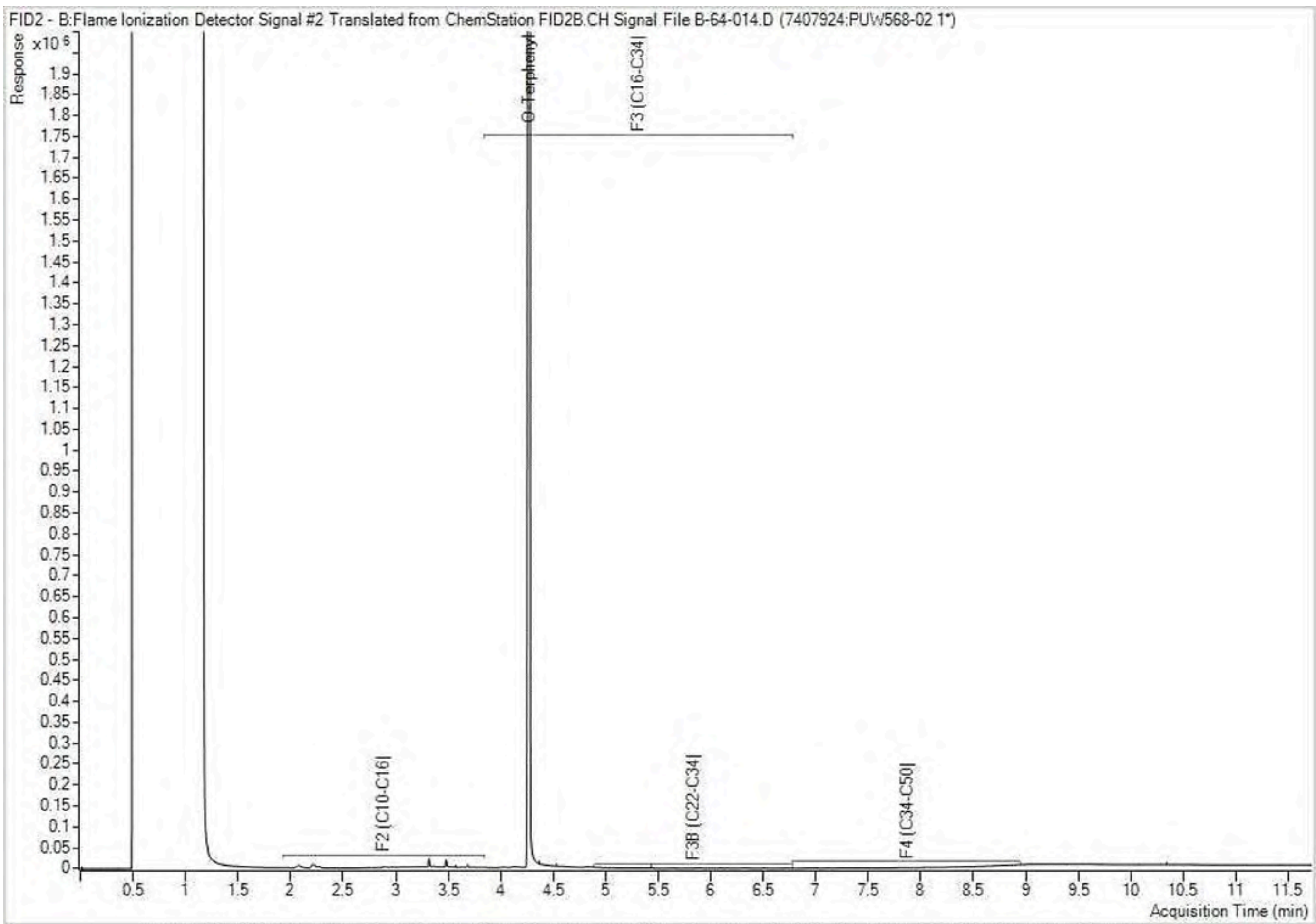


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW568

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW118

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

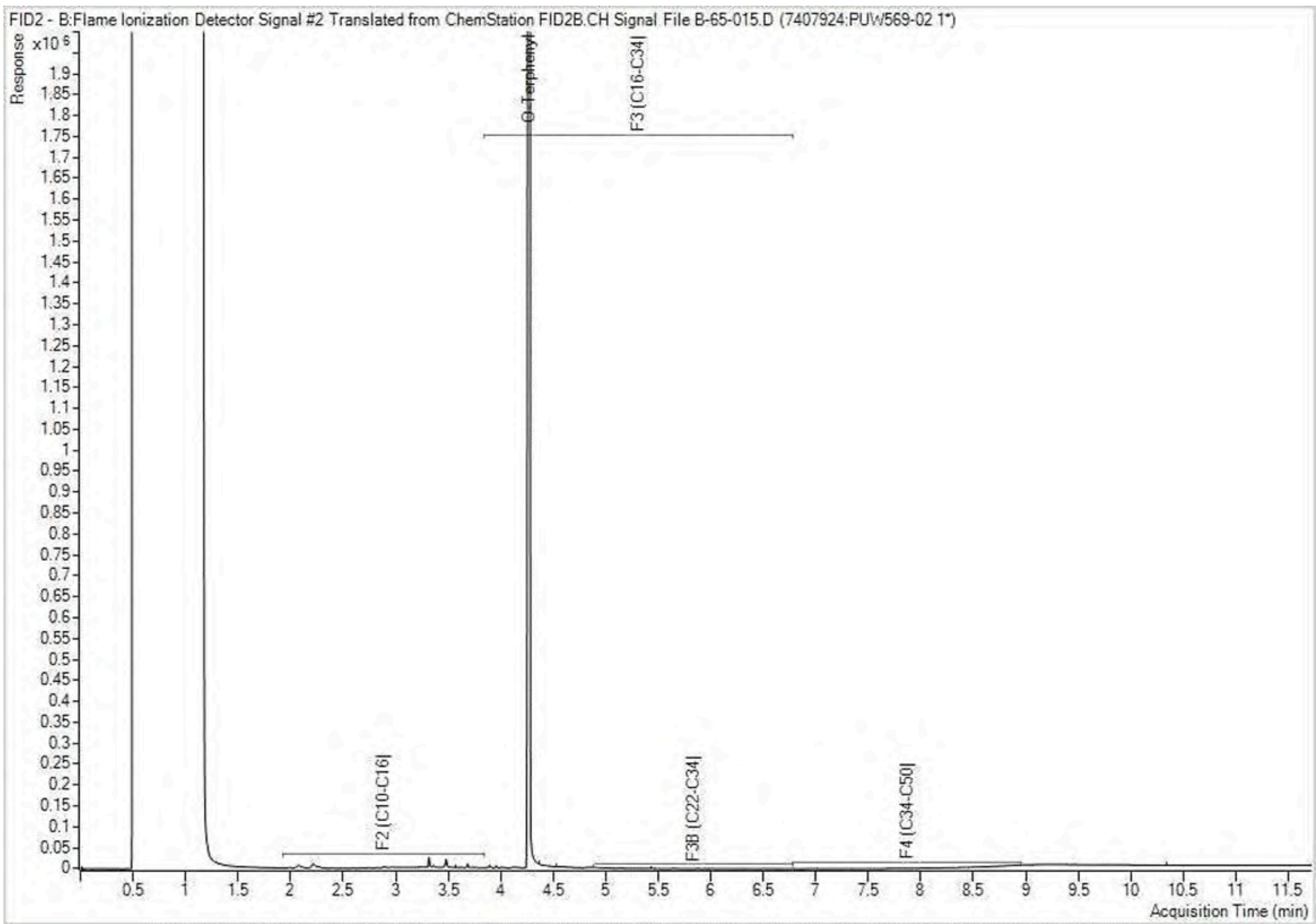


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW569

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW120

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

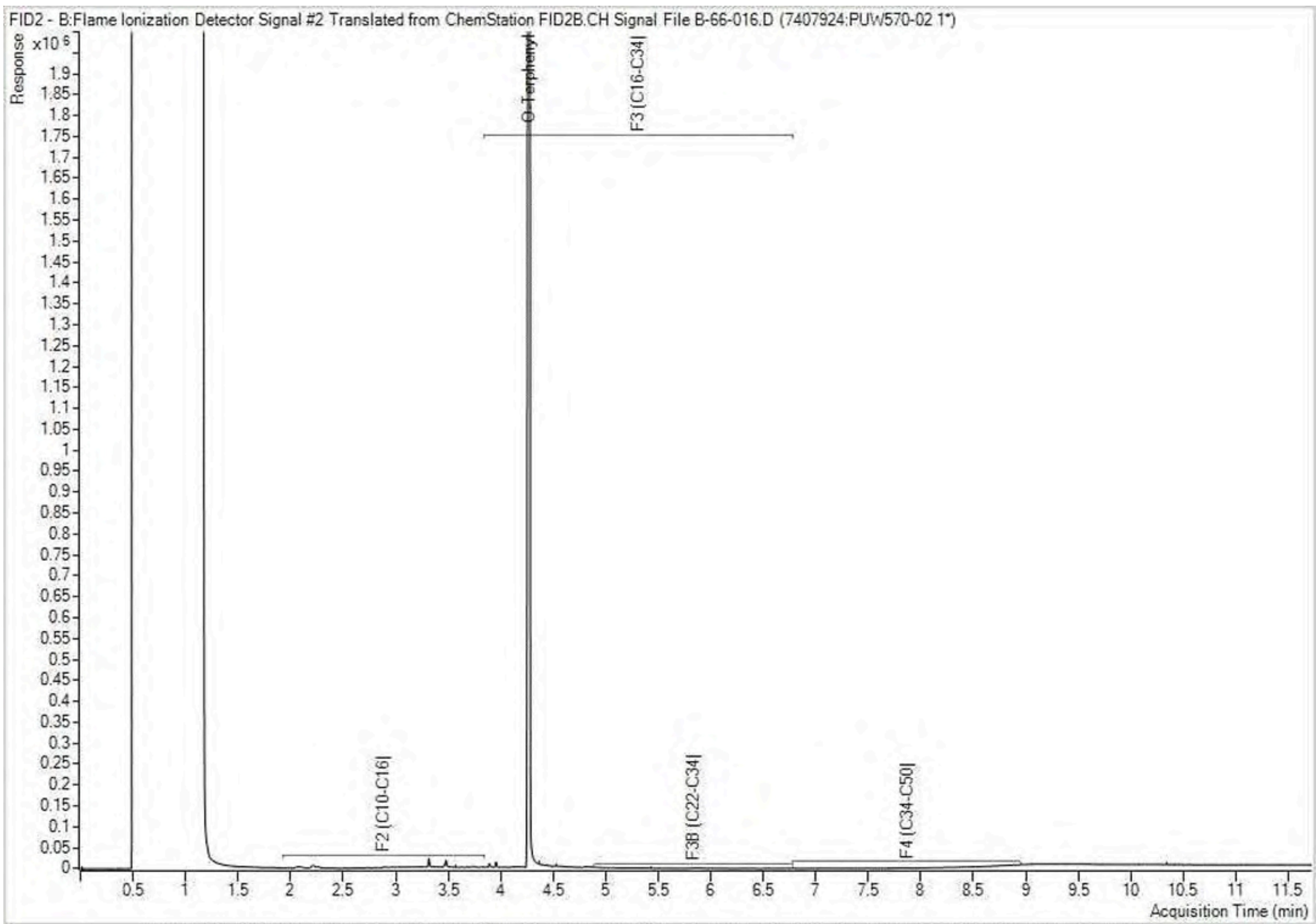


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW570

Pinchin Ltd
Client Project #: 285722.003
Client ID: GWDUP-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

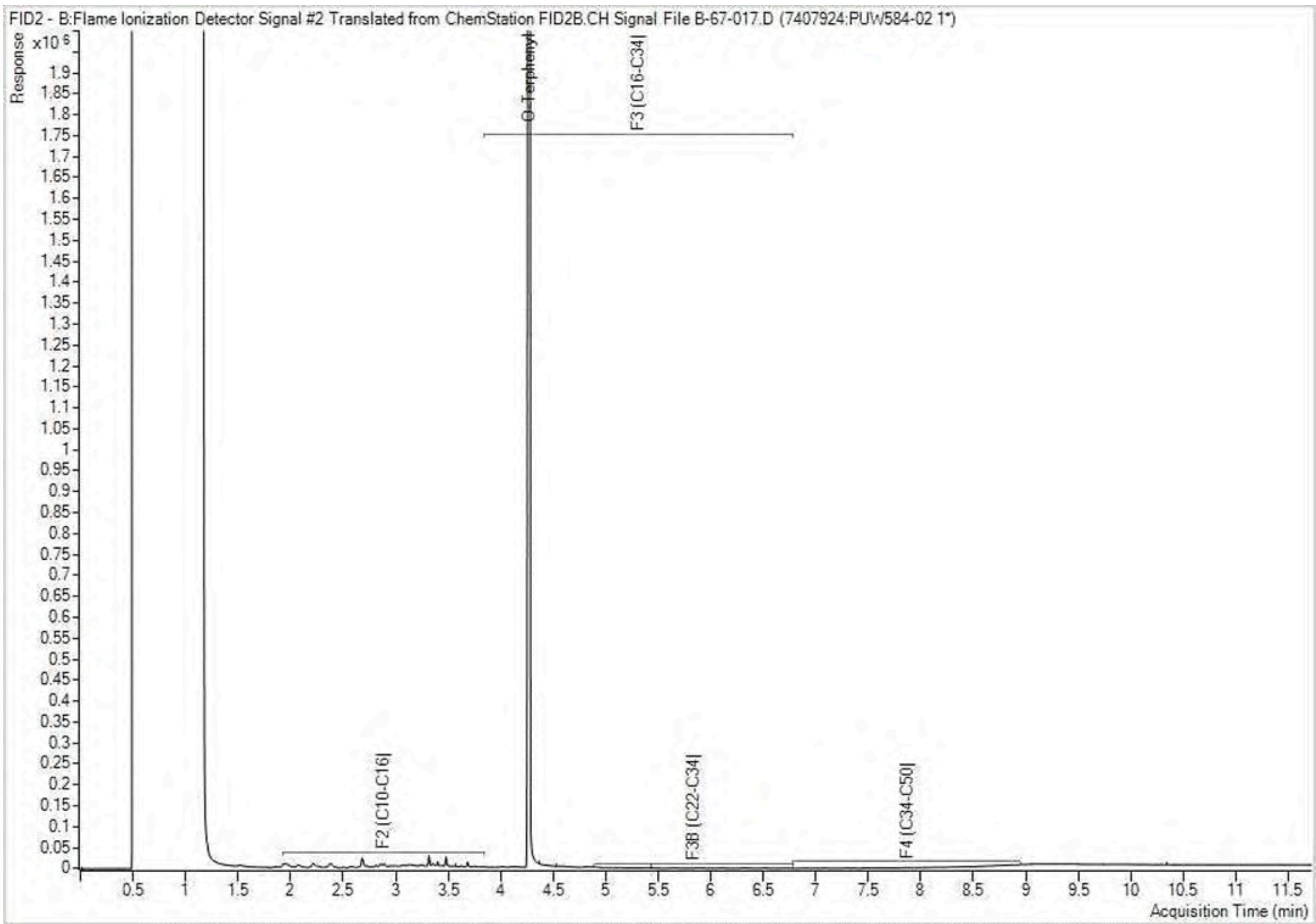


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW584

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW122

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

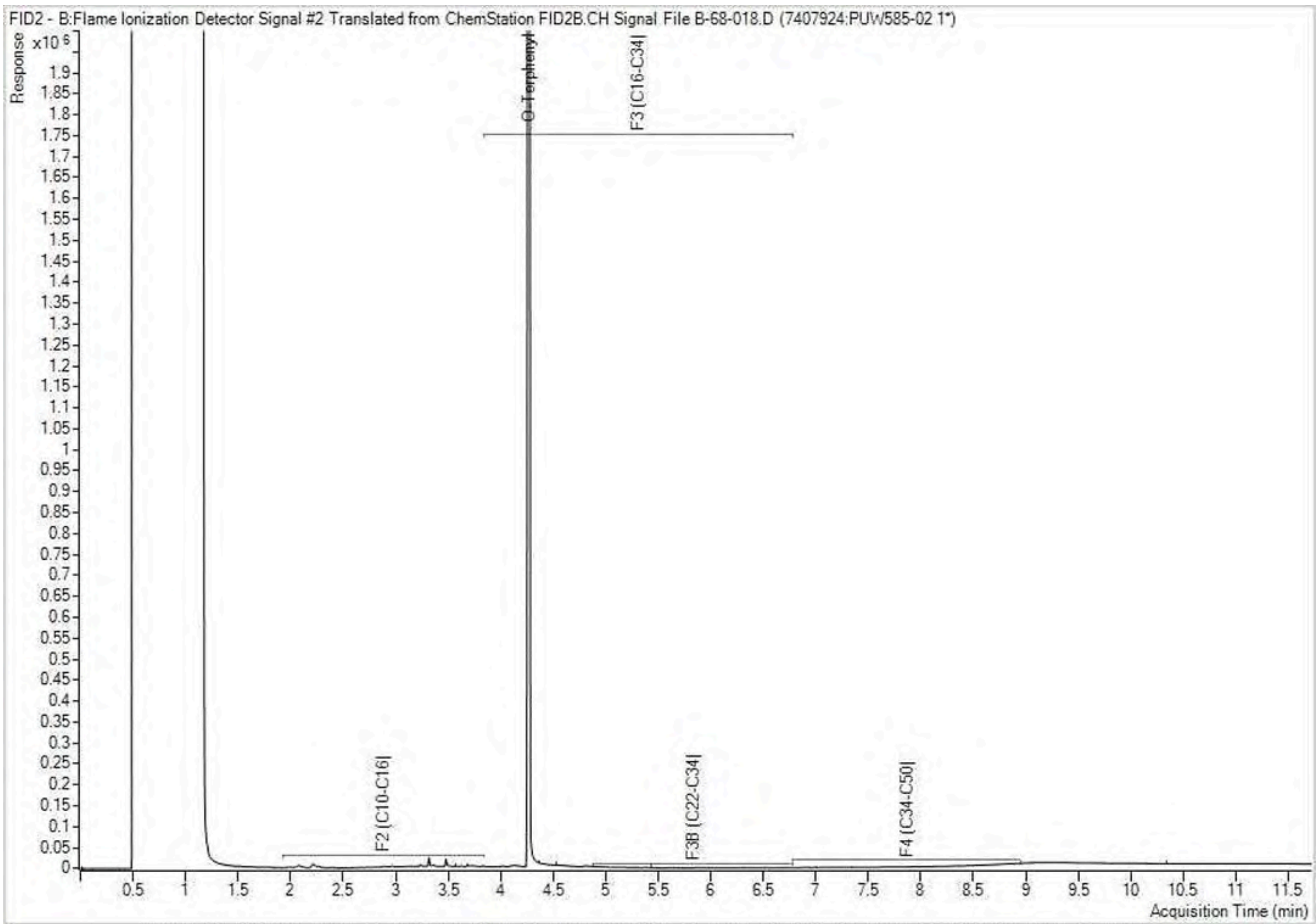


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW585

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW123

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

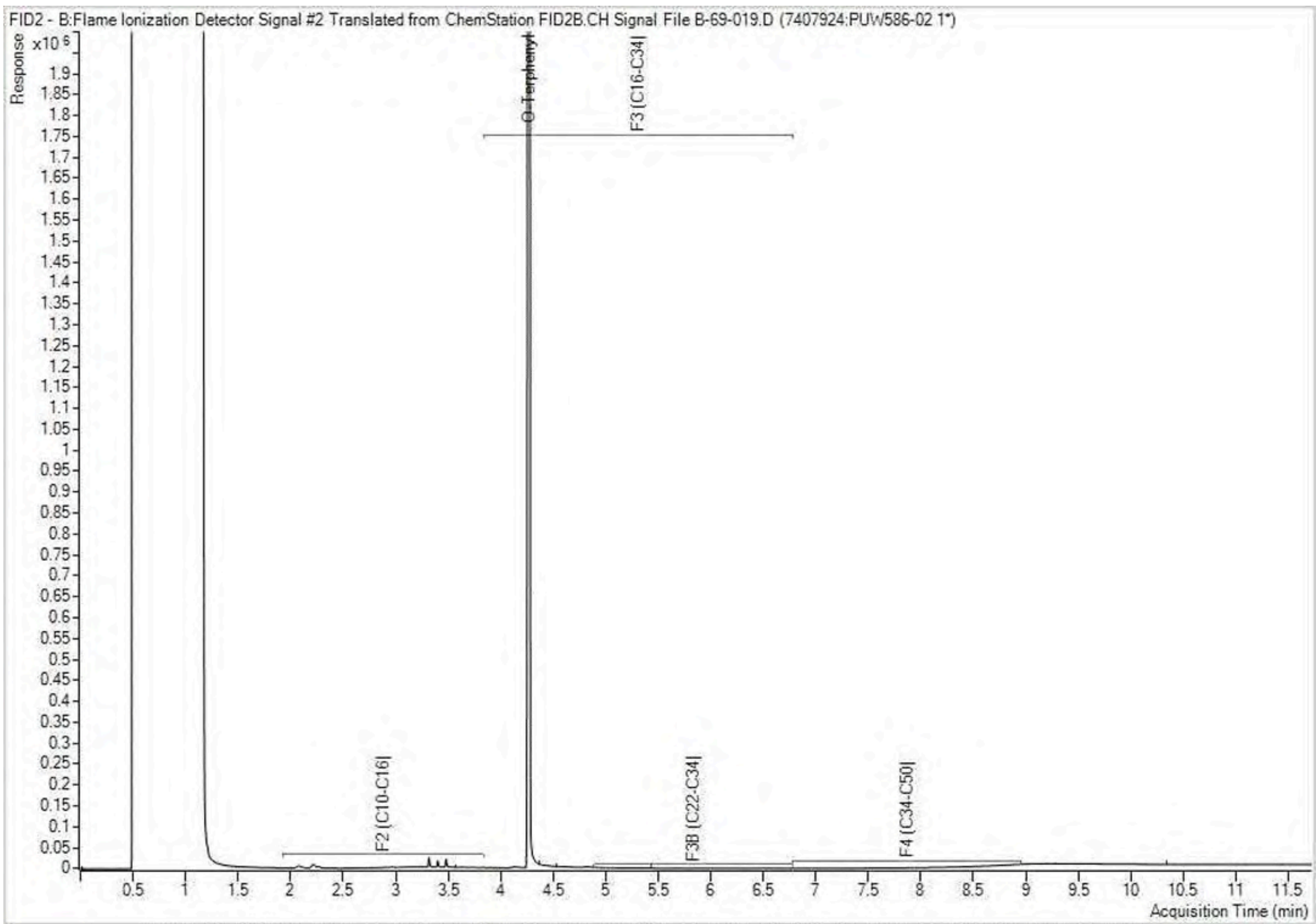


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW586

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW124

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

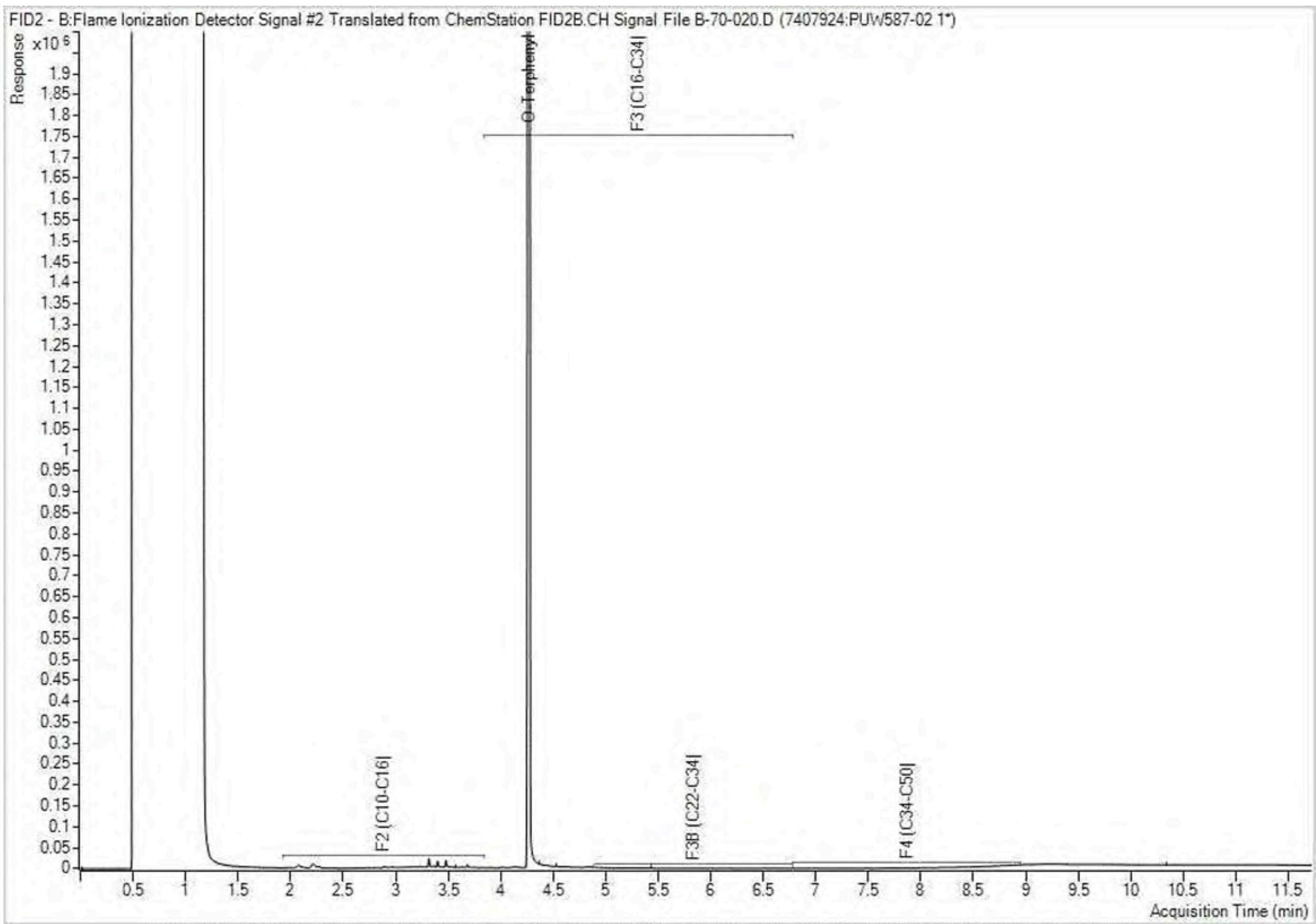


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G1158
Report Date: 2021/06/18
BV Labs Sample: PUW587

Pinchin Ltd
Client Project #: 285722.003
Client ID: GWDUP-2

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003
Your C.O.C. #: 832329-02-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/06/24
Report #: R6690670
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G6182
Received: 2021/06/16, 14:25

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	2	N/A	2021/06/23	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	2	N/A	2021/06/23		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	2	2021/06/21	2021/06/22	CAM SOP-00316	CCME PHC-CWS m
PAH Compounds in Water by GC/MS (SIM) (1)	2	2021/06/21	2021/06/22	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	2	N/A	2021/06/22	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: 285722.003
Your C.O.C. #: 832329-02-01

<u>Attention: Matt, Ryan, Mike</u>

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/06/24
Report #: R6690670
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G6182
Received: 2021/06/16, 14:25

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

O.REG 153 PAHS (WATER)

BV Labs ID		PVY848	PVY849		
Sampling Date		2021/06/15	2021/06/15		
COC Number		832329-02-01	832329-02-01		
	UNITS	**BHMW111**	**BHMW119**	**RDL**	**QC Batch**
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	7413210
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	<0.050	<0.050	0.050	7420170
Acenaphthylene	ug/L	<0.050	<0.050	0.050	7420170
Anthracene	ug/L	<0.050	<0.050	0.050	7420170
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	7420170
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	0.0090	7420170
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	7420170
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	7420170
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	7420170
Chrysene	ug/L	<0.050	<0.050	0.050	7420170
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	0.050	7420170
Fluoranthene	ug/L	<0.050	<0.050	0.050	7420170
Fluorene	ug/L	<0.050	<0.050	0.050	7420170
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	7420170
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7420170
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7420170
Naphthalene	ug/L	<0.050	<0.050	0.050	7420170
Phenanthrene	ug/L	<0.030	<0.030	0.030	7420170
Pyrene	ug/L	<0.050	<0.050	0.050	7420170
Surrogate Recovery (%)					
D10-Anthracene	%	128	111		7420170
D14-Terphenyl (FS)	%	121	119		7420170
D8-Acenaphthylene	%	102	101		7420170

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PVY848		PVY849		
Sampling Date		2021/06/15		2021/06/15		
COC Number		832329-02-01		832329-02-01		
	UNITS	**BHMW111**	**RDL**	**BHMW119**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	<0.50	0.50	7413211
Volatile Organics						
Acetone (2-Propanone)	ug/L	<10	10	<15 (1)	15	7414719
Benzene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Bromodichloromethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
Bromoform	ug/L	<1.0	1.0	<1.0	1.0	7414719
Bromomethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
Carbon Tetrachloride	ug/L	<0.20	0.20	<0.20	0.20	7414719
Chlorobenzene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Chloroform	ug/L	<0.20	0.20	0.78	0.20	7414719
Dibromochloromethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,2-Dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,3-Dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,4-Dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7414719
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	<1.0	1.0	7414719
1,1-Dichloroethane	ug/L	<0.20	0.20	<0.20	0.20	7414719
1,2-Dichloroethane	ug/L	<0.50	0.50	1.9	0.50	7414719
1,1-Dichloroethylene	ug/L	<0.20	0.20	<0.20	0.20	7414719
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	<0.50	0.50	7414719
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,2-Dichloropropane	ug/L	<0.20	0.20	<0.20	0.20	7414719
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	<0.30	0.30	7414719
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	<0.40	0.40	7414719
Ethylbenzene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Ethylene Dibromide	ug/L	<0.20	0.20	<0.20	0.20	7414719
Hexane	ug/L	<1.0	1.0	<1.0	1.0	7414719
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	<2.0	2.0	7414719
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	<10	10	7414719
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	<5.0	5.0	7414719
Methyl t-butyl ether (MTBE)	ug/L	0.64	0.50	15	0.50	7414719
Styrene	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
Tetrachloroethylene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Toluene	ug/L	0.29	0.20	<0.20	0.20	7414719

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) The detection limit was raised due to matrix interference.

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PVY848		PVY849		
Sampling Date		2021/06/15		2021/06/15		
COC Number		832329-02-01		832329-02-01		
	UNITS	**BHMW111**	**RDL**	**BHMW119**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	0.20	<0.20	0.20	7414719
1,1,2-Trichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7414719
Trichloroethylene	ug/L	<0.20	0.20	<0.20	0.20	7414719
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	<0.50	0.50	7414719
Vinyl Chloride	ug/L	<0.20	0.20	<0.20	0.20	7414719
p+m-Xylene	ug/L	0.38	0.20	0.35	0.20	7414719
o-Xylene	ug/L	0.22	0.20	0.42	0.20	7414719
Total Xylenes	ug/L	0.60	0.20	0.78	0.20	7414719
F1 (C6-C10)	ug/L	<25	25	<25	25	7414719
F1 (C6-C10) - BTEX	ug/L	<25	25	<25	25	7414719
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	<100	100	7420177
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	<200	200	7420177
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	<200	200	7420177
Reached Baseline at C50	ug/L	Yes		Yes		7420177
Surrogate Recovery (%)						
o-Terphenyl	%	102		98		7420177
4-Bromofluorobenzene	%	93		94		7414719
D4-1,2-Dichloroethane	%	110		108		7414719
D8-Toluene	%	87		88		7414719

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1G6182
Report Date: 2021/06/24

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MR

TEST SUMMARY

BV Labs ID: PVY848
Sample ID: BHMW111
Matrix: Water

Collected: 2021/06/15
Shipped:
Received: 2021/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7413210	N/A	2021/06/23	Automated Statchk
1,3-Dichloropropene Sum	CALC	7413211	N/A	2021/06/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7420177	2021/06/21	2021/06/22	Dennis Ngondu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7420170	2021/06/21	2021/06/22	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7414719	N/A	2021/06/22	Yang (Philip) Yu

BV Labs ID: PVY849
Sample ID: BHMW119
Matrix: Water

Collected: 2021/06/15
Shipped:
Received: 2021/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7413210	N/A	2021/06/23	Automated Statchk
1,3-Dichloropropene Sum	CALC	7413211	N/A	2021/06/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7420177	2021/06/21	2021/06/22	Dennis Ngondu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7420170	2021/06/21	2021/06/22	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7414719	N/A	2021/06/22	Yang (Philip) Yu

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.0°C

Cooler custody seal was present and intact.

All 40 ml vials for F1BTEX and VOC analyses contained visible sediment.
All 100 ml amber glass bottles for F2-F4 and PAH analyses contained visible sediment, which was included in the extraction.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7414719	YY	Matrix Spike	4-Bromofluorobenzene	2021/06/22		112	%	70 - 130
			D4-1,2-Dichloroethane	2021/06/22		98	%	70 - 130
			D8-Toluene	2021/06/22		105	%	70 - 130
			Acetone (2-Propanone)	2021/06/22		98	%	60 - 140
			Benzene	2021/06/22		89	%	70 - 130
			Bromodichloromethane	2021/06/22		100	%	70 - 130
			Bromoform	2021/06/22		107	%	70 - 130
			Bromomethane	2021/06/22		100	%	60 - 140
			Carbon Tetrachloride	2021/06/22		98	%	70 - 130
			Chlorobenzene	2021/06/22		99	%	70 - 130
			Chloroform	2021/06/22		95	%	70 - 130
			Dibromochloromethane	2021/06/22		100	%	70 - 130
			1,2-Dichlorobenzene	2021/06/22		100	%	70 - 130
			1,3-Dichlorobenzene	2021/06/22		98	%	70 - 130
			1,4-Dichlorobenzene	2021/06/22		102	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/06/22		106	%	60 - 140
			1,1-Dichloroethane	2021/06/22		88	%	70 - 130
			1,2-Dichloroethane	2021/06/22		94	%	70 - 130
			1,1-Dichloroethylene	2021/06/22		93	%	70 - 130
			cis-1,2-Dichloroethylene	2021/06/22		90	%	70 - 130
			trans-1,2-Dichloroethylene	2021/06/22		96	%	70 - 130
			1,2-Dichloropropane	2021/06/22		92	%	70 - 130
			cis-1,3-Dichloropropene	2021/06/22		95	%	70 - 130
			trans-1,3-Dichloropropene	2021/06/22		100	%	70 - 130
			Ethylbenzene	2021/06/22		89	%	70 - 130
			Ethylene Dibromide	2021/06/22		98	%	70 - 130
			Hexane	2021/06/22		91	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/06/22		111	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/06/22		106	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/22		106	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/06/22		92	%	70 - 130
			Styrene	2021/06/22		87	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/06/22		100	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/06/22		97	%	70 - 130
			Tetrachloroethylene	2021/06/22		94	%	70 - 130
			Toluene	2021/06/22		93	%	70 - 130
			1,1,1-Trichloroethane	2021/06/22		99	%	70 - 130
			1,1,2-Trichloroethane	2021/06/22		99	%	70 - 130
			Trichloroethylene	2021/06/22		104	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/06/22		98	%	70 - 130
			Vinyl Chloride	2021/06/22		100	%	70 - 130
			p+m-Xylene	2021/06/22		74	%	70 - 130
			o-Xylene	2021/06/22		92	%	70 - 130
			F1 (C6-C10)	2021/06/22		103	%	60 - 140
7414719	YY	Spiked Blank	4-Bromofluorobenzene	2021/06/22		113	%	70 - 130
			D4-1,2-Dichloroethane	2021/06/22		99	%	70 - 130
			D8-Toluene	2021/06/22		104	%	70 - 130
			Acetone (2-Propanone)	2021/06/22		110	%	60 - 140
			Benzene	2021/06/22		88	%	70 - 130
			Bromodichloromethane	2021/06/22		98	%	70 - 130
			Bromoform	2021/06/22		102	%	70 - 130
			Bromomethane	2021/06/22		100	%	60 - 140
			Carbon Tetrachloride	2021/06/22		98	%	70 - 130
			Chlorobenzene	2021/06/22		97	%	70 - 130

BV Labs Job #: C1G6182
Report Date: 2021/06/24

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MR

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chloroform	2021/06/22		94	%	70 - 130
			Dibromochloromethane	2021/06/22		95	%	70 - 130
			1,2-Dichlorobenzene	2021/06/22		95	%	70 - 130
			1,3-Dichlorobenzene	2021/06/22		95	%	70 - 130
			1,4-Dichlorobenzene	2021/06/22		98	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/06/22		112	%	60 - 140
			1,1-Dichloroethane	2021/06/22		88	%	70 - 130
			1,2-Dichloroethane	2021/06/22		92	%	70 - 130
			1,1-Dichloroethylene	2021/06/22		95	%	70 - 130
			cis-1,2-Dichloroethylene	2021/06/22		101	%	70 - 130
			trans-1,2-Dichloroethylene	2021/06/22		96	%	70 - 130
			1,2-Dichloropropane	2021/06/22		92	%	70 - 130
			cis-1,3-Dichloropropene	2021/06/22		90	%	70 - 130
			trans-1,3-Dichloropropene	2021/06/22		92	%	70 - 130
			Ethylbenzene	2021/06/22		88	%	70 - 130
			Ethylene Dibromide	2021/06/22		95	%	70 - 130
			Hexane	2021/06/22		95	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/06/22		111	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/06/22		115	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/22		110	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/06/22		91	%	70 - 130
			Styrene	2021/06/22		86	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/06/22		96	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/06/22		94	%	70 - 130
			Tetrachloroethylene	2021/06/22		93	%	70 - 130
			Toluene	2021/06/22		92	%	70 - 130
			1,1,1-Trichloroethane	2021/06/22		99	%	70 - 130
			1,1,2-Trichloroethane	2021/06/22		96	%	70 - 130
			Trichloroethylene	2021/06/22		105	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/06/22		100	%	70 - 130
			Vinyl Chloride	2021/06/22		101	%	70 - 130
			p+m-Xylene	2021/06/22		74	%	70 - 130
			o-Xylene	2021/06/22		91	%	70 - 130
			F1 (C6-C10)	2021/06/22		91	%	60 - 140
7414719	YY	Method Blank	4-Bromofluorobenzene	2021/06/22		94	%	70 - 130
			D4-1,2-Dichloroethane	2021/06/22		105	%	70 - 130
			D8-Toluene	2021/06/22		89	%	70 - 130
			Acetone (2-Propanone)	2021/06/22	<10		ug/L	
			Benzene	2021/06/22	<0.20		ug/L	
			Bromodichloromethane	2021/06/22	<0.50		ug/L	
			Bromoform	2021/06/22	<1.0		ug/L	
			Bromomethane	2021/06/22	<0.50		ug/L	
			Carbon Tetrachloride	2021/06/22	<0.20		ug/L	
			Chlorobenzene	2021/06/22	<0.20		ug/L	
			Chloroform	2021/06/22	<0.20		ug/L	
			Dibromochloromethane	2021/06/22	<0.50		ug/L	
			1,2-Dichlorobenzene	2021/06/22	<0.50		ug/L	
			1,3-Dichlorobenzene	2021/06/22	<0.50		ug/L	
			1,4-Dichlorobenzene	2021/06/22	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2021/06/22	<1.0		ug/L	
			1,1-Dichloroethane	2021/06/22	<0.20		ug/L	
			1,2-Dichloroethane	2021/06/22	<0.50		ug/L	
			1,1-Dichloroethylene	2021/06/22	<0.20		ug/L	
			cis-1,2-Dichloroethylene	2021/06/22	<0.50		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			trans-1,2-Dichloroethylene	2021/06/22	<0.50		ug/L	
			1,2-Dichloropropane	2021/06/22	<0.20		ug/L	
			cis-1,3-Dichloropropene	2021/06/22	<0.30		ug/L	
			trans-1,3-Dichloropropene	2021/06/22	<0.40		ug/L	
			Ethylbenzene	2021/06/22	<0.20		ug/L	
			Ethylene Dibromide	2021/06/22	<0.20		ug/L	
			Hexane	2021/06/22	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2021/06/22	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2021/06/22	<10		ug/L	
			Methyl Isobutyl Ketone	2021/06/22	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2021/06/22	<0.50		ug/L	
			Styrene	2021/06/22	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2021/06/22	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2021/06/22	<0.50		ug/L	
			Tetrachloroethylene	2021/06/22	<0.20		ug/L	
			Toluene	2021/06/22	<0.20		ug/L	
			1,1,1-Trichloroethane	2021/06/22	<0.20		ug/L	
			1,1,2-Trichloroethane	2021/06/22	<0.50		ug/L	
			Trichloroethylene	2021/06/22	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2021/06/22	<0.50		ug/L	
			Vinyl Chloride	2021/06/22	<0.20		ug/L	
			p+m-Xylene	2021/06/22	<0.20		ug/L	
			o-Xylene	2021/06/22	<0.20		ug/L	
			Total Xylenes	2021/06/22	<0.20		ug/L	
			F1 (C6-C10)	2021/06/22	<25		ug/L	
			F1 (C6-C10) - BTEX	2021/06/22	<25		ug/L	
7414719	YY	RPD	1,1-Dichloroethylene	2021/06/22	NC		%	30
			cis-1,2-Dichloroethylene	2021/06/22	9.6		%	30
			Tetrachloroethylene	2021/06/22	9.1		%	30
			Trichloroethylene	2021/06/22	7.4		%	30
			Vinyl Chloride	2021/06/22	NC		%	30
			F1 (C6-C10)	2021/06/22	NC		%	30
7420170	RAJ	Matrix Spike	D10-Anthracene	2021/06/22		85	%	50 - 130
			D14-Terphenyl (FS)	2021/06/22		116	%	50 - 130
			D8-Acenaphthylene	2021/06/22		100	%	50 - 130
			Acenaphthene	2021/06/22		87	%	50 - 130
			Acenaphthylene	2021/06/22		97	%	50 - 130
			Anthracene	2021/06/22		80	%	50 - 130
			Benzo(a)anthracene	2021/06/22		99	%	50 - 130
			Benzo(a)pyrene	2021/06/22		81	%	50 - 130
			Benzo(b/j)fluoranthene	2021/06/22		98	%	50 - 130
			Benzo(g,h,i)perylene	2021/06/22		96	%	50 - 130
			Benzo(k)fluoranthene	2021/06/22		92	%	50 - 130
			Chrysene	2021/06/22		103	%	50 - 130
			Dibenzo(a,h)anthracene	2021/06/22		100	%	50 - 130
			Fluoranthene	2021/06/22		121	%	50 - 130
			Fluorene	2021/06/22		99	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/06/22		109	%	50 - 130
			1-Methylnaphthalene	2021/06/22		88	%	50 - 130
			2-Methylnaphthalene	2021/06/22		84	%	50 - 130
			Naphthalene	2021/06/22		92	%	50 - 130
			Phenanthrene	2021/06/22		102	%	50 - 130
			Pyrene	2021/06/22		112	%	50 - 130
7420170	RAJ	Spiked Blank	D10-Anthracene	2021/06/22		122	%	50 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			D14-Terphenyl (FS)	2021/06/22		113	%	50 - 130
			D8-Acenaphthylene	2021/06/22		102	%	50 - 130
			Acenaphthene	2021/06/22		102	%	50 - 130
			Acenaphthylene	2021/06/22		99	%	50 - 130
			Anthracene	2021/06/22		108	%	50 - 130
			Benzo(a)anthracene	2021/06/22		102	%	50 - 130
			Benzo(a)pyrene	2021/06/22		85	%	50 - 130
			Benzo(b/j)fluoranthene	2021/06/22		101	%	50 - 130
			Benzo(g,h,i)perylene	2021/06/22		98	%	50 - 130
			Benzo(k)fluoranthene	2021/06/22		87	%	50 - 130
			Chrysene	2021/06/22		104	%	50 - 130
			Dibenzo(a,h)anthracene	2021/06/22		82	%	50 - 130
			Fluoranthene	2021/06/22		124	%	50 - 130
			Fluorene	2021/06/22		102	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/06/22		111	%	50 - 130
			1-Methylnaphthalene	2021/06/22		89	%	50 - 130
			2-Methylnaphthalene	2021/06/22		85	%	50 - 130
			Naphthalene	2021/06/22		94	%	50 - 130
			Phenanthrene	2021/06/22		106	%	50 - 130
			Pyrene	2021/06/22		122	%	50 - 130
7420170	RAJ	Method Blank	D10-Anthracene	2021/06/22		111	%	50 - 130
			D14-Terphenyl (FS)	2021/06/22		116	%	50 - 130
			D8-Acenaphthylene	2021/06/22		99	%	50 - 130
			Acenaphthene	2021/06/22	<0.050		ug/L	
			Acenaphthylene	2021/06/22	<0.050		ug/L	
			Anthracene	2021/06/22	<0.050		ug/L	
			Benzo(a)anthracene	2021/06/22	<0.050		ug/L	
			Benzo(a)pyrene	2021/06/22	<0.0090		ug/L	
			Benzo(b/j)fluoranthene	2021/06/22	<0.050		ug/L	
			Benzo(g,h,i)perylene	2021/06/22	<0.050		ug/L	
			Benzo(k)fluoranthene	2021/06/22	<0.050		ug/L	
			Chrysene	2021/06/22	<0.050		ug/L	
			Dibenzo(a,h)anthracene	2021/06/22	<0.050		ug/L	
			Fluoranthene	2021/06/22	<0.050		ug/L	
			Fluorene	2021/06/22	<0.050		ug/L	
			Indeno(1,2,3-cd)pyrene	2021/06/22	<0.050		ug/L	
			1-Methylnaphthalene	2021/06/22	<0.050		ug/L	
			2-Methylnaphthalene	2021/06/22	<0.050		ug/L	
			Naphthalene	2021/06/22	<0.050		ug/L	
			Phenanthrene	2021/06/22	<0.030		ug/L	
			Pyrene	2021/06/22	<0.050		ug/L	
7420170	RAJ	RPD	Naphthalene	2021/06/22	NC		%	30
7420177	DN0	Matrix Spike	o-Terphenyl	2021/06/22		100	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/22		NC	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/06/22		NC	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/06/22		90	%	60 - 130
7420177	DN0	Spiked Blank	o-Terphenyl	2021/06/22		101	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/22		96	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/06/22		98	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/06/22		102	%	60 - 130
7420177	DN0	Method Blank	o-Terphenyl	2021/06/22		99	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/22	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/06/22	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/06/22	<200		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7420177	DN0	RPD	F2 (C10-C16 Hydrocarbons)	2021/06/22	20		%	30
			F3 (C16-C34 Hydrocarbons)	2021/06/22	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/06/22	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

BV Labs Job #: C1G6182
Report Date: 2021/06/24

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MR

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

16-Jun-21-14:25
Antonella Brasil
C1G6182
J_L ENV-960

Maxxam Analytics
CAM FCD-01013/5
Page 1 of 1

Presence of Visible Particulate/Sediment

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

Bottle Types

			Inorganics					Organics											Hydrocarbons							Volatiles				Other
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/Herb 1 of 2	Pest/Herb 2 of 2	SVOC/ABN 1 of 2	SVOC/ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	BHMW111	TS																												
2																														
3																														
4																														
5																														
6																														
7																														
8																														
9																														
10																														

Comments:

Legend:

P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print) J-J-n

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

16-Jun-21 14:25
Antonella Brasil
C1G6182
J L ENV-960

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#982 Pinchin Ltd	Company Name		Quotation #	A70927
Attention	Accounts Payable	Attention	Matt, Ryan, Mike	P.O. #	
Address	1 Hines Road Suite 200	Address		Project	285722.003
	Kanata ON K2K 3C7			Project Name	
Tel	(613) 592-3387 Fax (613) 592-5897	Tel	Fax	Site #	
Email	ap@pinchin.com	Email	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By	M. Kosiw

Bottle Order #: 832329
COC #: C#832329-02-01
Project Manager: Antonella Brasil

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1; Table 2; [X] Table 3; Table ___; [X] Res/Park; Ind/Comm; Agri/Other; [X] Medium/Fine; Coarse; [X] For RSC

Other Regulations: CCME; Reg 558; MISA; PWQO; Other; Sanitary Sewer Bylaw; Storm Sewer Bylaw; Municipality; Reg 406 Table

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? Y

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; O.Reg 153 Metals & Inorganics Pkg (Soil); O.Reg 153 VOCs by HS & F1-F4 (Soil); O.Reg 153 PCBs (Soil); O.Reg 153 PAHs (Soil); O.Reg 153 Semivolatiles Package (Soil); Acid Extractables by GC/MS; O.Reg 153 OC Pesticides (Soil)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	O.Reg 153 Metals & Inorganics	O.Reg 153 VOCs by HS & F1-F4	O.Reg 153 PCBs	O.Reg 153 PAHs	O.Reg 153 Semivolatiles	Acid Extractables	O.Reg 153 OC Pesticides	# of Bottles	Comments
1		BHMW111	June 15 2021	PM	GW			X		X				5	
2		BHMW119	↓	↓	↓			X		X				5	
3															
4															
5															
6															
7															
8															
9															
10															ON Ice

RECEIVED IN OTTAWA

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mike Kosiw	June 16 2021	11:30 AM	[signature]	2021/06/16	14:25	
			[signature]	2021/06/17	08:30	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 9, 8, 10; Custody Seal: Present / Intact — Yes

3/3/3C

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

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** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

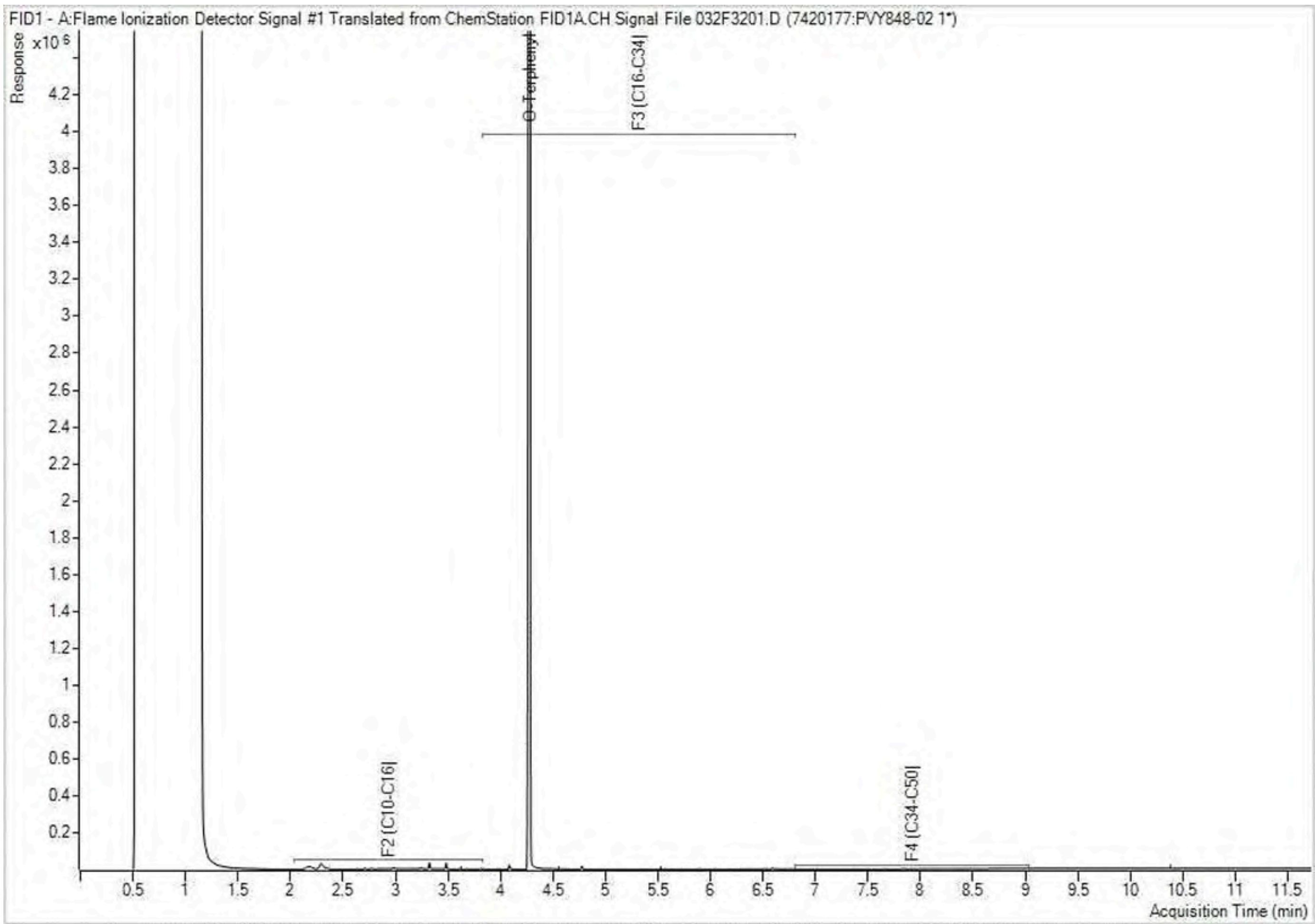
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

BV Labs Job #: C1G6182
Report Date: 2021/06/24
BV Labs Sample: PVY848

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW111

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

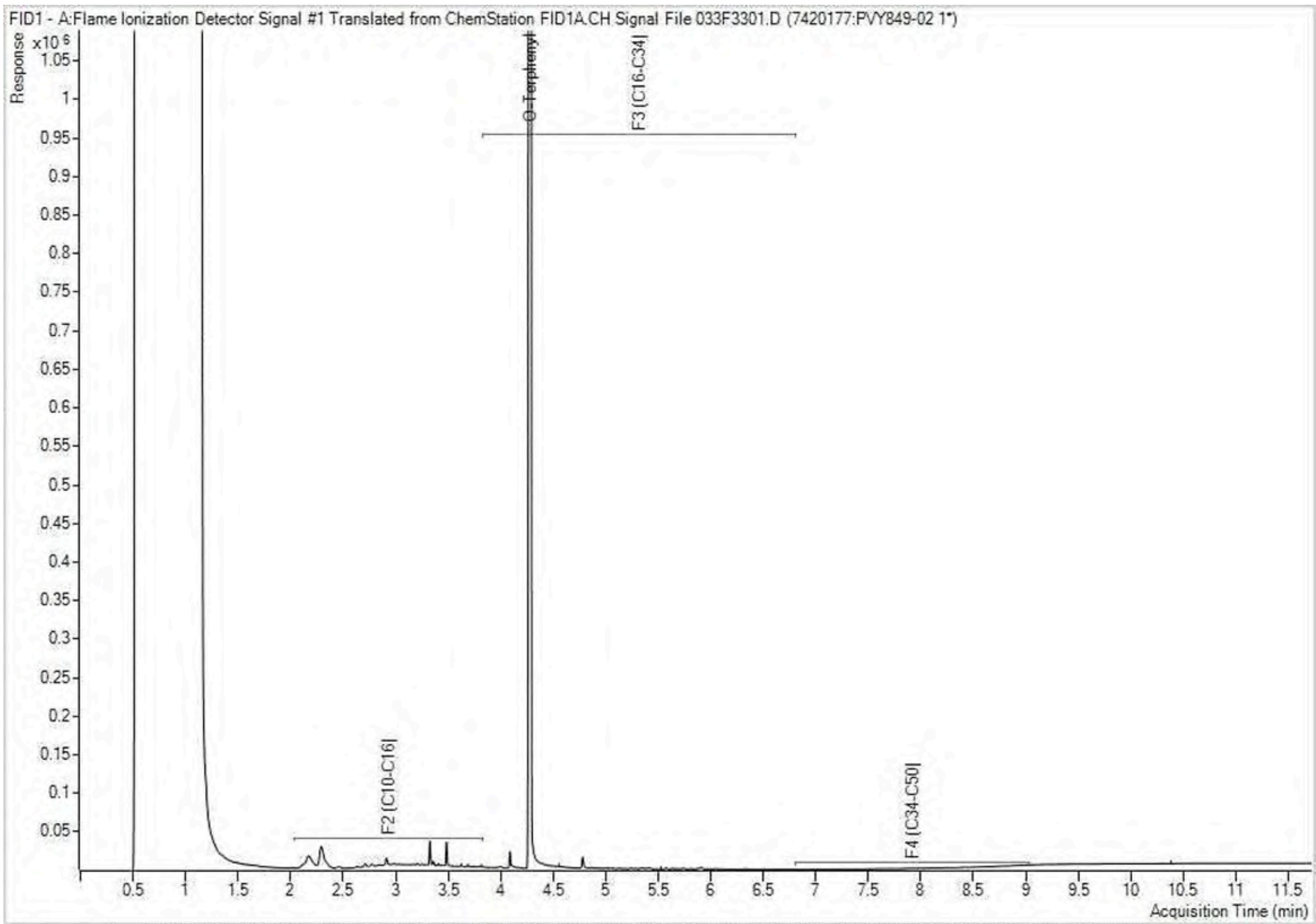


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1G6182
Report Date: 2021/06/24
BV Labs Sample: PVY849

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW119

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003
Your C.O.C. #: 832329-06-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/10/21
Report #: R6862370
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1T8290
Received: 2021/10/13, 16:20

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	3	N/A	2021/10/20	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	3	N/A	2021/10/20		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	3	2021/10/18	2021/10/19	CAM SOP-00316	CCME CWS m
Moisture (1)	3	N/A	2021/10/15	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	3	2021/10/19	2021/10/20	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	3	N/A	2021/10/19	CAM SOP-00230	EPA 8260C m

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	2	N/A	2021/10/19	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	2	N/A	2021/10/20		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	2	2021/10/18	2021/10/19	CAM SOP-00316	CCME PHC-CWS m
PAH Compounds in Water by GC/MS (SIM) (1)	2	2021/10/18	2021/10/19	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	3	N/A	2021/10/20	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Your Project #: 285722.003
Your C.O.C. #: 832329-06-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/10/21
Report #: R6862370
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1T8290
Received: 2021/10/13, 16:20

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

O.REG 153 PAHS (SOIL)

Bureau Veritas ID		QXT935		QXT936		QXT937		
Sampling Date		2021/10/06		2021/10/06		2021/10/06		
COC Number		832329-06-01		832329-06-01		832329-06-01		
	UNITS	BHMW125 SS-7	RDL	BHMW126 SS-1	RDL	BHMW127 SS-6	RDL	QC Batch
Inorganics								
Moisture	%	10	1.0	8.9	1.0	15	1.0	7639393
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	17	0.071	<0.0071	0.0071	7637968
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	<0.0050	0.0050	39	0.050	<0.0050	0.0050	7646770
Acenaphthylene	ug/g	<0.0050	0.0050	0.77	0.050	<0.0050	0.0050	7646770
Anthracene	ug/g	<0.0050	0.0050	110	0.050	<0.0050	0.0050	7646770
Benzo(a)anthracene	ug/g	<0.0050	0.0050	180	0.050	<0.0050	0.0050	7646770
Benzo(a)pyrene	ug/g	<0.0050	0.0050	120	0.050	<0.0050	0.0050	7646770
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	200	0.050	<0.0050	0.0050	7646770
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	57	0.050	<0.0050	0.0050	7646770
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	65	0.050	<0.0050	0.0050	7646770
Chrysene	ug/g	<0.0050	0.0050	140	0.050	<0.0050	0.0050	7646770
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	18	0.050	<0.0050	0.0050	7646770
Fluoranthene	ug/g	<0.0050	0.0050	450	0.050	0.0079	0.0050	7646770
Fluorene	ug/g	<0.0050	0.0050	54	0.050	<0.0050	0.0050	7646770
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	62	0.050	<0.0050	0.0050	7646770
1-Methylnaphthalene	ug/g	<0.0050	0.0050	7.2	0.050	<0.0050	0.0050	7646770
2-Methylnaphthalene	ug/g	<0.0050	0.0050	9.3	0.050	<0.0050	0.0050	7646770
Naphthalene	ug/g	<0.0050	0.0050	12	0.050	<0.0050	0.0050	7646770
Phenanthrene	ug/g	<0.0050	0.0050	430	0.050	0.0087	0.0050	7646770
Pyrene	ug/g	<0.0050	0.0050	330	0.050	0.0057	0.0050	7646770
Surrogate Recovery (%)								
D10-Anthracene	%	94		120		99		7646770
D14-Terphenyl (FS)	%	90		313 (1)		96		7646770
D8-Acenaphthylene	%	56		120		68		7646770

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) Surrogate recovery was above the upper control limit due to matrix interference. This may represent a high bias in some results.

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Bureau Veritas ID		QXT935	QXT936	QXT937		
Sampling Date		2021/10/06	2021/10/06	2021/10/06		
COC Number		832329-06-01	832329-06-01	832329-06-01		
	UNITS	**BHMW125 SS-7**	**BHMW126 SS-1**	**BHMW127 SS-6**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	0.050	7638071
Volatile Organics						
Acetone (2-Propanone)	ug/g	<0.49	<0.49	<0.49	0.49	7642664
Benzene	ug/g	<0.0060	0.0085	<0.0060	0.0060	7642664
Bromodichloromethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Bromoform	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Bromomethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Carbon Tetrachloride	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Chlorobenzene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Chloroform	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Dibromochloromethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,2-Dichlorobenzene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,3-Dichlorobenzene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,4-Dichlorobenzene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Dichlorodifluoromethane (FREON 12)	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,1-Dichloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,2-Dichloroethane	ug/g	<0.049	<0.049	<0.049	0.049	7642664
1,1-Dichloroethylene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
cis-1,2-Dichloroethylene	ug/g	<0.040	0.057	<0.040	0.040	7642664
trans-1,2-Dichloroethylene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,2-Dichloropropane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	0.030	7642664
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Ethylbenzene	ug/g	<0.010	0.017	<0.010	0.010	7642664
Ethylene Dibromide	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Hexane	ug/g	<0.040	0.058	<0.040	0.040	7642664
Methylene Chloride(Dichloromethane)	ug/g	<0.049	<0.049	<0.049	0.049	7642664
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.40	<0.40	<0.40	0.40	7642664
Methyl Isobutyl Ketone	ug/g	<0.40	<0.40	<0.40	0.40	7642664
Methyl t-butyl ether (MTBE)	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Styrene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,1,1,2-Tetrachloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,1,2,2-Tetrachloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Tetrachloroethylene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Toluene	ug/g	<0.020	0.053	<0.020	0.020	7642664
1,1,1-Trichloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Bureau Veritas ID		QXT935	QXT936	QXT937		
Sampling Date		2021/10/06	2021/10/06	2021/10/06		
COC Number		832329-06-01	832329-06-01	832329-06-01		
	UNITS	**BHMW125 SS-7**	**BHMW126 SS-1**	**BHMW127 SS-6**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Trichloroethylene	ug/g	<0.010	0.023	<0.010	0.010	7642664
Trichlorofluoromethane (FREON 11)	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Vinyl Chloride	ug/g	<0.019	<0.019	<0.019	0.019	7642664
p+m-Xylene	ug/g	<0.020	0.088	<0.020	0.020	7642664
o-Xylene	ug/g	<0.020	0.053	<0.020	0.020	7642664
Total Xylenes	ug/g	<0.020	0.14	<0.020	0.020	7642664
F1 (C6-C10)	ug/g	<10	<10	<10	10	7642664
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	10	7642664
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	<10	290	<10	10	7644377
F3 (C16-C34 Hydrocarbons)	ug/g	<50	6200	<50	50	7644377
F4 (C34-C50 Hydrocarbons)	ug/g	<50	1400	<50	50	7644377
Reached Baseline at C50	ug/g	Yes	Yes	Yes		7644377
Surrogate Recovery (%)						
o-Terphenyl	%	86	99	84		7644377
4-Bromofluorobenzene	%	98	99	98		7642664
D10-o-Xylene	%	100	106	109		7642664
D4-1,2-Dichloroethane	%	89	89	88		7642664
D8-Toluene	%	97	97	97		7642664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID		QXT940		
Sampling Date		2021/10/12		
COC Number		832329-06-01		
	UNITS	TRIP BLANK	RDL	QC Batch
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	7640033
Benzene	ug/L	<0.17	0.17	7640033
Bromodichloromethane	ug/L	<0.50	0.50	7640033
Bromoform	ug/L	<1.0	1.0	7640033
Bromomethane	ug/L	<0.50	0.50	7640033
Carbon Tetrachloride	ug/L	<0.20	0.20	7640033
Chlorobenzene	ug/L	<0.20	0.20	7640033
Chloroform	ug/L	<0.20	0.20	7640033
Dibromochloromethane	ug/L	<0.50	0.50	7640033
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7640033
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7640033
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7640033
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7640033
1,1-Dichloroethane	ug/L	<0.20	0.20	7640033
1,2-Dichloroethane	ug/L	<0.50	0.50	7640033
1,1-Dichloroethylene	ug/L	<0.20	0.20	7640033
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7640033
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7640033
1,2-Dichloropropane	ug/L	<0.20	0.20	7640033
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7640033
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7640033
Ethylbenzene	ug/L	<0.20	0.20	7640033
Ethylene Dibromide	ug/L	<0.20	0.20	7640033
Hexane	ug/L	<1.0	1.0	7640033
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7640033
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7640033
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7640033
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7640033
Styrene	ug/L	<0.50	0.50	7640033
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7640033
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7640033
Tetrachloroethylene	ug/L	<0.20	0.20	7640033
Toluene	ug/L	<0.20	0.20	7640033
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7640033
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7640033
Trichloroethylene	ug/L	<0.20	0.20	7640033

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID		QXT940		
Sampling Date		2021/10/12		
COC Number		832329-06-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7640033
Vinyl Chloride	ug/L	<0.20	0.20	7640033
p+m-Xylene	ug/L	<0.20	0.20	7640033
o-Xylene	ug/L	<0.20	0.20	7640033
Total Xylenes	ug/L	<0.20	0.20	7640033
F1 (C6-C10)	ug/L	<25	25	7640033
F1 (C6-C10) - BTEX	ug/L	<25	25	7640033
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	87		7640033
D4-1,2-Dichloroethane	%	98		7640033
D8-Toluene	%	106		7640033

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (WATER)

Bureau Veritas ID		QXT938	QXT939		
Sampling Date		2021/10/12	2021/10/12		
COC Number		832329-06-01	832329-06-01		
	UNITS	**BHMW125**	**BHM127**	**RDL**	**QC Batch**
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	7637229
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	<0.050	0.10	0.050	7643885
Acenaphthylene	ug/L	<0.050	<0.050	0.050	7643885
Anthracene	ug/L	<0.050	<0.050	0.050	7643885
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	7643885
Benzo(a)pyrene	ug/L	<0.0090	0.040	0.0090	7643885
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	7643885
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	7643885
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	7643885
Chrysene	ug/L	<0.050	0.057	0.050	7643885
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	0.050	7643885
Fluoranthene	ug/L	<0.050	0.14	0.050	7643885
Fluorene	ug/L	<0.050	0.076	0.050	7643885
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	7643885
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7643885
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7643885
Naphthalene	ug/L	<0.050	0.053	0.050	7643885
Phenanthrene	ug/L	<0.030	0.25	0.030	7643885
Pyrene	ug/L	<0.050	0.11	0.050	7643885
Surrogate Recovery (%)					
D10-Anthracene	%	109	115		7643885
D14-Terphenyl (FS)	%	103	110		7643885
D8-Acenaphthylene	%	85	94		7643885

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Bureau Veritas ID		QXT938			QXT938			QXT939		
Sampling Date		2021/10/12			2021/10/12			2021/10/12		
COC Number		832329-06-01			832329-06-01			832329-06-01		
	UNITS	BHMW125	RDL	QC Batch	BHMW125 Lab-Dup	RDL	QC Batch	BHM127	RDL	QC Batch
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	7637343				<0.50	0.50	7637343
Volatile Organics										
Acetone (2-Propanone)	ug/L	<10	10	7640033	<10	10	7640033	<10	10	7640033
Benzene	ug/L	<0.17	0.17	7640033	<0.17	0.17	7640033	0.47	0.17	7640033
Bromodichloromethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Bromoform	ug/L	<1.0	1.0	7640033	<1.0	1.0	7640033	<1.0	1.0	7640033
Bromomethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Carbon Tetrachloride	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Chlorobenzene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Chloroform	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Dibromochloromethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7640033	<1.0	1.0	7640033	<1.0	1.0	7640033
1,1-Dichloroethane	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	0.48	0.20	7640033
1,2-Dichloroethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	1.1	0.50	7640033
1,1-Dichloroethylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,2-Dichloropropane	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7640033	<0.30	0.30	7640033	<0.30	0.30	7640033
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7640033	<0.40	0.40	7640033	<0.40	0.40	7640033
Ethylbenzene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Ethylene Dibromide	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Hexane	ug/L	<1.0	1.0	7640033	<1.0	1.0	7640033	<1.0	1.0	7640033
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7640033	<2.0	2.0	7640033	<2.0	2.0	7640033
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7640033	<10	10	7640033	<10	10	7640033
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7640033	<5.0	5.0	7640033	<5.0	5.0	7640033
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	46	0.50	7640033
Styrene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Tetrachloroethylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Toluene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Bureau Veritas ID		QXT938			QXT938			QXT939		
Sampling Date		2021/10/12			2021/10/12			2021/10/12		
COC Number		832329-06-01			832329-06-01			832329-06-01		
	UNITS	**BHMW125**	**RDL**	**QC Batch**	**BHMW125 Lab-Dup**	**RDL**	**QC Batch**	**BHM127**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Trichloroethylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Vinyl Chloride	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
p+m-Xylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
o-Xylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Total Xylenes	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
F1 (C6-C10)	ug/L	<25	25	7640033	<25	25	7640033	<25	25	7640033
F1 (C6-C10) - BTEX	ug/L	<25	25	7640033	<25	25	7640033	<25	25	7640033
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	7643884				<100	100	7643884
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	7643884				<200	200	7643884
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	7643884				<200	200	7643884
Reached Baseline at C50	ug/L	Yes		7643884				Yes		7643884
Surrogate Recovery (%)										
o-Terphenyl	%	89		7643884				92		7643884
4-Bromofluorobenzene	%	85		7640033	84		7640033	87		7640033
D4-1,2-Dichloroethane	%	94		7640033	91		7640033	98		7640033
D8-Toluene	%	108		7640033	110		7640033	106		7640033

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

TEST SUMMARY

Bureau Veritas ID: QXT935 **Collected:** 2021/10/06
Sample ID: BHMW125 SS-7 **Shipped:**
Matrix: Soil **Received:** 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637968	N/A	2021/10/20	Automated Statchk
1,3-Dichloropropene Sum	CALC	7638071	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7644377	2021/10/18	2021/10/19	Ravinder Gaidhu
Moisture	BAL	7639393	N/A	2021/10/15	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7646770	2021/10/19	2021/10/20	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7642664	N/A	2021/10/19	Anna Gabrielyan

Bureau Veritas ID: QXT936 **Collected:** 2021/10/06
Sample ID: BHMW126 SS-1 **Shipped:**
Matrix: Soil **Received:** 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637968	N/A	2021/10/20	Automated Statchk
1,3-Dichloropropene Sum	CALC	7638071	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7644377	2021/10/18	2021/10/19	Ravinder Gaidhu
Moisture	BAL	7639393	N/A	2021/10/15	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7646770	2021/10/19	2021/10/20	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7642664	N/A	2021/10/19	Anna Gabrielyan

Bureau Veritas ID: QXT937 **Collected:** 2021/10/06
Sample ID: BHMW127 SS-6 **Shipped:**
Matrix: Soil **Received:** 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637968	N/A	2021/10/20	Automated Statchk
1,3-Dichloropropene Sum	CALC	7638071	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7644377	2021/10/18	2021/10/19	Ravinder Gaidhu
Moisture	BAL	7639393	N/A	2021/10/15	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7646770	2021/10/19	2021/10/20	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7642664	N/A	2021/10/19	Anna Gabrielyan

Bureau Veritas ID: QXT938 **Collected:** 2021/10/12
Sample ID: BHMW125 **Shipped:**
Matrix: Water **Received:** 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637229	N/A	2021/10/19	Automated Statchk
1,3-Dichloropropene Sum	CALC	7637343	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7643884	2021/10/18	2021/10/19	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7643885	2021/10/18	2021/10/19	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7640033	N/A	2021/10/20	Blair Gannon

TEST SUMMARY

Bureau Veritas ID: QXT938 Dup
Sample ID: BHMW125
Matrix: Water

Collected: 2021/10/12
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7640033	N/A	2021/10/20	Blair Gannon

Bureau Veritas ID: QXT939
Sample ID: BHM127
Matrix: Water

Collected: 2021/10/12
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637229	N/A	2021/10/19	Automated Statchk
1,3-Dichloropropene Sum	CALC	7637343	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7643884	2021/10/18	2021/10/19	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7643885	2021/10/18	2021/10/19	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7640033	N/A	2021/10/20	Blair Gannon

Bureau Veritas ID: QXT940
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2021/10/12
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7640033	N/A	2021/10/20	Blair Gannon

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C

Cooler custody seal was present and intact.

All 40 ml vials for F1BTEX and VOC analyses contained visible sediment.
All 100 ml amber glass bottles for F2-F4 and PAH analyses contained visible sediment, which was included in the extraction.

Sample QXT936 [BHMW126 SS-1] : PAH ANALYSIS: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7639393	MBW	RPD	Moisture	2021/10/15	15		%	20
7640033	BG1	Matrix Spike [QXT938-03]	4-Bromofluorobenzene	2021/10/19		98	%	70 - 130
			D4-1,2-Dichloroethane	2021/10/19		94	%	70 - 130
			D8-Toluene	2021/10/19		106	%	70 - 130
			Acetone (2-Propanone)	2021/10/19		86	%	60 - 140
			Benzene	2021/10/19		91	%	70 - 130
			Bromodichloromethane	2021/10/19		94	%	70 - 130
			Bromoform	2021/10/19		87	%	70 - 130
			Bromomethane	2021/10/19		95	%	60 - 140
			Carbon Tetrachloride	2021/10/19		101	%	70 - 130
			Chlorobenzene	2021/10/19		97	%	70 - 130
			Chloroform	2021/10/19		97	%	70 - 130
			Dibromochloromethane	2021/10/19		90	%	70 - 130
			1,2-Dichlorobenzene	2021/10/19		97	%	70 - 130
			1,3-Dichlorobenzene	2021/10/19		108	%	70 - 130
			1,4-Dichlorobenzene	2021/10/19		96	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/10/19		91	%	60 - 140
			1,1-Dichloroethane	2021/10/19		94	%	70 - 130
			1,2-Dichloroethane	2021/10/19		87	%	70 - 130
			1,1-Dichloroethylene	2021/10/19		102	%	70 - 130
			cis-1,2-Dichloroethylene	2021/10/19		97	%	70 - 130
			trans-1,2-Dichloroethylene	2021/10/19		99	%	70 - 130
			1,2-Dichloropropane	2021/10/19		92	%	70 - 130
			cis-1,3-Dichloropropene	2021/10/19		83	%	70 - 130
			trans-1,3-Dichloropropene	2021/10/19		90	%	70 - 130
			Ethylbenzene	2021/10/19		95	%	70 - 130
			Ethylene Dibromide	2021/10/19		91	%	70 - 130
			Hexane	2021/10/19		103	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/10/19		98	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/10/19		82	%	60 - 140
			Methyl Isobutyl Ketone	2021/10/19		66 (1)	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/10/19		84	%	70 - 130
			Styrene	2021/10/19		96	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/10/19		98	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/10/19		88	%	70 - 130
			Tetrachloroethylene	2021/10/19		100	%	70 - 130
			Toluene	2021/10/19		91	%	70 - 130
			1,1,1-Trichloroethane	2021/10/19		104	%	70 - 130
			1,1,2-Trichloroethane	2021/10/19		100	%	70 - 130
			Trichloroethylene	2021/10/19		106	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/10/19		104	%	70 - 130
			Vinyl Chloride	2021/10/19		98	%	70 - 130
			p+m-Xylene	2021/10/19		92	%	70 - 130
			o-Xylene	2021/10/19		90	%	70 - 130
			F1 (C6-C10)	2021/10/19		117	%	60 - 140
7640033	BG1	Spiked Blank	4-Bromofluorobenzene	2021/10/19		98	%	70 - 130
			D4-1,2-Dichloroethane	2021/10/19		102	%	70 - 130
			D8-Toluene	2021/10/19		102	%	70 - 130
			Acetone (2-Propanone)	2021/10/19		95	%	60 - 140
			Benzene	2021/10/19		88	%	70 - 130
			Bromodichloromethane	2021/10/19		97	%	70 - 130
			Bromoform	2021/10/19		92	%	70 - 130
			Bromomethane	2021/10/19		94	%	60 - 140
			Carbon Tetrachloride	2021/10/19		93	%	70 - 130

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chlorobenzene	2021/10/19		94	%	70 - 130
			Chloroform	2021/10/19		96	%	70 - 130
			Dibromochloromethane	2021/10/19		92	%	70 - 130
			1,2-Dichlorobenzene	2021/10/19		94	%	70 - 130
			1,3-Dichlorobenzene	2021/10/19		98	%	70 - 130
			1,4-Dichlorobenzene	2021/10/19		94	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/10/19		83	%	60 - 140
			1,1-Dichloroethane	2021/10/19		92	%	70 - 130
			1,2-Dichloroethane	2021/10/19		93	%	70 - 130
			1,1-Dichloroethylene	2021/10/19		95	%	70 - 130
			cis-1,2-Dichloroethylene	2021/10/19		96	%	70 - 130
			trans-1,2-Dichloroethylene	2021/10/19		93	%	70 - 130
			1,2-Dichloropropane	2021/10/19		93	%	70 - 130
			cis-1,3-Dichloropropene	2021/10/19		86	%	70 - 130
			trans-1,3-Dichloropropene	2021/10/19		92	%	70 - 130
			Ethylbenzene	2021/10/19		87	%	70 - 130
			Ethylene Dibromide	2021/10/19		96	%	70 - 130
			Hexane	2021/10/19		95	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/10/19		100	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/10/19		96	%	60 - 140
			Methyl Isobutyl Ketone	2021/10/19		83	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/10/19		90	%	70 - 130
			Styrene	2021/10/19		95	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/10/19		96	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/10/19		95	%	70 - 130
			Tetrachloroethylene	2021/10/19		88	%	70 - 130
			Toluene	2021/10/19		85	%	70 - 130
			1,1,1-Trichloroethane	2021/10/19		96	%	70 - 130
			1,1,2-Trichloroethane	2021/10/19		103	%	70 - 130
			Trichloroethylene	2021/10/19		99	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/10/19		95	%	70 - 130
			Vinyl Chloride	2021/10/19		92	%	70 - 130
			p+m-Xylene	2021/10/19		84	%	70 - 130
			o-Xylene	2021/10/19		85	%	70 - 130
			F1 (C6-C10)	2021/10/19		97	%	60 - 140
7640033	BG1	Method Blank	4-Bromofluorobenzene	2021/10/19		90	%	70 - 130
			D4-1,2-Dichloroethane	2021/10/19		109	%	70 - 130
			D8-Toluene	2021/10/19		100	%	70 - 130
			Acetone (2-Propanone)	2021/10/19	<10		ug/L	
			Benzene	2021/10/19	<0.17		ug/L	
			Bromodichloromethane	2021/10/19	<0.50		ug/L	
			Bromoform	2021/10/19	<1.0		ug/L	
			Bromomethane	2021/10/19	<0.50		ug/L	
			Carbon Tetrachloride	2021/10/19	<0.20		ug/L	
			Chlorobenzene	2021/10/19	<0.20		ug/L	
			Chloroform	2021/10/19	<0.20		ug/L	
			Dibromochloromethane	2021/10/19	<0.50		ug/L	
			1,2-Dichlorobenzene	2021/10/19	<0.50		ug/L	
			1,3-Dichlorobenzene	2021/10/19	<0.50		ug/L	
			1,4-Dichlorobenzene	2021/10/19	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2021/10/19	<1.0		ug/L	
			1,1-Dichloroethane	2021/10/19	<0.20		ug/L	
			1,2-Dichloroethane	2021/10/19	<0.50		ug/L	
			1,1-Dichloroethylene	2021/10/19	<0.20		ug/L	

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,2-Dichloroethylene	2021/10/19	<0.50		ug/L	
			trans-1,2-Dichloroethylene	2021/10/19	<0.50		ug/L	
			1,2-Dichloropropane	2021/10/19	<0.20		ug/L	
			cis-1,3-Dichloropropene	2021/10/19	<0.30		ug/L	
			trans-1,3-Dichloropropene	2021/10/19	<0.40		ug/L	
			Ethylbenzene	2021/10/19	<0.20		ug/L	
			Ethylene Dibromide	2021/10/19	<0.20		ug/L	
			Hexane	2021/10/19	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2021/10/19	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2021/10/19	<10		ug/L	
			Methyl Isobutyl Ketone	2021/10/19	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2021/10/19	<0.50		ug/L	
			Styrene	2021/10/19	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2021/10/19	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2021/10/19	<0.50		ug/L	
			Tetrachloroethylene	2021/10/19	<0.20		ug/L	
			Toluene	2021/10/19	<0.20		ug/L	
			1,1,1-Trichloroethane	2021/10/19	<0.20		ug/L	
			1,1,2-Trichloroethane	2021/10/19	<0.50		ug/L	
			Trichloroethylene	2021/10/19	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2021/10/19	<0.50		ug/L	
			Vinyl Chloride	2021/10/19	<0.20		ug/L	
			p+m-Xylene	2021/10/19	<0.20		ug/L	
			o-Xylene	2021/10/19	<0.20		ug/L	
			Total Xylenes	2021/10/19	<0.20		ug/L	
			F1 (C6-C10)	2021/10/19	<25		ug/L	
			F1 (C6-C10) - BTEX	2021/10/19	<25		ug/L	
7640033	BG1	RPD [QXT938-03]	Acetone (2-Propanone)	2021/10/20	NC		%	30
			Benzene	2021/10/20	NC		%	30
			Bromodichloromethane	2021/10/20	NC		%	30
			Bromoform	2021/10/20	NC		%	30
			Bromomethane	2021/10/20	NC		%	30
			Carbon Tetrachloride	2021/10/20	NC		%	30
			Chlorobenzene	2021/10/20	NC		%	30
			Chloroform	2021/10/20	NC		%	30
			Dibromochloromethane	2021/10/20	NC		%	30
			1,2-Dichlorobenzene	2021/10/20	NC		%	30
			1,3-Dichlorobenzene	2021/10/20	NC		%	30
			1,4-Dichlorobenzene	2021/10/20	NC		%	30
			Dichlorodifluoromethane (FREON 12)	2021/10/20	NC		%	30
			1,1-Dichloroethane	2021/10/20	NC		%	30
			1,2-Dichloroethane	2021/10/20	NC		%	30
			1,1-Dichloroethylene	2021/10/20	NC		%	30
			cis-1,2-Dichloroethylene	2021/10/20	NC		%	30
			trans-1,2-Dichloroethylene	2021/10/20	NC		%	30
			1,2-Dichloropropane	2021/10/20	NC		%	30
			cis-1,3-Dichloropropene	2021/10/20	NC		%	30
			trans-1,3-Dichloropropene	2021/10/20	NC		%	30
			Ethylbenzene	2021/10/20	NC		%	30
			Ethylene Dibromide	2021/10/20	NC		%	30
			Hexane	2021/10/20	NC		%	30
			Methylene Chloride(Dichloromethane)	2021/10/20	NC		%	30
			Methyl Ethyl Ketone (2-Butanone)	2021/10/20	NC		%	30
			Methyl Isobutyl Ketone	2021/10/20	NC		%	30

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			Methyl t-butyl ether (MTBE)	2021/10/20	NC		%	30
			Styrene	2021/10/20	NC		%	30
			1,1,1,2-Tetrachloroethane	2021/10/20	NC		%	30
			1,1,2,2-Tetrachloroethane	2021/10/20	NC		%	30
			Tetrachloroethylene	2021/10/20	NC		%	30
			Toluene	2021/10/20	NC		%	30
			1,1,1-Trichloroethane	2021/10/20	NC		%	30
			1,1,2-Trichloroethane	2021/10/20	NC		%	30
			Trichloroethylene	2021/10/20	NC		%	30
			Trichlorofluoromethane (FREON 11)	2021/10/20	NC		%	30
			Vinyl Chloride	2021/10/20	NC		%	30
			p+m-Xylene	2021/10/20	NC		%	30
			o-Xylene	2021/10/20	NC		%	30
			Total Xylenes	2021/10/20	NC		%	30
			F1 (C6-C10)	2021/10/20	NC		%	30
			F1 (C6-C10) - BTEX	2021/10/20	NC		%	30
7642664	AYA	Matrix Spike	4-Bromofluorobenzene	2021/10/18		109	%	60 - 140
			D10-o-Xylene	2021/10/18		112	%	60 - 130
			D4-1,2-Dichloroethane	2021/10/18		86	%	60 - 140
			D8-Toluene	2021/10/18		105	%	60 - 140
			Acetone (2-Propanone)	2021/10/18		83	%	60 - 140
			Benzene	2021/10/18		86	%	60 - 140
			Bromodichloromethane	2021/10/18		90	%	60 - 140
			Bromoform	2021/10/18		85	%	60 - 140
			Bromomethane	2021/10/18		92	%	60 - 140
			Carbon Tetrachloride	2021/10/18		93	%	60 - 140
			Chlorobenzene	2021/10/18		100	%	60 - 140
			Chloroform	2021/10/18		87	%	60 - 140
			Dibromochloromethane	2021/10/18		75	%	60 - 140
			1,2-Dichlorobenzene	2021/10/18		98	%	60 - 140
			1,3-Dichlorobenzene	2021/10/18		106	%	60 - 140
			1,4-Dichlorobenzene	2021/10/18		112	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2021/10/18		95	%	60 - 140
			1,1-Dichloroethane	2021/10/18		84	%	60 - 140
			1,2-Dichloroethane	2021/10/18		81	%	60 - 140
			1,1-Dichloroethylene	2021/10/18		96	%	60 - 140
			cis-1,2-Dichloroethylene	2021/10/18		94	%	60 - 140
			trans-1,2-Dichloroethylene	2021/10/18		93	%	60 - 140
			1,2-Dichloropropane	2021/10/18		88	%	60 - 140
			cis-1,3-Dichloropropene	2021/10/18		102	%	60 - 140
			trans-1,3-Dichloropropene	2021/10/18		105	%	60 - 140
			Ethylbenzene	2021/10/18		103	%	60 - 140
			Ethylene Dibromide	2021/10/18		84	%	60 - 140
			Hexane	2021/10/18		104	%	60 - 140
			Methylene Chloride(Dichloromethane)	2021/10/18		86	%	60 - 140
			Methyl Ethyl Ketone (2-Butanone)	2021/10/18		96	%	60 - 140
			Methyl Isobutyl Ketone	2021/10/18		79	%	60 - 140
			Methyl t-butyl ether (MTBE)	2021/10/18		98	%	60 - 140
			Styrene	2021/10/18		90	%	60 - 140
			1,1,1,2-Tetrachloroethane	2021/10/18		90	%	60 - 140
			1,1,2,2-Tetrachloroethane	2021/10/18		78	%	60 - 140
			Tetrachloroethylene	2021/10/18		88	%	60 - 140
			Toluene	2021/10/18		95	%	60 - 140
			1,1,1-Trichloroethane	2021/10/18		95	%	60 - 140

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			1,1,2-Trichloroethane	2021/10/18		85	%	60 - 140
			Trichloroethylene	2021/10/18		102	%	60 - 140
			Trichlorofluoromethane (FREON 11)	2021/10/18		95	%	60 - 140
			Vinyl Chloride	2021/10/18		94	%	60 - 140
			p+m-Xylene	2021/10/18		110	%	60 - 140
			o-Xylene	2021/10/18		103	%	60 - 140
			F1 (C6-C10)	2021/10/18		88	%	60 - 140
7642664	AYA	Spiked Blank	4-Bromofluorobenzene	2021/10/18		109	%	60 - 140
			D10-o-Xylene	2021/10/18		113	%	60 - 130
			D4-1,2-Dichloroethane	2021/10/18		89	%	60 - 140
			D8-Toluene	2021/10/18		105	%	60 - 140
			Acetone (2-Propanone)	2021/10/18		84	%	60 - 140
			Benzene	2021/10/18		84	%	60 - 130
			Bromodichloromethane	2021/10/18		90	%	60 - 130
			Bromoform	2021/10/18		86	%	60 - 130
			Bromomethane	2021/10/18		84	%	60 - 140
			Carbon Tetrachloride	2021/10/18		92	%	60 - 130
			Chlorobenzene	2021/10/18		97	%	60 - 130
			Chloroform	2021/10/18		87	%	60 - 130
			Dibromochloromethane	2021/10/18		76	%	60 - 130
			1,2-Dichlorobenzene	2021/10/18		97	%	60 - 130
			1,3-Dichlorobenzene	2021/10/18		102	%	60 - 130
			1,4-Dichlorobenzene	2021/10/18		108	%	60 - 130
			Dichlorodifluoromethane (FREON 12)	2021/10/18		64	%	60 - 140
			1,1-Dichloroethane	2021/10/18		83	%	60 - 130
			1,2-Dichloroethane	2021/10/18		81	%	60 - 130
			1,1-Dichloroethylene	2021/10/18		92	%	60 - 130
			cis-1,2-Dichloroethylene	2021/10/18		93	%	60 - 130
			trans-1,2-Dichloroethylene	2021/10/18		92	%	60 - 130
			1,2-Dichloropropane	2021/10/18		88	%	60 - 130
			cis-1,3-Dichloropropene	2021/10/18		92	%	60 - 130
			trans-1,3-Dichloropropene	2021/10/18		95	%	60 - 130
			Ethylbenzene	2021/10/18		97	%	60 - 130
			Ethylene Dibromide	2021/10/18		84	%	60 - 130
			Hexane	2021/10/18		99	%	60 - 130
			Methylene Chloride(Dichloromethane)	2021/10/18		86	%	60 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/10/18		96	%	60 - 140
			Methyl Isobutyl Ketone	2021/10/18		77	%	60 - 130
			Methyl t-butyl ether (MTBE)	2021/10/18		92	%	60 - 130
			Styrene	2021/10/18		87	%	60 - 130
			1,1,1,2-Tetrachloroethane	2021/10/18		90	%	60 - 130
			1,1,2,2-Tetrachloroethane	2021/10/18		81	%	60 - 130
			Tetrachloroethylene	2021/10/18		88	%	60 - 130
			Toluene	2021/10/18		93	%	60 - 130
			1,1,1-Trichloroethane	2021/10/18		94	%	60 - 130
			1,1,2-Trichloroethane	2021/10/18		86	%	60 - 130
			Trichloroethylene	2021/10/18		100	%	60 - 130
			Trichlorofluoromethane (FREON 11)	2021/10/18		91	%	60 - 130
			Vinyl Chloride	2021/10/18		84	%	60 - 130
			p+m-Xylene	2021/10/18		102	%	60 - 130
			o-Xylene	2021/10/18		99	%	60 - 130
			F1 (C6-C10)	2021/10/18		96	%	80 - 120
7642664	AYA	Method Blank	4-Bromofluorobenzene	2021/10/18		96	%	60 - 140
			D10-o-Xylene	2021/10/18		107	%	60 - 130

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			D4-1,2-Dichloroethane	2021/10/18		91	%	60 - 140
			D8-Toluene	2021/10/18		95	%	60 - 140
			Acetone (2-Propanone)	2021/10/18	<0.49		ug/g	
			Benzene	2021/10/18	<0.0060		ug/g	
			Bromodichloromethane	2021/10/18	<0.040		ug/g	
			Bromoform	2021/10/18	<0.040		ug/g	
			Bromomethane	2021/10/18	<0.040		ug/g	
			Carbon Tetrachloride	2021/10/18	<0.040		ug/g	
			Chlorobenzene	2021/10/18	<0.040		ug/g	
			Chloroform	2021/10/18	<0.040		ug/g	
			Dibromochloromethane	2021/10/18	<0.040		ug/g	
			1,2-Dichlorobenzene	2021/10/18	<0.040		ug/g	
			1,3-Dichlorobenzene	2021/10/18	<0.040		ug/g	
			1,4-Dichlorobenzene	2021/10/18	<0.040		ug/g	
			Dichlorodifluoromethane (FREON 12)	2021/10/18	<0.040		ug/g	
			1,1-Dichloroethane	2021/10/18	<0.040		ug/g	
			1,2-Dichloroethane	2021/10/18	<0.049		ug/g	
			1,1-Dichloroethylene	2021/10/18	<0.040		ug/g	
			cis-1,2-Dichloroethylene	2021/10/18	<0.040		ug/g	
			trans-1,2-Dichloroethylene	2021/10/18	<0.040		ug/g	
			1,2-Dichloropropane	2021/10/18	<0.040		ug/g	
			cis-1,3-Dichloropropene	2021/10/18	<0.030		ug/g	
			trans-1,3-Dichloropropene	2021/10/18	<0.040		ug/g	
			Ethylbenzene	2021/10/18	<0.010		ug/g	
			Ethylene Dibromide	2021/10/18	<0.040		ug/g	
			Hexane	2021/10/18	<0.040		ug/g	
			Methylene Chloride(Dichloromethane)	2021/10/18	<0.049		ug/g	
			Methyl Ethyl Ketone (2-Butanone)	2021/10/18	<0.40		ug/g	
			Methyl Isobutyl Ketone	2021/10/18	<0.40		ug/g	
			Methyl t-butyl ether (MTBE)	2021/10/18	<0.040		ug/g	
			Styrene	2021/10/18	<0.040		ug/g	
			1,1,1,2-Tetrachloroethane	2021/10/18	<0.040		ug/g	
			1,1,2,2-Tetrachloroethane	2021/10/18	<0.040		ug/g	
			Tetrachloroethylene	2021/10/18	<0.040		ug/g	
			Toluene	2021/10/18	<0.020		ug/g	
			1,1,1-Trichloroethane	2021/10/18	<0.040		ug/g	
			1,1,2-Trichloroethane	2021/10/18	<0.040		ug/g	
			Trichloroethylene	2021/10/18	<0.010		ug/g	
			Trichlorofluoromethane (FREON 11)	2021/10/18	<0.040		ug/g	
			Vinyl Chloride	2021/10/18	<0.019		ug/g	
			p+m-Xylene	2021/10/18	<0.020		ug/g	
			o-Xylene	2021/10/18	<0.020		ug/g	
			Total Xylenes	2021/10/18	<0.020		ug/g	
			F1 (C6-C10)	2021/10/18	<10		ug/g	
			F1 (C6-C10) - BTEX	2021/10/18	<10		ug/g	
7642664	AYA	RPD	Acetone (2-Propanone)	2021/10/18	NC		%	50
			Benzene	2021/10/18	NC		%	50
			Bromodichloromethane	2021/10/18	NC		%	50
			Bromoform	2021/10/18	NC		%	50
			Bromomethane	2021/10/18	NC		%	50
			Carbon Tetrachloride	2021/10/18	NC		%	50
			Chlorobenzene	2021/10/18	NC		%	50
			Chloroform	2021/10/18	NC		%	50
			Dibromochloromethane	2021/10/18	NC		%	50

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			1,2-Dichlorobenzene	2021/10/18	NC		%	50
			1,3-Dichlorobenzene	2021/10/18	NC		%	50
			1,4-Dichlorobenzene	2021/10/18	NC		%	50
			Dichlorodifluoromethane (FREON 12)	2021/10/18	NC		%	50
			1,1-Dichloroethane	2021/10/18	NC		%	50
			1,2-Dichloroethane	2021/10/18	NC		%	50
			1,1-Dichloroethylene	2021/10/18	NC		%	50
			cis-1,2-Dichloroethylene	2021/10/18	NC		%	50
			trans-1,2-Dichloroethylene	2021/10/18	NC		%	50
			1,2-Dichloropropane	2021/10/18	NC		%	50
			cis-1,3-Dichloropropene	2021/10/18	NC		%	50
			trans-1,3-Dichloropropene	2021/10/18	NC		%	50
			Ethylbenzene	2021/10/18	NC		%	50
			Ethylene Dibromide	2021/10/18	NC		%	50
			Hexane	2021/10/18	NC		%	50
			Methylene Chloride(Dichloromethane)	2021/10/18	NC		%	50
			Methyl Ethyl Ketone (2-Butanone)	2021/10/18	NC		%	50
			Methyl Isobutyl Ketone	2021/10/18	NC		%	50
			Methyl t-butyl ether (MTBE)	2021/10/18	NC		%	50
			Styrene	2021/10/18	NC		%	50
			1,1,1,2-Tetrachloroethane	2021/10/18	NC		%	50
			1,1,2,2-Tetrachloroethane	2021/10/18	NC		%	50
			Tetrachloroethylene	2021/10/18	NC		%	50
			Toluene	2021/10/18	0.41		%	50
			1,1,1-Trichloroethane	2021/10/18	NC		%	50
			1,1,2-Trichloroethane	2021/10/18	NC		%	50
			Trichloroethylene	2021/10/18	NC		%	50
			Trichlorofluoromethane (FREON 11)	2021/10/18	NC		%	50
			Vinyl Chloride	2021/10/18	NC		%	50
			p+m-Xylene	2021/10/18	NC		%	50
			o-Xylene	2021/10/18	NC		%	50
			Total Xylenes	2021/10/18	NC		%	50
			F1 (C6-C10)	2021/10/18	NC		%	30
			F1 (C6-C10) - BTEX	2021/10/18	NC		%	30
7643884	RGA	Matrix Spike	o-Terphenyl	2021/10/18		91	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/18		99	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/10/18		102	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/10/18		104	%	60 - 130
7643884	RGA	Spiked Blank	o-Terphenyl	2021/10/18		94	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/18		103	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/10/18		106	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/10/18		107	%	60 - 130
7643884	RGA	Method Blank	o-Terphenyl	2021/10/18		91	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/18	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/10/18	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/10/18	<200		ug/L	
7643884	RGA	RPD	F2 (C10-C16 Hydrocarbons)	2021/10/19	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/10/19	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/10/19	NC		%	30
7643885	JYO	Matrix Spike	D10-Anthracene	2021/10/19		110	%	50 - 130
			D14-Terphenyl (FS)	2021/10/19		109	%	50 - 130
			D8-Acenaphthylene	2021/10/19		96	%	50 - 130
			Acenaphthene	2021/10/19		91	%	50 - 130
			Acenaphthylene	2021/10/19		88	%	50 - 130

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			Anthracene	2021/10/19		103	%	50 - 130
			Benzo(a)anthracene	2021/10/19		102	%	50 - 130
			Benzo(a)pyrene	2021/10/19		87	%	50 - 130
			Benzo(b/j)fluoranthene	2021/10/19		101	%	50 - 130
			Benzo(g,h,i)perylene	2021/10/19		102	%	50 - 130
			Benzo(k)fluoranthene	2021/10/19		106	%	50 - 130
			Chrysene	2021/10/19		100	%	50 - 130
			Dibenzo(a,h)anthracene	2021/10/19		95	%	50 - 130
			Fluoranthene	2021/10/19		118	%	50 - 130
			Fluorene	2021/10/19		94	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/10/19		102	%	50 - 130
			1-Methylnaphthalene	2021/10/19		97	%	50 - 130
			2-Methylnaphthalene	2021/10/19		91	%	50 - 130
			Naphthalene	2021/10/19		87	%	50 - 130
			Phenanthrene	2021/10/19		100	%	50 - 130
			Pyrene	2021/10/19		115	%	50 - 130
7643885	JYO	Spiked Blank	D10-Anthracene	2021/10/19		104	%	50 - 130
			D14-Terphenyl (FS)	2021/10/19		106	%	50 - 130
			D8-Acenaphthylene	2021/10/19		91	%	50 - 130
			Acenaphthene	2021/10/19		95	%	50 - 130
			Acenaphthylene	2021/10/19		93	%	50 - 130
			Anthracene	2021/10/19		107	%	50 - 130
			Benzo(a)anthracene	2021/10/19		106	%	50 - 130
			Benzo(a)pyrene	2021/10/19		92	%	50 - 130
			Benzo(b/j)fluoranthene	2021/10/19		108	%	50 - 130
			Benzo(g,h,i)perylene	2021/10/19		109	%	50 - 130
			Benzo(k)fluoranthene	2021/10/19		112	%	50 - 130
			Chrysene	2021/10/19		105	%	50 - 130
			Dibenzo(a,h)anthracene	2021/10/19		102	%	50 - 130
			Fluoranthene	2021/10/19		127	%	50 - 130
			Fluorene	2021/10/19		97	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/10/19		110	%	50 - 130
			1-Methylnaphthalene	2021/10/19		100	%	50 - 130
			2-Methylnaphthalene	2021/10/19		92	%	50 - 130
			Naphthalene	2021/10/19		89	%	50 - 130
			Phenanthrene	2021/10/19		104	%	50 - 130
			Pyrene	2021/10/19		121	%	50 - 130
7643885	JYO	Method Blank	D10-Anthracene	2021/10/19		118	%	50 - 130
			D14-Terphenyl (FS)	2021/10/19		115	%	50 - 130
			D8-Acenaphthylene	2021/10/19		93	%	50 - 130
			Acenaphthene	2021/10/19	<0.050		ug/L	
			Acenaphthylene	2021/10/19	<0.050		ug/L	
			Anthracene	2021/10/19	<0.050		ug/L	
			Benzo(a)anthracene	2021/10/19	<0.050		ug/L	
			Benzo(a)pyrene	2021/10/19	<0.0090		ug/L	
			Benzo(b/j)fluoranthene	2021/10/19	<0.050		ug/L	
			Benzo(g,h,i)perylene	2021/10/19	<0.050		ug/L	
			Benzo(k)fluoranthene	2021/10/19	<0.050		ug/L	
			Chrysene	2021/10/19	<0.050		ug/L	
			Dibenzo(a,h)anthracene	2021/10/19	<0.050		ug/L	
			Fluoranthene	2021/10/19	<0.050		ug/L	
			Fluorene	2021/10/19	<0.050		ug/L	
			Indeno(1,2,3-cd)pyrene	2021/10/19	<0.050		ug/L	
			1-Methylnaphthalene	2021/10/19	<0.050		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			2-Methylnaphthalene	2021/10/19	<0.050		ug/L	
			Naphthalene	2021/10/19	<0.050		ug/L	
			Phenanthrene	2021/10/19	<0.030		ug/L	
			Pyrene	2021/10/19	<0.050		ug/L	
7643885	JYO	RPD	Acenaphthene	2021/10/19	NC		%	30
			Acenaphthylene	2021/10/19	NC		%	30
			Anthracene	2021/10/19	NC		%	30
			Benzo(a)anthracene	2021/10/19	NC		%	30
			Benzo(a)pyrene	2021/10/19	NC		%	30
			Benzo(b/j)fluoranthene	2021/10/19	NC		%	30
			Benzo(g,h,i)perylene	2021/10/19	NC		%	30
			Benzo(k)fluoranthene	2021/10/19	NC		%	30
			Chrysene	2021/10/19	NC		%	30
			Dibenzo(a,h)anthracene	2021/10/19	NC		%	30
			Fluoranthene	2021/10/19	NC		%	30
			Fluorene	2021/10/19	NC		%	30
			Indeno(1,2,3-cd)pyrene	2021/10/19	NC		%	30
			1-Methylnaphthalene	2021/10/19	NC		%	30
			2-Methylnaphthalene	2021/10/19	NC		%	30
			Naphthalene	2021/10/19	NC		%	30
			Phenanthrene	2021/10/19	NC		%	30
			Pyrene	2021/10/19	NC		%	30
7644377	RGA	Matrix Spike	o-Terphenyl	2021/10/19		84	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/19		NC	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2021/10/19		NC	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2021/10/19		NC	%	50 - 130
7644377	RGA	Spiked Blank	o-Terphenyl	2021/10/19		85	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/19		88	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2021/10/19		89	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2021/10/19		90	%	80 - 120
7644377	RGA	Method Blank	o-Terphenyl	2021/10/19		86	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/19	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2021/10/19	<50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2021/10/19	<50		ug/g	
7644377	RGA	RPD	F2 (C10-C16 Hydrocarbons)	2021/10/19	36 (2)		%	30
			F3 (C16-C34 Hydrocarbons)	2021/10/19	39 (2)		%	30
			F4 (C34-C50 Hydrocarbons)	2021/10/19	38 (2)		%	30
7646770	JYO	Matrix Spike	D10-Anthracene	2021/10/20		93	%	50 - 130
			D14-Terphenyl (FS)	2021/10/20		92	%	50 - 130
			D8-Acenaphthylene	2021/10/20		86	%	50 - 130
			Acenaphthene	2021/10/20		98	%	50 - 130
			Acenaphthylene	2021/10/20		95	%	50 - 130
			Anthracene	2021/10/20		102	%	50 - 130
			Benzo(a)anthracene	2021/10/20		107	%	50 - 130
			Benzo(a)pyrene	2021/10/20		94	%	50 - 130
			Benzo(b/j)fluoranthene	2021/10/20		96	%	50 - 130
			Benzo(g,h,i)perylene	2021/10/20		99	%	50 - 130
			Benzo(k)fluoranthene	2021/10/20		118	%	50 - 130
			Chrysene	2021/10/20		105	%	50 - 130
			Dibenzo(a,h)anthracene	2021/10/20		96	%	50 - 130
			Fluoranthene	2021/10/20		103	%	50 - 130
			Fluorene	2021/10/20		104	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/10/20		103	%	50 - 130
			1-Methylnaphthalene	2021/10/20		90	%	50 - 130

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			2-Methylnaphthalene	2021/10/20		89	%	50 - 130
			Naphthalene	2021/10/20		76	%	50 - 130
			Phenanthrene	2021/10/20		102	%	50 - 130
			Pyrene	2021/10/20		100	%	50 - 130
7646770	JYO	Spiked Blank	D10-Anthracene	2021/10/20		102	%	50 - 130
			D14-Terphenyl (FS)	2021/10/20		97	%	50 - 130
			D8-Acenaphthylene	2021/10/20		77	%	50 - 130
			Acenaphthene	2021/10/20		101	%	50 - 130
			Acenaphthylene	2021/10/20		100	%	50 - 130
			Anthracene	2021/10/20		114	%	50 - 130
			Benzo(a)anthracene	2021/10/20		112	%	50 - 130
			Benzo(a)pyrene	2021/10/20		99	%	50 - 130
			Benzo(b/j)fluoranthene	2021/10/20		110	%	50 - 130
			Benzo(g,h,i)perylene	2021/10/20		107	%	50 - 130
			Benzo(k)fluoranthene	2021/10/20		112	%	50 - 130
			Chrysene	2021/10/20		116	%	50 - 130
			Dibenzo(a,h)anthracene	2021/10/20		97	%	50 - 130
			Fluoranthene	2021/10/20		110	%	50 - 130
			Fluorene	2021/10/20		109	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/10/20		112	%	50 - 130
			1-Methylnaphthalene	2021/10/20		97	%	50 - 130
			2-Methylnaphthalene	2021/10/20		95	%	50 - 130
			Naphthalene	2021/10/20		77	%	50 - 130
			Phenanthrene	2021/10/20		110	%	50 - 130
			Pyrene	2021/10/20		108	%	50 - 130
7646770	JYO	Method Blank	D10-Anthracene	2021/10/20		108	%	50 - 130
			D14-Terphenyl (FS)	2021/10/20		99	%	50 - 130
			D8-Acenaphthylene	2021/10/20		65	%	50 - 130
			Acenaphthene	2021/10/20	<0.0050		ug/g	
			Acenaphthylene	2021/10/20	<0.0050		ug/g	
			Anthracene	2021/10/20	<0.0050		ug/g	
			Benzo(a)anthracene	2021/10/20	<0.0050		ug/g	
			Benzo(a)pyrene	2021/10/20	<0.0050		ug/g	
			Benzo(b/j)fluoranthene	2021/10/20	<0.0050		ug/g	
			Benzo(g,h,i)perylene	2021/10/20	<0.0050		ug/g	
			Benzo(k)fluoranthene	2021/10/20	<0.0050		ug/g	
			Chrysene	2021/10/20	<0.0050		ug/g	
			Dibenzo(a,h)anthracene	2021/10/20	<0.0050		ug/g	
			Fluoranthene	2021/10/20	<0.0050		ug/g	
			Fluorene	2021/10/20	<0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2021/10/20	<0.0050		ug/g	
			1-Methylnaphthalene	2021/10/20	<0.0050		ug/g	
			2-Methylnaphthalene	2021/10/20	<0.0050		ug/g	
			Naphthalene	2021/10/20	<0.0050		ug/g	
			Phenanthrene	2021/10/20	<0.0050		ug/g	
			Pyrene	2021/10/20	<0.0050		ug/g	
7646770	JYO	RPD	Acenaphthene	2021/10/20	NC		%	40
			Acenaphthylene	2021/10/20	NC		%	40
			Anthracene	2021/10/20	NC		%	40
			Benzo(a)anthracene	2021/10/20	NC		%	40
			Benzo(a)pyrene	2021/10/20	NC		%	40
			Benzo(b/j)fluoranthene	2021/10/20	NC		%	40
			Benzo(g,h,i)perylene	2021/10/20	NC		%	40
			Benzo(k)fluoranthene	2021/10/20	NC		%	40

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chrysene	2021/10/20	NC		%	40
			Dibenzo(a,h)anthracene	2021/10/20	NC		%	40
			Fluoranthene	2021/10/20	NC		%	40
			Fluorene	2021/10/20	NC		%	40
			Indeno(1,2,3-cd)pyrene	2021/10/20	NC		%	40
			1-Methylnaphthalene	2021/10/20	NC		%	40
			2-Methylnaphthalene	2021/10/20	NC		%	40
			Naphthalene	2021/10/20	NC		%	40
			Phenanthrene	2021/10/20	NC		%	40
			Pyrene	2021/10/20	NC		%	40

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Affix Job Label Here

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5
Page 1 of 1

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

Bottle Types

			Inorganics					Organics												Hydrocarbons							Volatiles				Other
	Sample ID	All	Cr/VI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/Herb 1 of 2	Pest/Herb 2 of 2	SVOC/ABN 1 of 2	SVOC/ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	BHMW125	TS																												
2	BHM127	TS																												
3	TRIP BLANK	TS																												
4																														
5																														
6																														
7																														
8																														
9																														
10																														

Comments:

Legend:

P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print) [signature] / L MCLEAN

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#982 Pinchin Ltd	Company Name		Quotation #	A70927	BV Labs Job #:	Bottle Order #:
Attention	Accounts Payable	Attention	Matt, Ryan, Mike	P.O. #			832329
Address	1 Hines Road Suite 200	Address		Project	285722.003	COC #:	Project Manager:
	Kanata ON K2K 3C7			Project Name		C#832329-06-01	Antonella Brasil
Tel	(613) 592-3387 Fax (613) 592-5897	Tel	Fax	Site #			
Email	ap@pinchin.com	Email	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By	M. Kosiw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☒ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☑ Coarse ☒ Table 3 ☐ Agri/Other ☒ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? N

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 Metals & Inorganics Pkg	O Reg 153 VOCs by HS & F1-F4 (Soil)	O Reg 153 PCBs (Soil)	O Reg 153 PAHs (Soil)	O Reg 153 Semivolatiles Package (Soil)	Acid Extractables by GC/MS	O Reg 153 OC Pesticides (Soil)				# of Bottles	Comments
1		BHMW125 SS-7	Oct 6 2021		Soil			X		X							2	PHCs F1-F4 VOCs PAHs
2		BHMW126 SS-7	↓		↓			X		X							2	
3		BHMW127 SS6						X		X							2	↓
4																		
5		BHMW125	Oct 12		GW			X		X							5	PHCs, VOCs, PAHs
6		BHM127	↓		↓			X		X							5	↓
7		Trip Blank	↓		↓			X									2	Trip Blank VOCs / F1
8																		
9																		
10																		

13-Oct-21 16:20
Antonella Brasil
C1T8290
ENV-1528

RECEIVED IN OTTAWA
On Ice 2021/10/13

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
M. Kosiw	Oct 13 2021	930 Am		2021/10/13	16:20
				2021/10/14	09:00

Time Sensitive

Laboratory Use Only			
Temperature (°C) on Recei	Custody Seal	Yes	No
6, 6, 6	Present	Y	
	Intact	Y	

White: BV Labs Yellow: Client

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

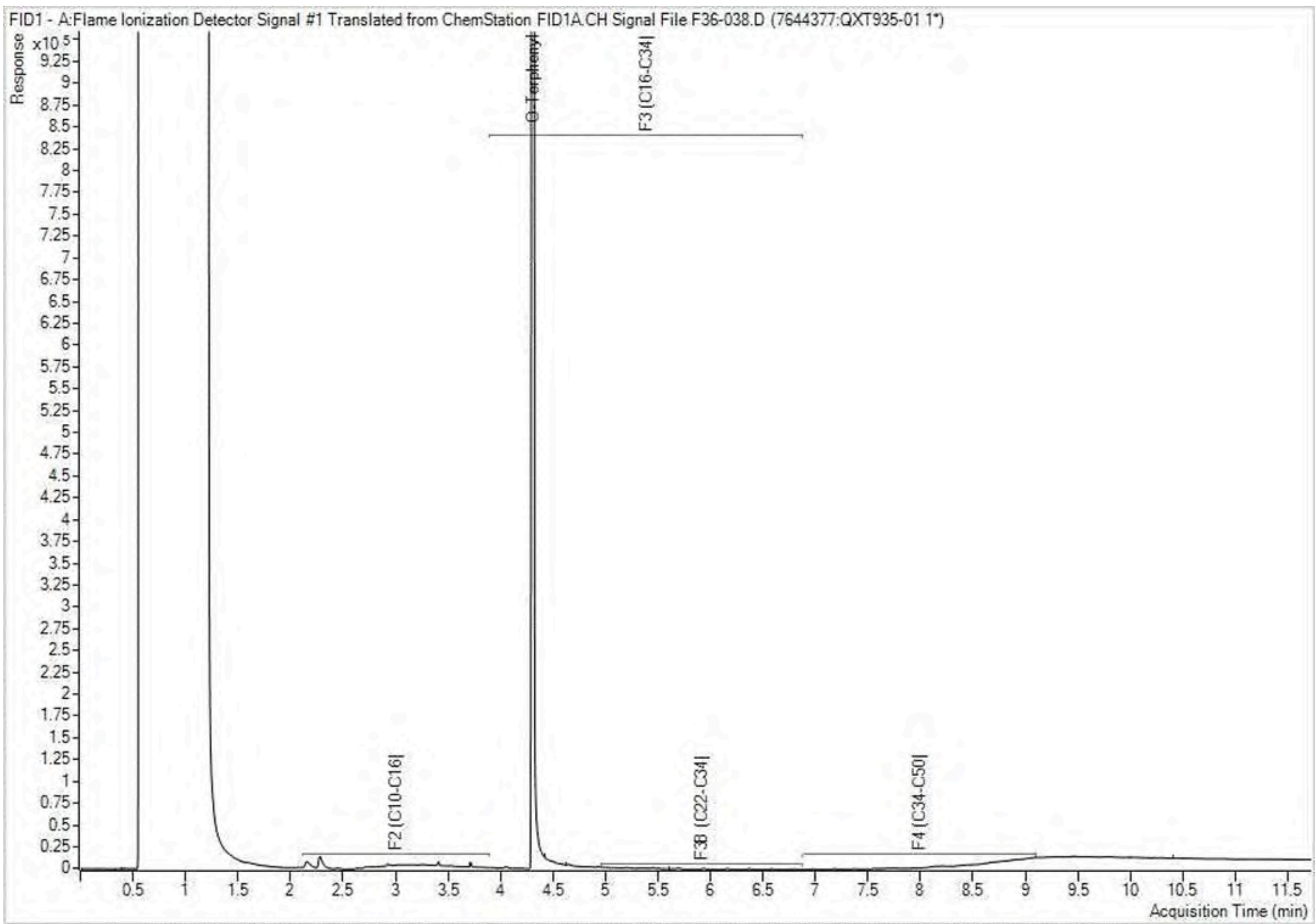
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

7/6/6

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21
Bureau Veritas Sample: QXT935

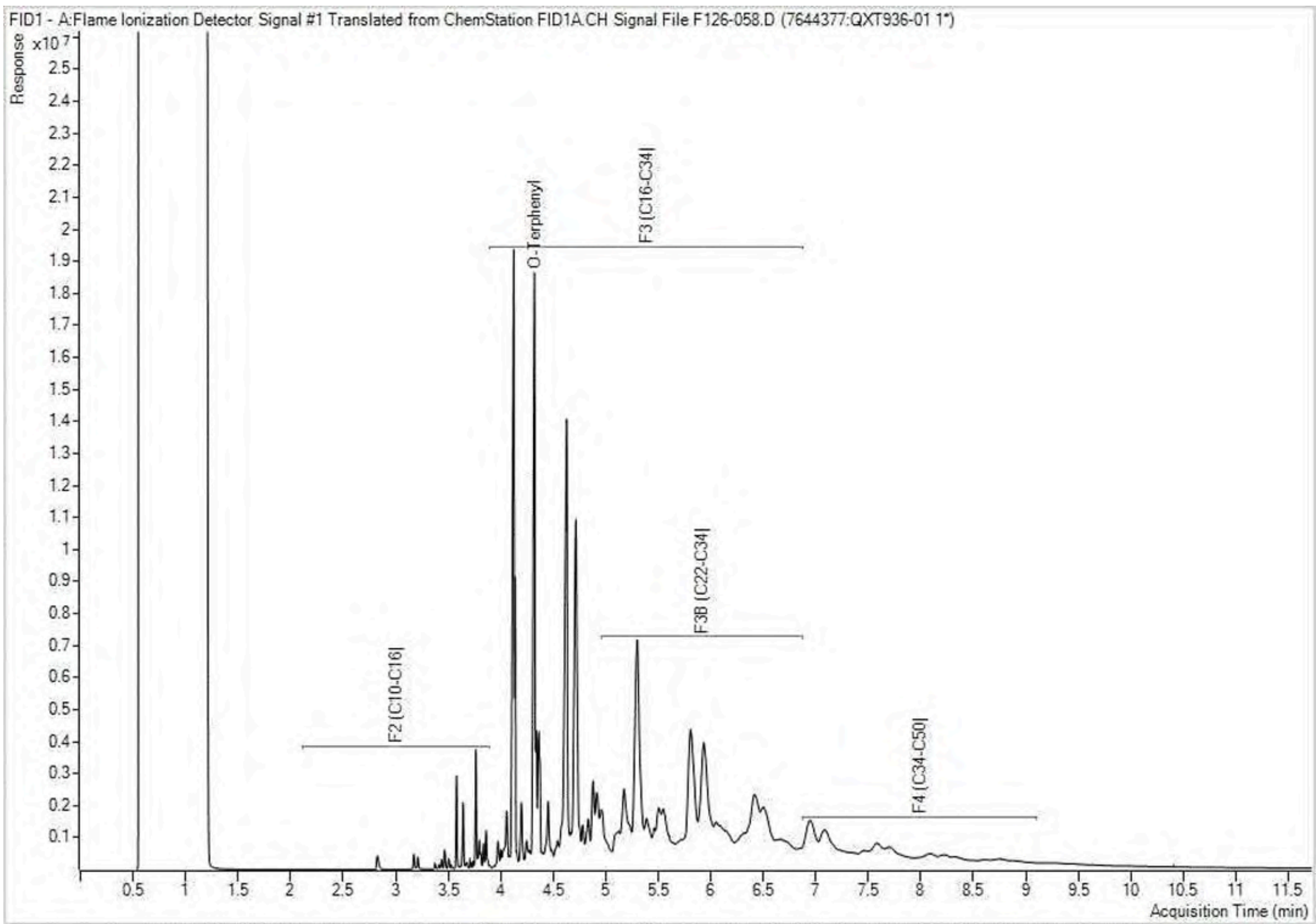
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW125 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

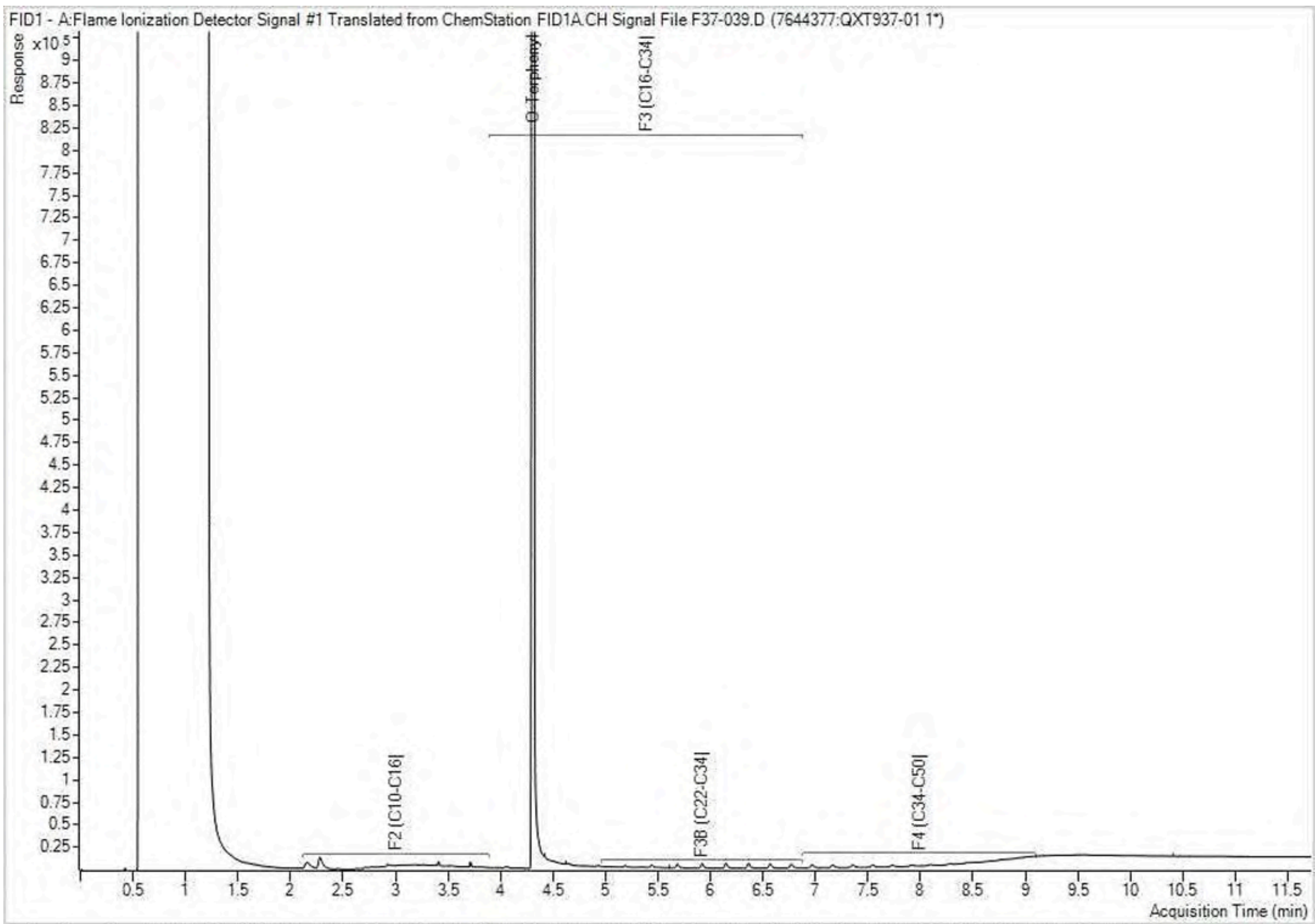


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21
Bureau Veritas Sample: QXT937

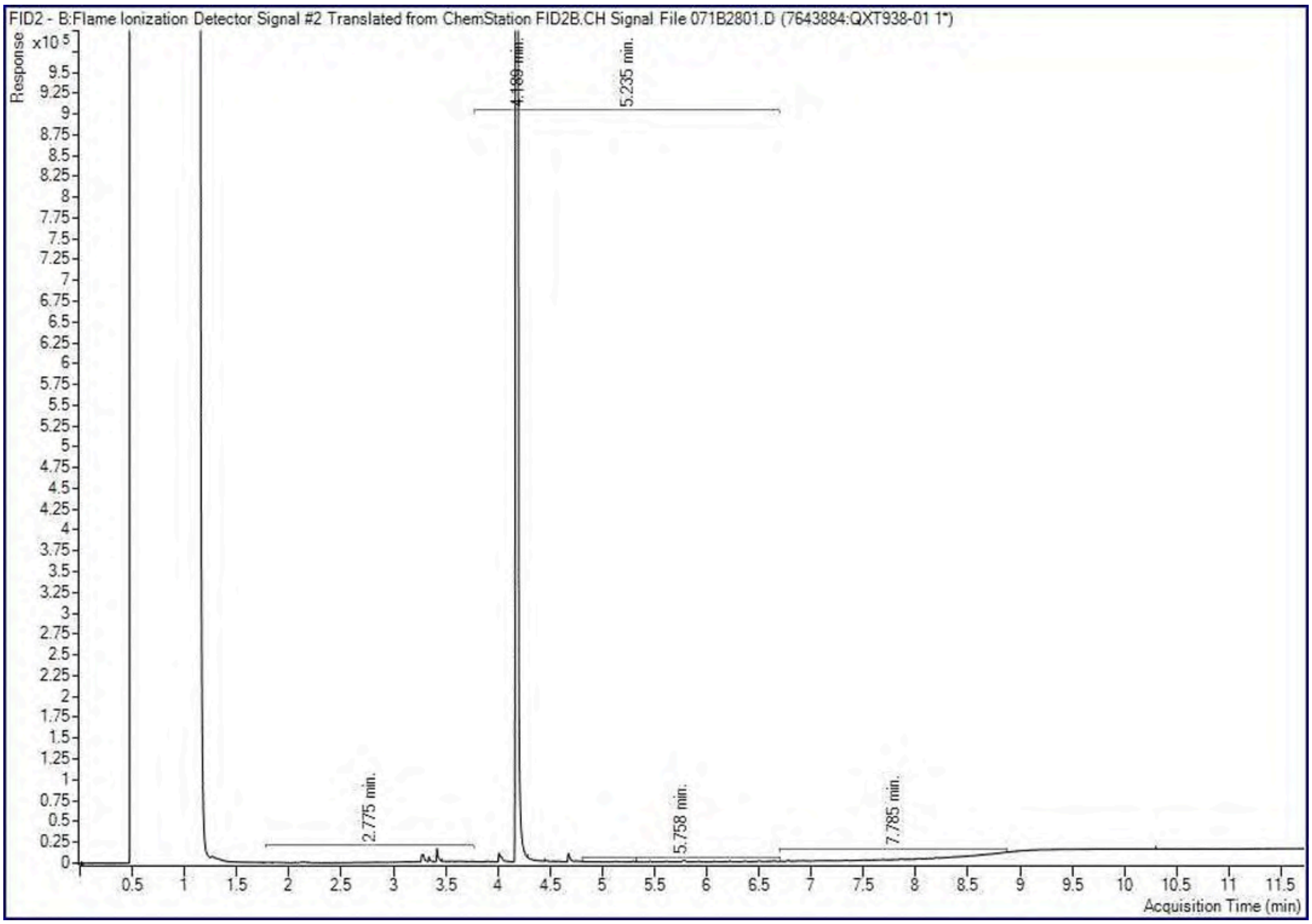
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW127 SS-6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

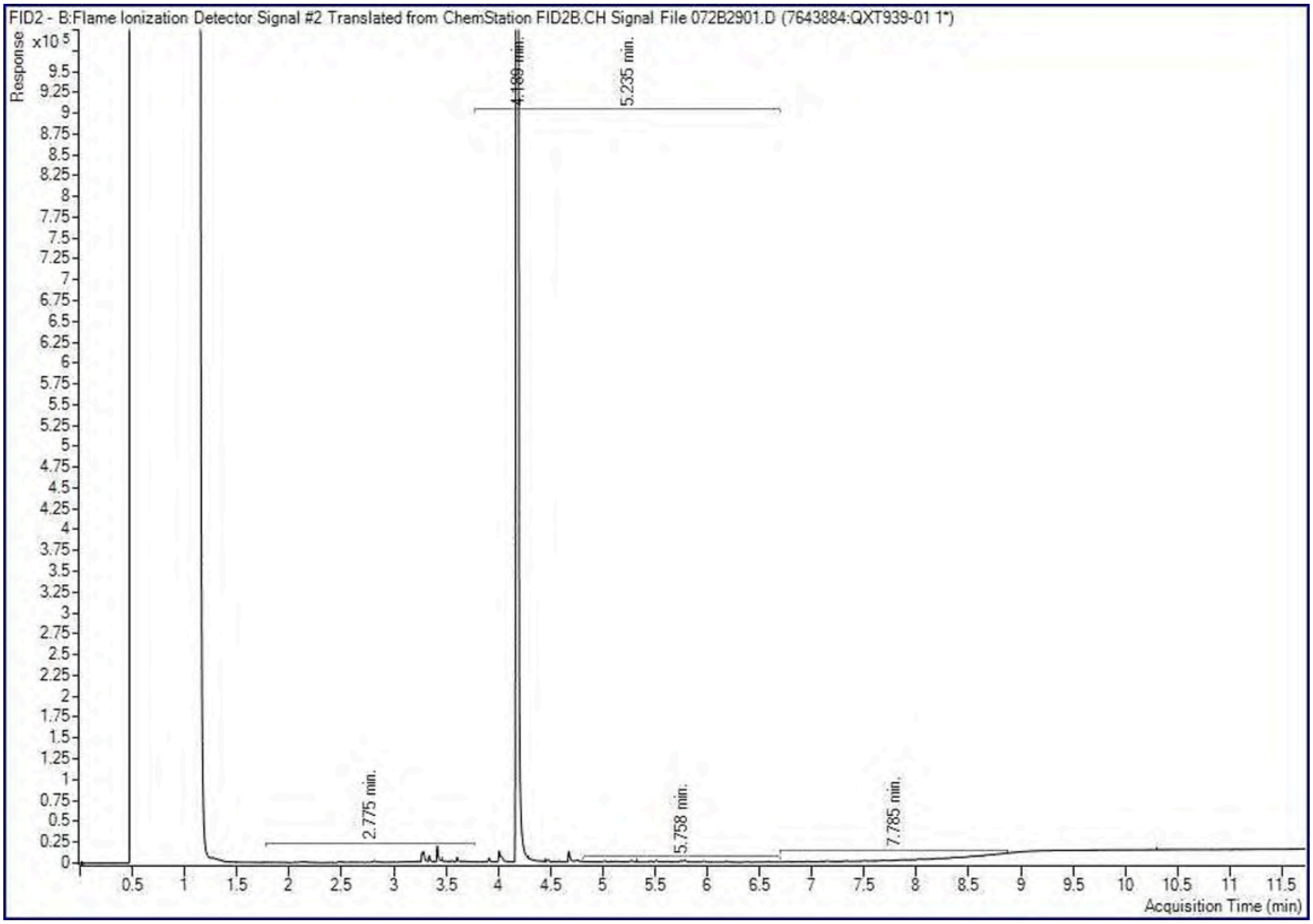


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21
Bureau Veritas Sample: QXT939

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHM127

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003
Your C.O.C. #: 832329-10-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2022/01/11
Report #: R6957984
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Y3876
Received: 2021/12/08, 14:28

Sample Matrix: Ground Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
1,3-Dichloropropene Sum (1)	8	N/A	2021/12/16		EPA 8260C m
Chloride by Automated Colourimetry (1)	1	N/A	2021/12/14	CAM SOP-00463	SM 23 4500-Cl E m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	9	2021/12/13	2021/12/14	CAM SOP-00316	CCME PHC-CWS m
Dissolved Metals Analysis by ICP (1)	1	2021/12/16	2022/01/11	CAM SOP-00408	EPA 6010D m
Volatile Organic Compounds and F1 PHCs (1)	7	N/A	2021/12/15	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds and F1 PHCs (1)	1	N/A	2021/12/16	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1

Your Project #: 285722.003
Your C.O.C. #: 832329-10-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
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CANADA K2K 3C7

Report Date: 2022/01/11
Report #: R6957984
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Y3876
Received: 2021/12/08, 14:28
Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		RHL821			
Sampling Date		2021/11/30			
COC Number		832329-10-01			
	UNITS	**BHMW124**	**RDL**	**MDL**	**QC Batch**
Inorganics					
Dissolved Chloride (Cl-)	mg/L	3100	50	15	7723363

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (GROUND WATER)

Bureau Veritas ID		RHL821			
Sampling Date		2021/11/30			
COC Number		832329-10-01			
	UNITS	BHMW124	RDL	MDL	QC Batch
Metals					
Dissolved Sodium (Na)	ug/L	1600000	5000	N/A	7733717

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

Bureau Veritas ID		RHL818	RHL819	RHL820	RHL820	RHL822			
Sampling Date		2021/12/02	2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	**BHMW120**	**BHMW116**	**DUP301**	**DUP301 Lab-Dup**	**BHMW110**	**RDL**	**MDL**	**QC Batch**
Volatile Organics									
Acetone (2-Propanone)	ug/L	<10	<10	<10	<10	17	10	1.0	7724026
Benzene	ug/L	<0.17	0.35	<0.17	<0.17	<0.17	0.17	0.020	7724026
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	0.10	7724026
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.10	7724026
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
Chloroform	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	0.050	7724026
1,1-Dichloroethane	ug/L	<0.20	0.62	<0.20	<0.20	<0.20	0.20	0.050	7724026
1,2-Dichloroethane	ug/L	3.6	22	<0.50	<0.50	<0.50	0.50	0.020	7724026
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	0.050	7724026
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	0.050	7724026
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	0.10	7724026
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	0.10	7724026
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	12	10	0.50	7724026
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	0.10	7724026
Methyl t-butyl ether (MTBE)	ug/L	38	130	<0.50	<0.50	<0.50	0.50	0.050	7724026
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

Bureau Veritas ID		RHL818	RHL819	RHL820	RHL820	RHL822			
Sampling Date		2021/12/02	2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	**BHMW120**	**BHMW116**	**DUP301**	**DUP301 Lab-Dup**	**BHMW110**	**RDL**	**MDL**	**QC Batch**
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.10	7724026
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
Total Xylenes	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
F1 (C6-C10)	ug/L	<25	<25	<25	<25	28	25	20	7724026
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	28	25	20	7724026
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	77	73	77	74	84			7724026
D4-1,2-Dichloroethane	%	103	106	106	109	106			7724026
D8-Toluene	%	100	103	101	100	99			7724026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

Bureau Veritas ID		RHL823	RHL824	RHL825	RHL826			
Sampling Date		2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	**BHMW119**	**BHMW122**	**BHMW108**	**BHMW115**	**RDL**	**MDL**	**QC Batch**
Volatile Organics								
Acetone (2-Propanone)	ug/L	<10	<10	15	<10	10	1.0	7724026
Benzene	ug/L	0.27	<0.17	74	14	0.17	0.020	7724026
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	0.10	7724026
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.10	7724026
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.010	7724026
Chloroform	ug/L	0.53	<0.20	<0.20	<0.20	0.20	0.050	7724026
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	0.050	7724026
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.020	7724026
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	0.050	7724026
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	0.050	7724026
Ethylbenzene	ug/L	0.36	<0.20	39	1.2	0.20	0.010	7724026
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Hexane	ug/L	<1.0	<1.0	3.3	<1.0	1.0	0.10	7724026
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	0.10	7724026
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	10	0.50	7724026
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	89	<5.0	5.0	0.10	7724026
Methyl t-butyl ether (MTBE)	ug/L	7.1	<0.50	<0.50	10	0.50	0.050	7724026
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
Toluene	ug/L	0.27	<0.20	19	0.98	0.20	0.010	7724026
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.050	7724026
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (GROUND WATER)

Bureau Veritas ID		RHL823	RHL824	RHL825	RHL826			
Sampling Date		2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	**BHMW119**	**BHMW122**	**BHMW108**	**BHMW115**	**RDL**	**MDL**	**QC Batch**
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	0.10	7724026
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	0.050	7724026
p+m-Xylene	ug/L	0.78	<0.20	100	0.74	0.20	0.010	7724026
o-Xylene	ug/L	0.21	<0.20	21	<0.20	0.20	0.010	7724026
Total Xylenes	ug/L	0.99	<0.20	120	0.74	0.20	0.010	7724026
F1 (C6-C10)	ug/L	<25	<25	730	54	25	20	7724026
F1 (C6-C10) - BTEX	ug/L	<25	<25	480	37	25	20	7724026
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	77	76	104	80			7724026
D4-1,2-Dichloroethane	%	105	108	101	102			7724026
D8-Toluene	%	101	101	112	102			7724026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

Bureau Veritas ID		RHL818	RHL819				RHL819			
Sampling Date		2021/12/02	2021/11/30				2021/11/30			
COC Number		832329-10-01	832329-10-01				832329-10-01			
	UNITS	**BHMW120**	**BHMW116**	**RDL**	**MDL**	**QC Batch**	**BHMW116 Lab-Dup**	**RDL**	**MDL**	**QC Batch**
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	0.50	7716316				
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	50	7722846	<100	100	50	7722846
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	70	7722846	<200	200	70	7722846
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	50	7722846	<200	200	50	7722846
Reached Baseline at C50	ug/L	Yes	Yes			7722846	Yes			7722846
Surrogate Recovery (%)										
o-Terphenyl	%	108	107			7722846	109			7722846

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas ID		RHL820	RHL822	RHL823	RHL824	RHL825			
Sampling Date		2021/11/30	2021/11/30	2021/11/30	2021/11/30	2021/11/30			
COC Number		832329-10-01	832329-10-01	832329-10-01	832329-10-01	832329-10-01			
	UNITS	**DUP301**	**BHMW110**	**BHMW119**	**BHMW122**	**BHMW108**	**RDL**	**MDL**	**QC Batch**
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.50	7716316
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	110	100	50	7722846
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	70	7722846
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	50	7722846
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes			7722846
Surrogate Recovery (%)									
o-Terphenyl	%	106	107	109	108	106			7722846

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (GROUND WATER)

Bureau Veritas ID		RHL826				RHL827			
Sampling Date		2021/11/30				2021/11/30			
COC Number		832329-10-01				832329-10-01			
	UNITS	BHMW115	RDL	MDL	QC Batch	TRIP BLANK	RDL	MDL	QC Batch
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	0.50	7716316				
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	330	100	50	7722846	<100	100	50	7722846
F3 (C16-C34 Hydrocarbons)	ug/L	28000	200	70	7722846	<200	200	70	7722846
F4 (C34-C50 Hydrocarbons)	ug/L	3600	200	50	7722846	<200	200	50	7722846
Reached Baseline at C50	ug/L	Yes			7722846	Yes			7722846
Surrogate Recovery (%)									
o-Terphenyl	%	107			7722846	106			7722846

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11

Pinchin Ltd
Client Project #: 285722.003

TEST SUMMARY

Bureau Veritas ID: RHL818
Sample ID: BHMW120
Matrix: Ground Water

Collected: 2021/12/02
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/16	Xueming Jiang

Bureau Veritas ID: RHL819
Sample ID: BHMW116
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL819 Dup
Sample ID: BHMW116
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland

Bureau Veritas ID: RHL820
Sample ID: DUP301
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL820 Dup
Sample ID: DUP301
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL821
Sample ID: BHMW124
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	7723363	N/A	2021/12/14	Alina Dobreanu
Dissolved Metals Analysis by ICP	ICP	7733717	2021/12/16	2022/01/11	Suban Kanapathippllai

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

TEST SUMMARY

Bureau Veritas ID: RHL822
Sample ID: BHMW110
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL823
Sample ID: BHMW119
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL824
Sample ID: BHMW122
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL825
Sample ID: BHMW108
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL826
Sample ID: BHMW115
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7716316	N/A	2021/12/16	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7724026	N/A	2021/12/15	Xueming Jiang

Bureau Veritas ID: RHL827
Sample ID: TRIP BLANK
Matrix: Ground Water

Collected: 2021/11/30
Shipped:
Received: 2021/12/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7722846	2021/12/13	2021/12/14	Anna Stuglik-Rolland

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C

Results relate only to the items tested.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11

Pinchin Ltd
Client Project #: 285722.003

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7722846	AS2	Matrix Spike [RHL818-01]	o-Terphenyl	2021/12/14		109	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/12/14		102	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/12/14		104	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/12/14		108	%	60 - 130
7722846	AS2	Spiked Blank	o-Terphenyl	2021/12/14		109	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/12/14		101	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/12/14		104	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/12/14		108	%	60 - 130
7722846	AS2	Method Blank	o-Terphenyl	2021/12/14		106	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/12/14	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/12/14	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/12/14	<200		ug/L	
7722846	AS2	RPD [RHL819-01]	F2 (C10-C16 Hydrocarbons)	2021/12/14	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/12/14	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/12/14	NC		%	30
7723363	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2021/12/14		NC	%	80 - 120
7723363	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2021/12/14		103	%	80 - 120
7723363	ADB	Method Blank	Dissolved Chloride (Cl-)	2021/12/14	<1.0		mg/L	
7723363	ADB	RPD	Dissolved Chloride (Cl-)	2021/12/14	2.3		%	20
7724026	XJI	Matrix Spike [RHL819-02]	4-Bromofluorobenzene	2021/12/15		108	%	70 - 130
			D4-1,2-Dichloroethane	2021/12/15		106	%	70 - 130
			D8-Toluene	2021/12/15		99	%	70 - 130
			Acetone (2-Propanone)	2021/12/15		99	%	60 - 140
			Benzene	2021/12/15		81	%	70 - 130
			Bromodichloromethane	2021/12/15		94	%	70 - 130
			Bromoform	2021/12/15		91	%	70 - 130
			Bromomethane	2021/12/15		91	%	60 - 140
			Carbon Tetrachloride	2021/12/15		88	%	70 - 130
			Chlorobenzene	2021/12/15		90	%	70 - 130
			Chloroform	2021/12/15		90	%	70 - 130
			Dibromochloromethane	2021/12/15		88	%	70 - 130
			1,2-Dichlorobenzene	2021/12/15		90	%	70 - 130
			1,3-Dichlorobenzene	2021/12/15		91	%	70 - 130
			1,4-Dichlorobenzene	2021/12/15		80	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/12/15		82	%	60 - 140
			1,1-Dichloroethane	2021/12/15		88	%	70 - 130
			1,2-Dichloroethane	2021/12/15		92	%	70 - 130
			1,1-Dichloroethylene	2021/12/15		90	%	70 - 130
			cis-1,2-Dichloroethylene	2021/12/15		95	%	70 - 130
			trans-1,2-Dichloroethylene	2021/12/15		92	%	70 - 130
			1,2-Dichloropropane	2021/12/15		90	%	70 - 130
			cis-1,3-Dichloropropene	2021/12/15		94	%	70 - 130
			trans-1,3-Dichloropropene	2021/12/15		102	%	70 - 130
			Ethylbenzene	2021/12/15		81	%	70 - 130
			Ethylene Dibromide	2021/12/15		89	%	70 - 130
			Hexane	2021/12/15		98	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/12/15		95	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/12/15		107	%	60 - 140
			Methyl Isobutyl Ketone	2021/12/15		103	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/12/15		NC	%	70 - 130
			Styrene	2021/12/15		75	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/12/15		88	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/12/15		92	%	70 - 130
			Tetrachloroethylene	2021/12/15		80	%	70 - 130
			Toluene	2021/12/15		88	%	70 - 130

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11

Pinchin Ltd
Client Project #: 285722.003

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,1-Trichloroethane	2021/12/15		91	%	70 - 130
			1,1,2-Trichloroethane	2021/12/15		93	%	70 - 130
			Trichloroethylene	2021/12/15		92	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/12/15		89	%	70 - 130
			Vinyl Chloride	2021/12/15		90	%	70 - 130
			p+m-Xylene	2021/12/15		87	%	70 - 130
			o-Xylene	2021/12/15		83	%	70 - 130
			F1 (C6-C10)	2021/12/15		72	%	60 - 140
7724026	XJI	Spiked Blank	4-Bromofluorobenzene	2021/12/15		111	%	70 - 130
			D4-1,2-Dichloroethane	2021/12/15		101	%	70 - 130
			D8-Toluene	2021/12/15		101	%	70 - 130
			Acetone (2-Propanone)	2021/12/15		94	%	60 - 140
			Benzene	2021/12/15		85	%	70 - 130
			Bromodichloromethane	2021/12/15		97	%	70 - 130
			Bromoform	2021/12/15		94	%	70 - 130
			Bromomethane	2021/12/15		92	%	60 - 140
			Carbon Tetrachloride	2021/12/15		96	%	70 - 130
			Chlorobenzene	2021/12/15		96	%	70 - 130
			Chloroform	2021/12/15		95	%	70 - 130
			Dibromochloromethane	2021/12/15		91	%	70 - 130
			1,2-Dichlorobenzene	2021/12/15		97	%	70 - 130
			1,3-Dichlorobenzene	2021/12/15		100	%	70 - 130
			1,4-Dichlorobenzene	2021/12/15		90	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/12/15		88	%	60 - 140
			1,1-Dichloroethane	2021/12/15		92	%	70 - 130
			1,2-Dichloroethane	2021/12/15		93	%	70 - 130
			1,1-Dichloroethylene	2021/12/15		96	%	70 - 130
			cis-1,2-Dichloroethylene	2021/12/15		99	%	70 - 130
			trans-1,2-Dichloroethylene	2021/12/15		96	%	70 - 130
			1,2-Dichloropropane	2021/12/15		94	%	70 - 130
			cis-1,3-Dichloropropene	2021/12/15		92	%	70 - 130
			trans-1,3-Dichloropropene	2021/12/15		94	%	70 - 130
			Ethylbenzene	2021/12/15		90	%	70 - 130
			Ethylene Dibromide	2021/12/15		90	%	70 - 130
			Hexane	2021/12/15		103	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/12/15		97	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/12/15		104	%	60 - 140
			Methyl Isobutyl Ketone	2021/12/15		104	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/12/15		92	%	70 - 130
			Styrene	2021/12/15		84	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/12/15		94	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/12/15		94	%	70 - 130
			Tetrachloroethylene	2021/12/15		88	%	70 - 130
			Toluene	2021/12/15		96	%	70 - 130
			1,1,1-Trichloroethane	2021/12/15		99	%	70 - 130
			1,1,2-Trichloroethane	2021/12/15		95	%	70 - 130
			Trichloroethylene	2021/12/15		100	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/12/15		95	%	70 - 130
			Vinyl Chloride	2021/12/15		94	%	70 - 130
			p+m-Xylene	2021/12/15		98	%	70 - 130
			o-Xylene	2021/12/15		94	%	70 - 130
			F1 (C6-C10)	2021/12/15		95	%	60 - 140
7724026	XJI	Method Blank	4-Bromofluorobenzene	2021/12/15		78	%	70 - 130
			D4-1,2-Dichloroethane	2021/12/15		103	%	70 - 130
			D8-Toluene	2021/12/15		102	%	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acetone (2-Propanone)	2021/12/15	<10		ug/L	
			Benzene	2021/12/15	<0.17		ug/L	
			Bromodichloromethane	2021/12/15	<0.50		ug/L	
			Bromoform	2021/12/15	<1.0		ug/L	
			Bromomethane	2021/12/15	<0.50		ug/L	
			Carbon Tetrachloride	2021/12/15	<0.20		ug/L	
			Chlorobenzene	2021/12/15	<0.20		ug/L	
			Chloroform	2021/12/15	<0.20		ug/L	
			Dibromochloromethane	2021/12/15	<0.50		ug/L	
			1,2-Dichlorobenzene	2021/12/15	<0.50		ug/L	
			1,3-Dichlorobenzene	2021/12/15	<0.50		ug/L	
			1,4-Dichlorobenzene	2021/12/15	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2021/12/15	<1.0		ug/L	
			1,1-Dichloroethane	2021/12/15	<0.20		ug/L	
			1,2-Dichloroethane	2021/12/15	<0.50		ug/L	
			1,1-Dichloroethylene	2021/12/15	<0.20		ug/L	
			cis-1,2-Dichloroethylene	2021/12/15	<0.50		ug/L	
			trans-1,2-Dichloroethylene	2021/12/15	<0.50		ug/L	
			1,2-Dichloropropane	2021/12/15	<0.20		ug/L	
			cis-1,3-Dichloropropene	2021/12/15	<0.30		ug/L	
			trans-1,3-Dichloropropene	2021/12/15	<0.40		ug/L	
			Ethylbenzene	2021/12/15	<0.20		ug/L	
			Ethylene Dibromide	2021/12/15	<0.20		ug/L	
			Hexane	2021/12/15	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2021/12/15	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2021/12/15	<10		ug/L	
			Methyl Isobutyl Ketone	2021/12/15	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2021/12/15	<0.50		ug/L	
			Styrene	2021/12/15	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2021/12/15	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2021/12/15	<0.50		ug/L	
			Tetrachloroethylene	2021/12/15	<0.20		ug/L	
			Toluene	2021/12/15	<0.20		ug/L	
			1,1,1-Trichloroethane	2021/12/15	<0.20		ug/L	
			1,1,2-Trichloroethane	2021/12/15	<0.50		ug/L	
			Trichloroethylene	2021/12/15	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2021/12/15	<0.50		ug/L	
			Vinyl Chloride	2021/12/15	<0.20		ug/L	
			p+m-Xylene	2021/12/15	<0.20		ug/L	
			o-Xylene	2021/12/15	<0.20		ug/L	
			Total Xylenes	2021/12/15	<0.20		ug/L	
			F1 (C6-C10)	2021/12/15	<25		ug/L	
			F1 (C6-C10) - BTEX	2021/12/15	<25		ug/L	
7724026	XJI	RPD [RHL820-02]	Acetone (2-Propanone)	2021/12/15	NC		%	30
			Benzene	2021/12/15	NC		%	30
			Bromodichloromethane	2021/12/15	NC		%	30
			Bromoform	2021/12/15	NC		%	30
			Bromomethane	2021/12/15	NC		%	30
			Carbon Tetrachloride	2021/12/15	NC		%	30
			Chlorobenzene	2021/12/15	NC		%	30
			Chloroform	2021/12/15	NC		%	30
			Dibromochloromethane	2021/12/15	NC		%	30
			1,2-Dichlorobenzene	2021/12/15	NC		%	30
			1,3-Dichlorobenzene	2021/12/15	NC		%	30
			1,4-Dichlorobenzene	2021/12/15	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dichlorodifluoromethane (FREON 12)	2021/12/15	NC		%	30
			1,1-Dichloroethane	2021/12/15	NC		%	30
			1,2-Dichloroethane	2021/12/15	NC		%	30
			1,1-Dichloroethylene	2021/12/15	NC		%	30
			cis-1,2-Dichloroethylene	2021/12/15	NC		%	30
			trans-1,2-Dichloroethylene	2021/12/15	NC		%	30
			1,2-Dichloropropane	2021/12/15	NC		%	30
			cis-1,3-Dichloropropene	2021/12/15	NC		%	30
			trans-1,3-Dichloropropene	2021/12/15	NC		%	30
			Ethylbenzene	2021/12/15	NC		%	30
			Ethylene Dibromide	2021/12/15	NC		%	30
			Hexane	2021/12/15	NC		%	30
			Methylene Chloride(Dichloromethane)	2021/12/15	NC		%	30
			Methyl Ethyl Ketone (2-Butanone)	2021/12/15	NC		%	30
			Methyl Isobutyl Ketone	2021/12/15	NC		%	30
			Methyl t-butyl ether (MTBE)	2021/12/15	NC		%	30
			Styrene	2021/12/15	NC		%	30
			1,1,1,2-Tetrachloroethane	2021/12/15	NC		%	30
			1,1,2,2-Tetrachloroethane	2021/12/15	NC		%	30
			Tetrachloroethylene	2021/12/15	NC		%	30
			Toluene	2021/12/15	NC		%	30
			1,1,1-Trichloroethane	2021/12/15	NC		%	30
			1,1,2-Trichloroethane	2021/12/15	NC		%	30
			Trichloroethylene	2021/12/15	NC		%	30
			Trichlorofluoromethane (FREON 11)	2021/12/15	NC		%	30
			Vinyl Chloride	2021/12/15	NC		%	30
			p+m-Xylene	2021/12/15	NC		%	30
			o-Xylene	2021/12/15	NC		%	30
			Total Xylenes	2021/12/15	NC		%	30
			F1 (C6-C10)	2021/12/15	NC		%	30
			F1 (C6-C10) - BTEX	2021/12/15	NC		%	30
7733717	SUK	Spiked Blank	Dissolved Sodium (Na)	2022/01/11		99	%	80 - 120
7733717	SUK	Method Blank	Dissolved Sodium (Na)	2022/01/11	<500		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

08-Dec-21 14:28
Antonella Brasil
C1Y3876
KTN ENV-819

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

Bottle Types

			Inorganics					Organics											Hydrocarbons							Volatiles				Other
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/ Herb 1 of 2	Pest/ Herb 2 of 2	SVOC/ ABN 1 of 2	SVOC/ ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	BHMW120	TS																												
2	BHMW116	TS																												
3	DUP 301	TS																												
4	MW110	P																												
5	MW114	TS																												
6	MW122	TS																												
7	MW108	TS																												
8	MW115	TS																												
9																														
10																														

Comments:

Legend:

P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print) Z VI TRINH

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free 800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

RECEIVED IN OTTAWA

CHAIN

08-Dec-21 14:28
Antonella Brasil
C1Y3876
KTN ENV-819
C#832329-10-01

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#982 Pinchin Ltd	Company Name:		Quotation #:	A70927
Attention:	Accounts Payable	Attention:	Matt, Ryan, Mike	P.O. #:	
Address:	1 Hines Road Suite 200, Kanata ON K2K 3C7	Address:		Project:	~~[struck through]~~ 285722.003
Tel:	(613) 592-3387 Fax: (613) 592-5897	Tel:	Fax:	Project Name:	
Email:	ap@pinchin.com	Email:	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Site #:	
				Sampled By:	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☒ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☒ Coarse ☒ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 Metals & Inorganics Pkg (Soil)	O Reg 153 VOCs by HS & F1-F4 (Soil)	O Reg 153 PCBs (Soil)	O Reg 153 PAHs (Soil)	O Reg 153 Semivolatiles Package (Soil)	Acid Extractables by GC/MS	O Reg 153 OC Pesticides (Soil)	Sodium	Chloride		# of Bottles	Comments
1		BHMW120	Dec 2 2021	Am	GW			X									4	PHCs F1-F4 +
2		BHMW116	Nov 30 2021	Am				X									4	VOCs
3		Dup 301						X									4	
4		BHMW124												X	X		2	Sodium Chloride
5		BHM110						X									4	PHCs VOCs
6		BHMW119		Pm				X									4	
7		BHMW122						X									4	
8		BHMW108						X									4	
9		BHMW115						X									4	
10		Trip Blank						X									4	VOCs/F1 for Trip Blank

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Laboratory Use Only
[signature] Mike Kosiw	Dec 8/2021	AM	a. Santiago BEA	21/12/08	14:28			Temperature (°C) on Recei: 6, 4, 4 ice
			[signature]	21/12/09	08:05			Custody Seal Present: Yes; Intact: Yes
				5/5/5 C				

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

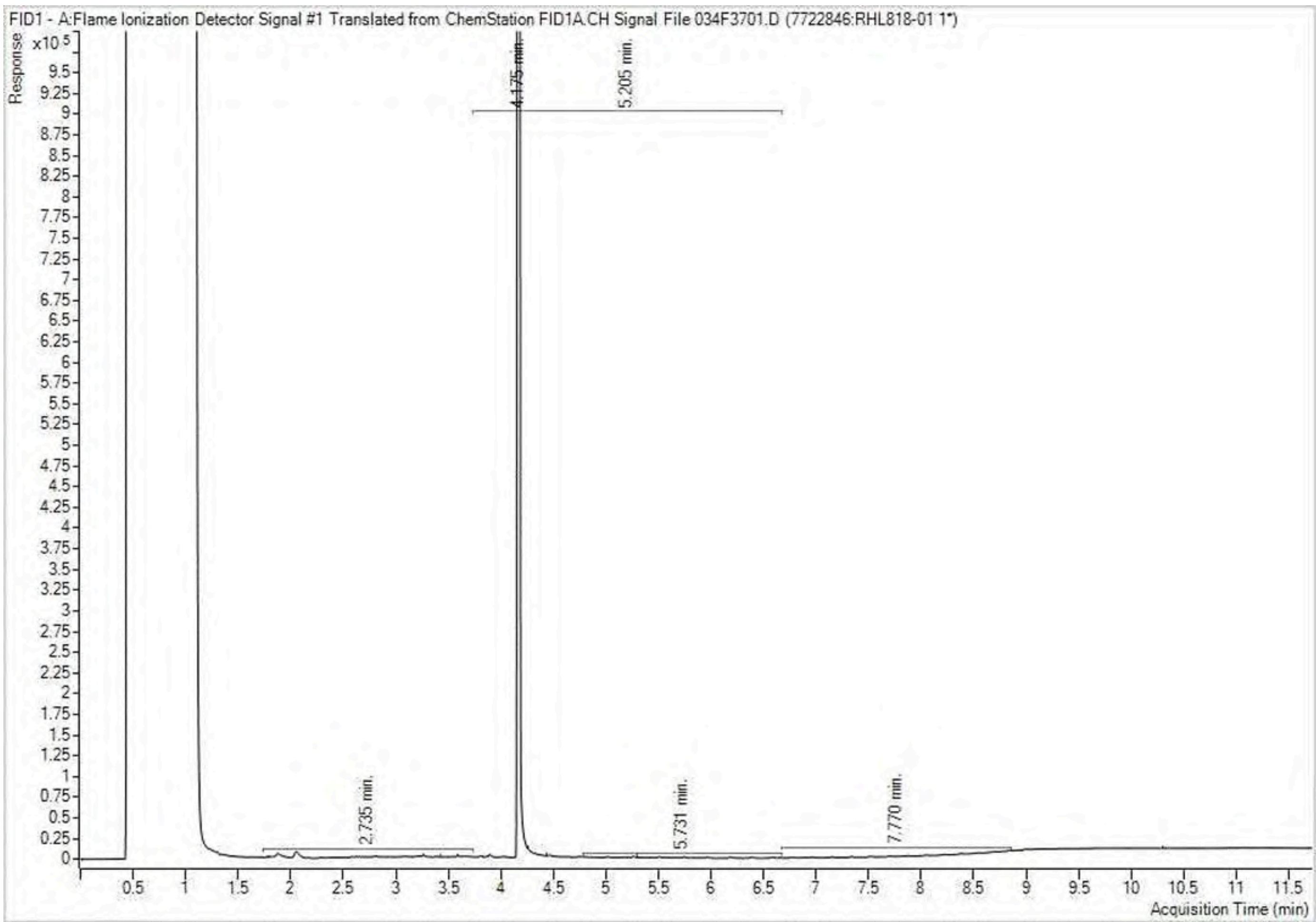
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL818

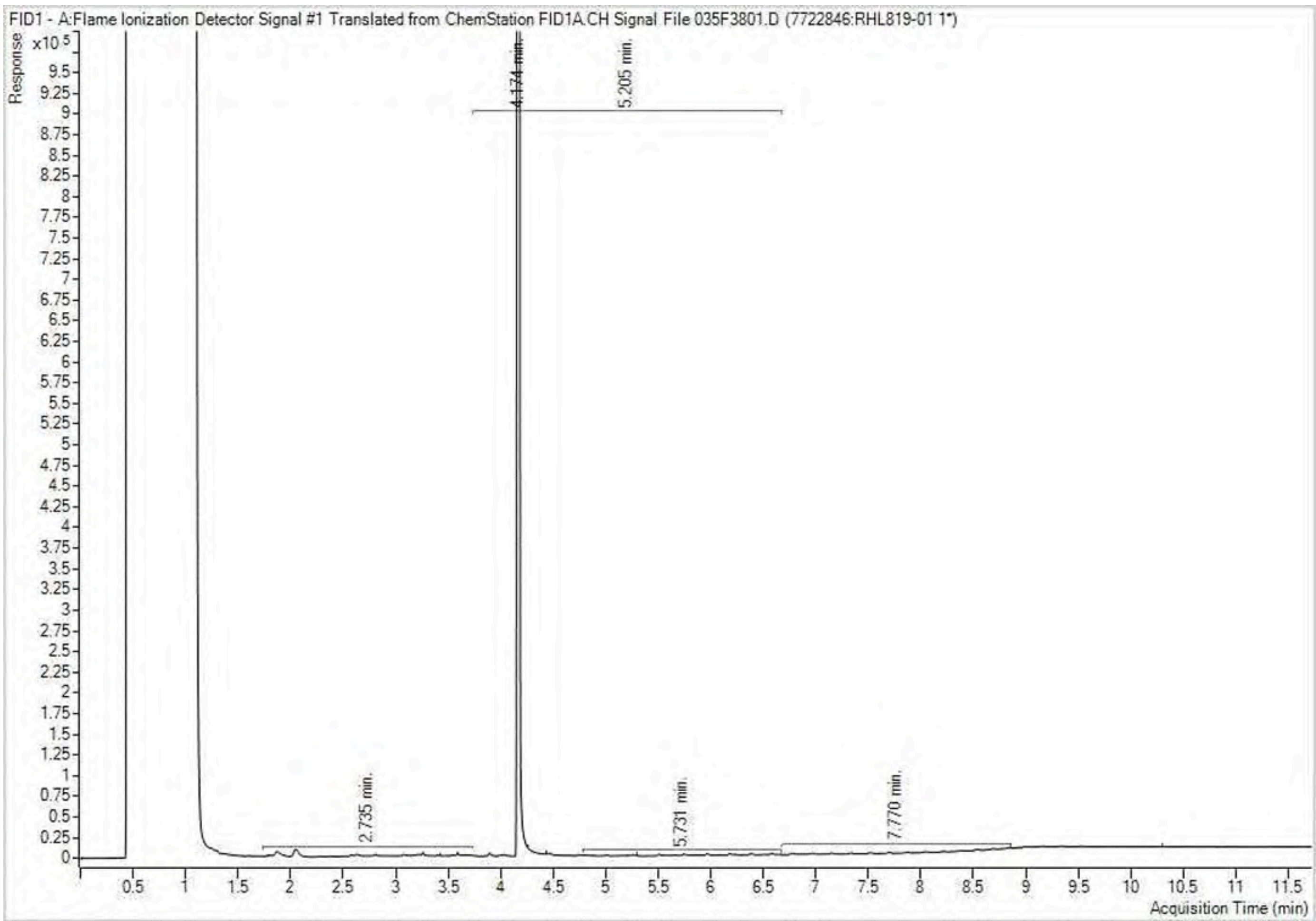
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW120

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

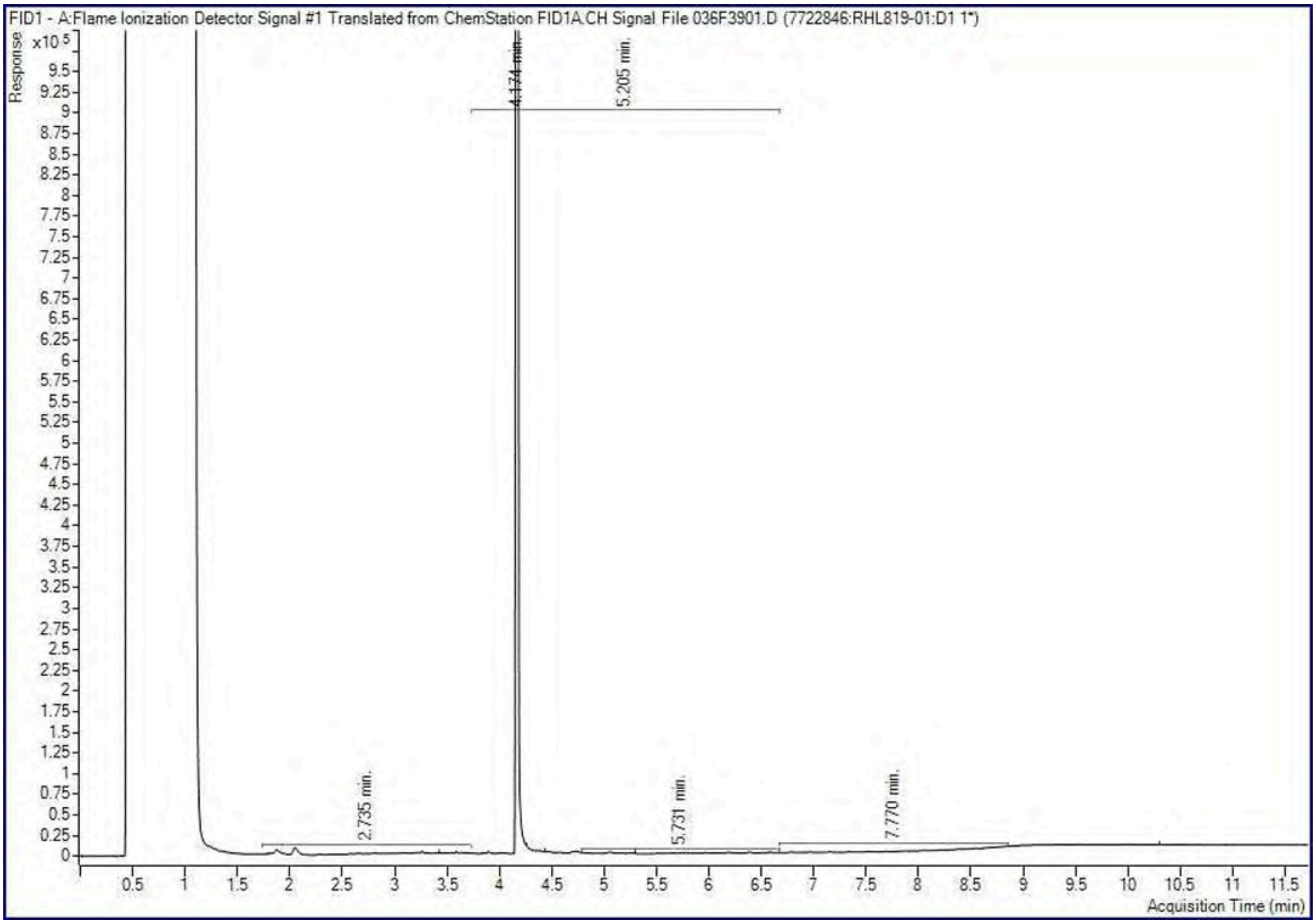


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL819 Lab-Dup

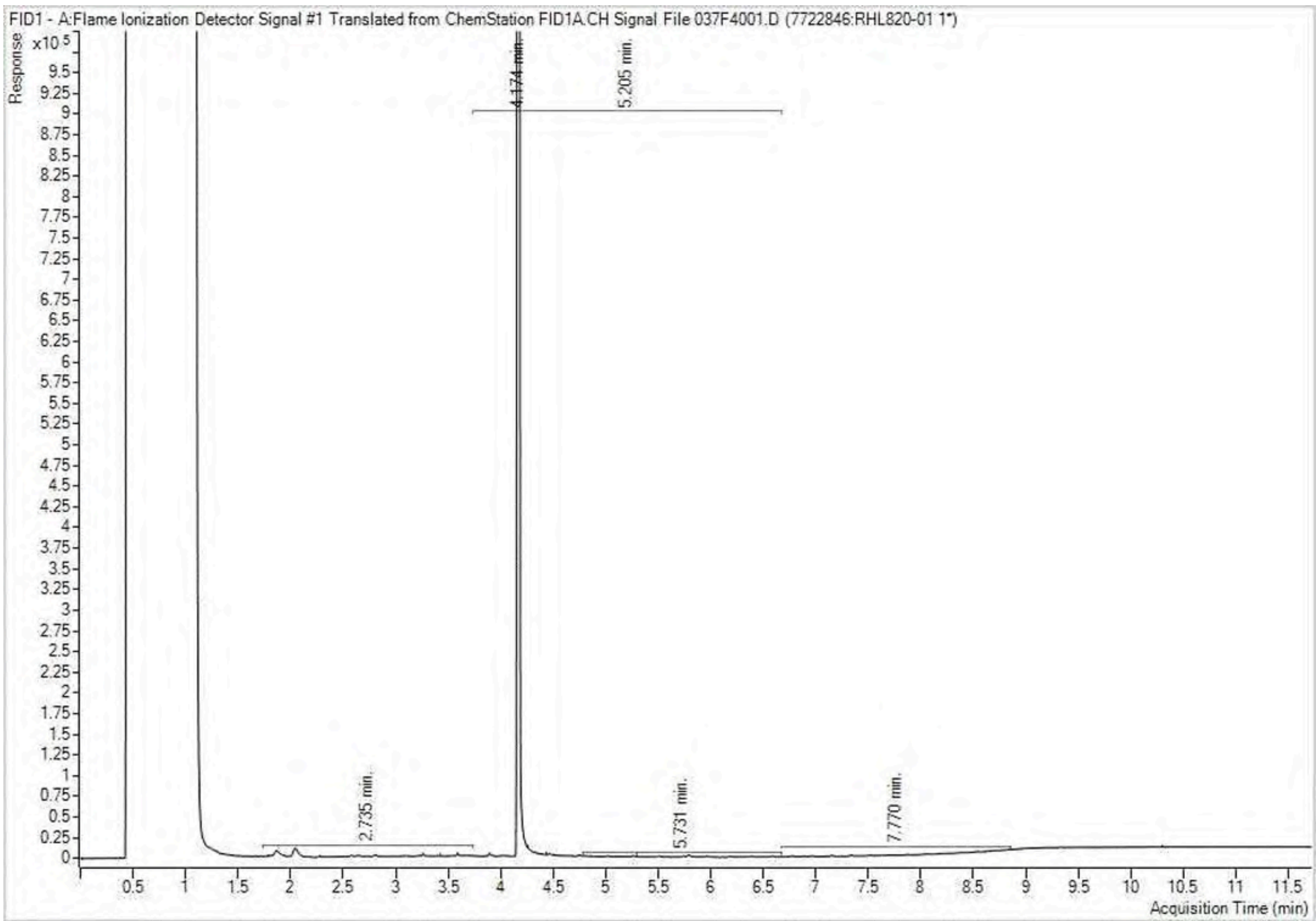
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW116

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

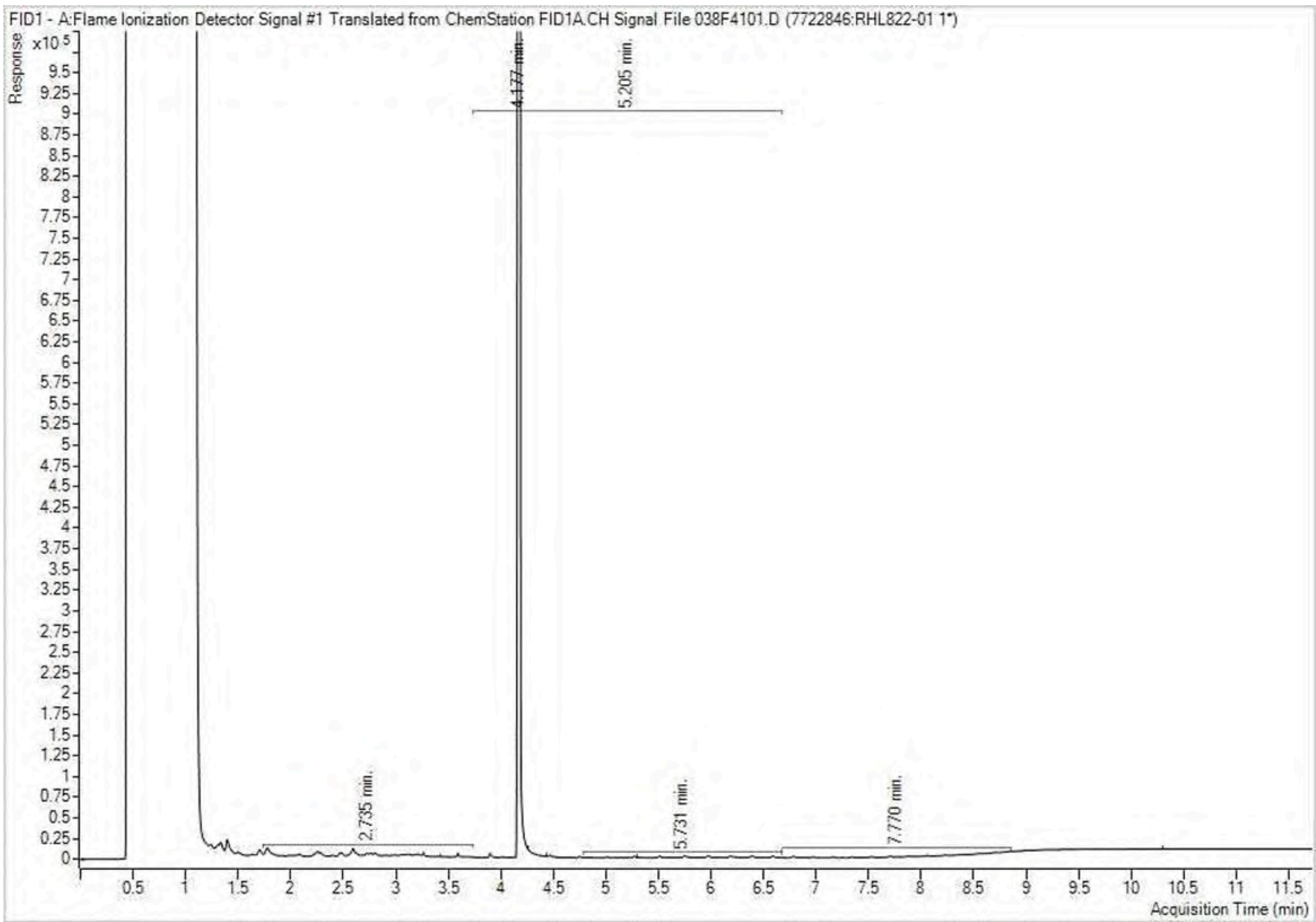


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL822

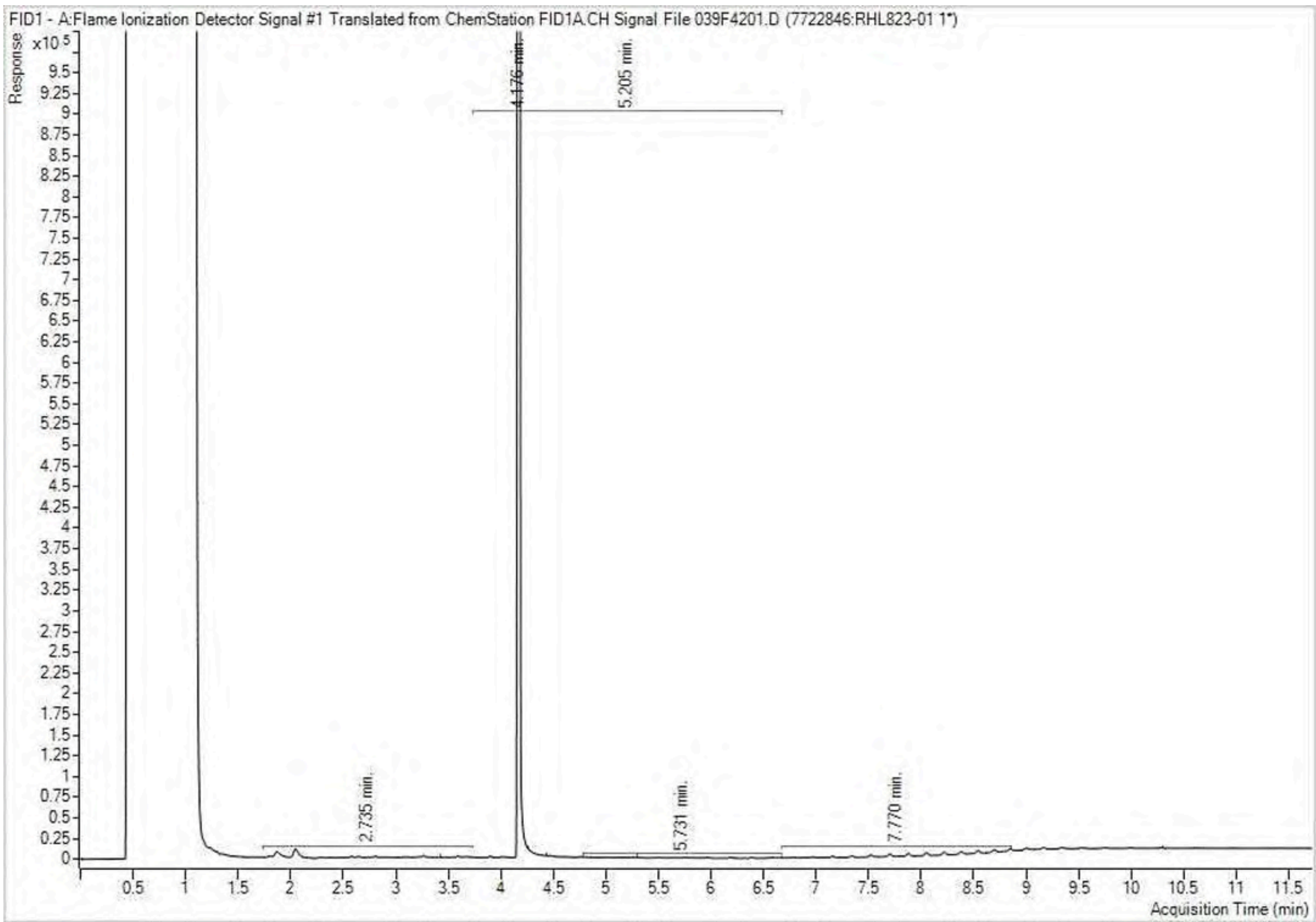
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW110

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

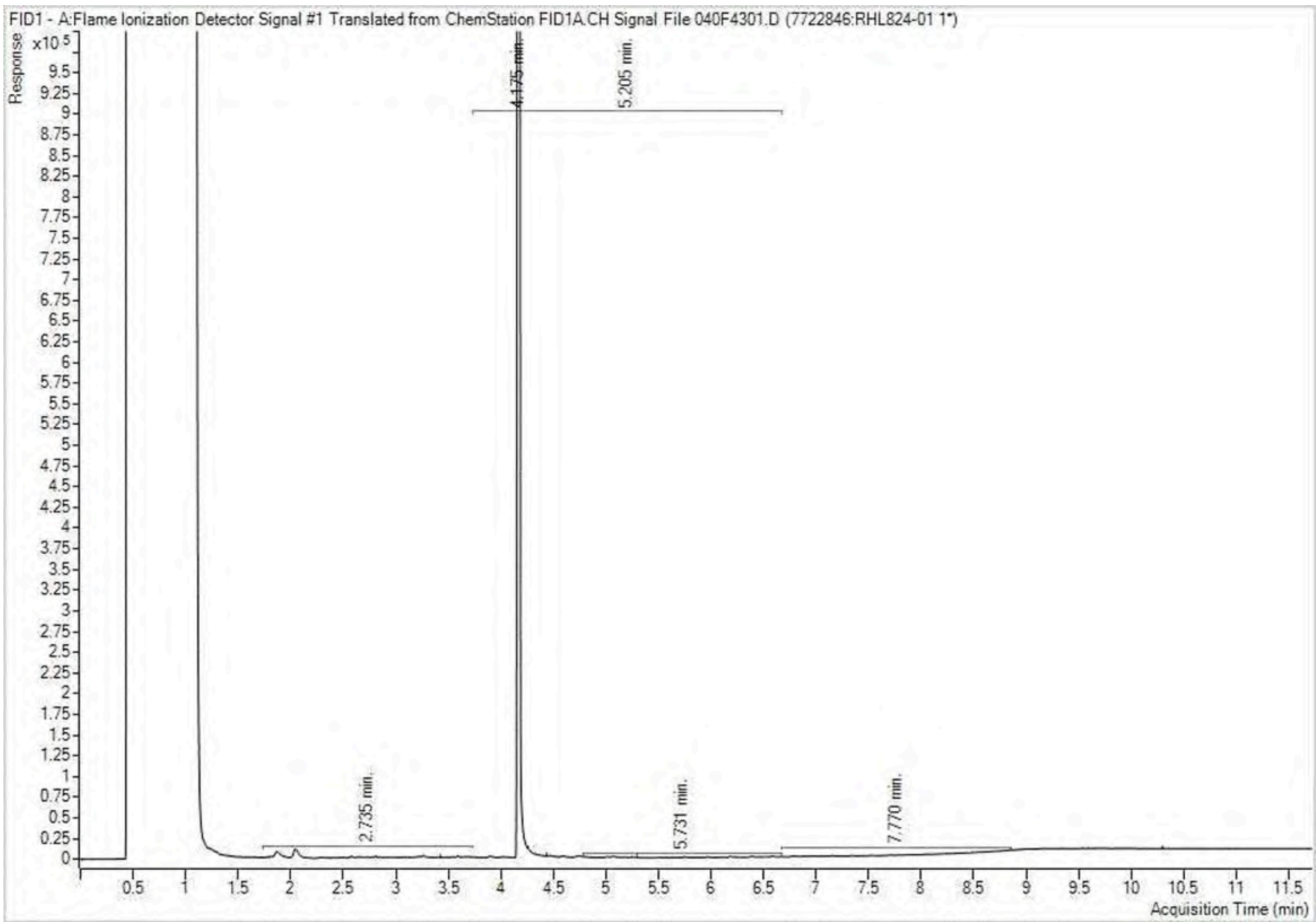


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL824

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW122

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

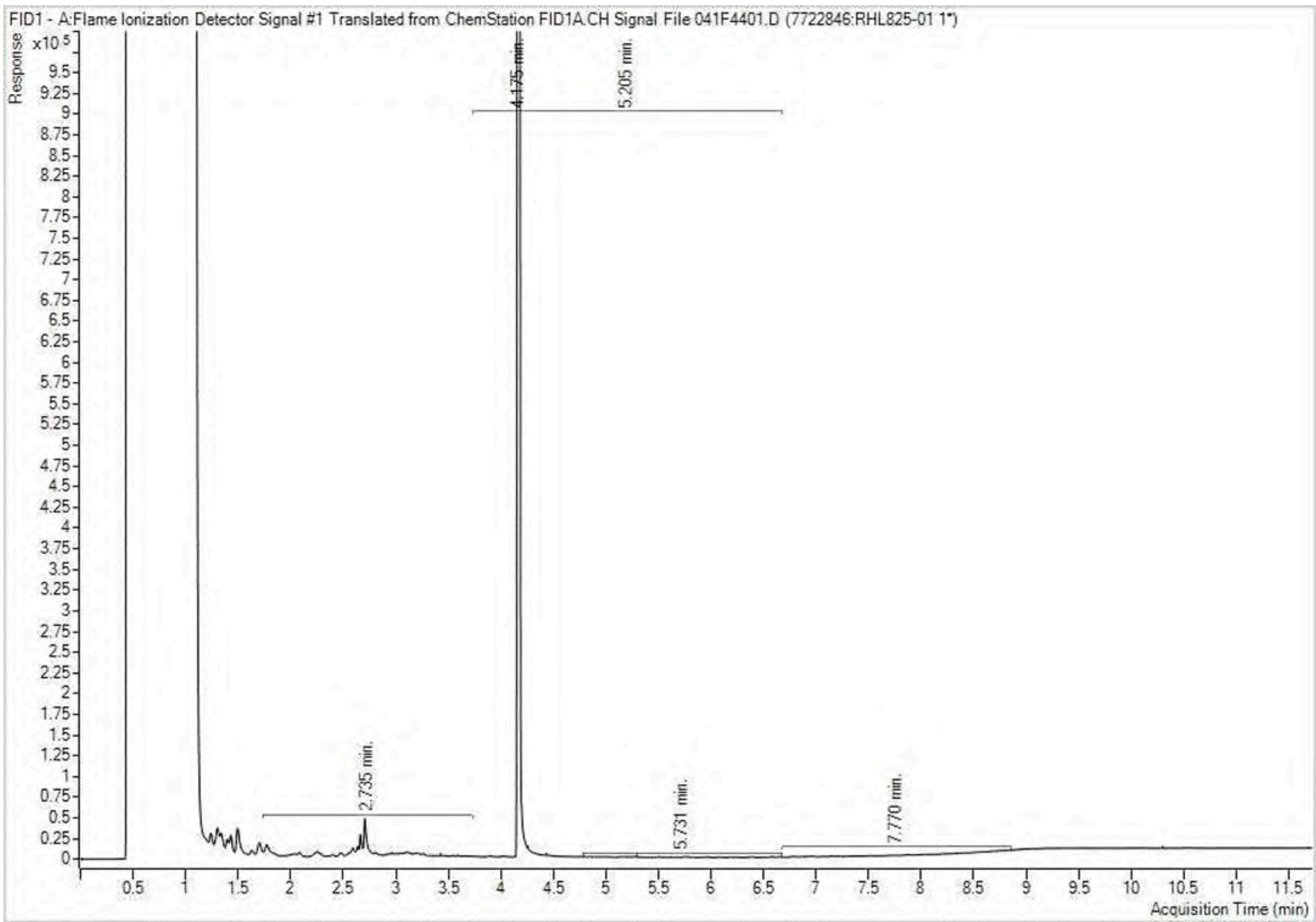


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL825

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW108

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

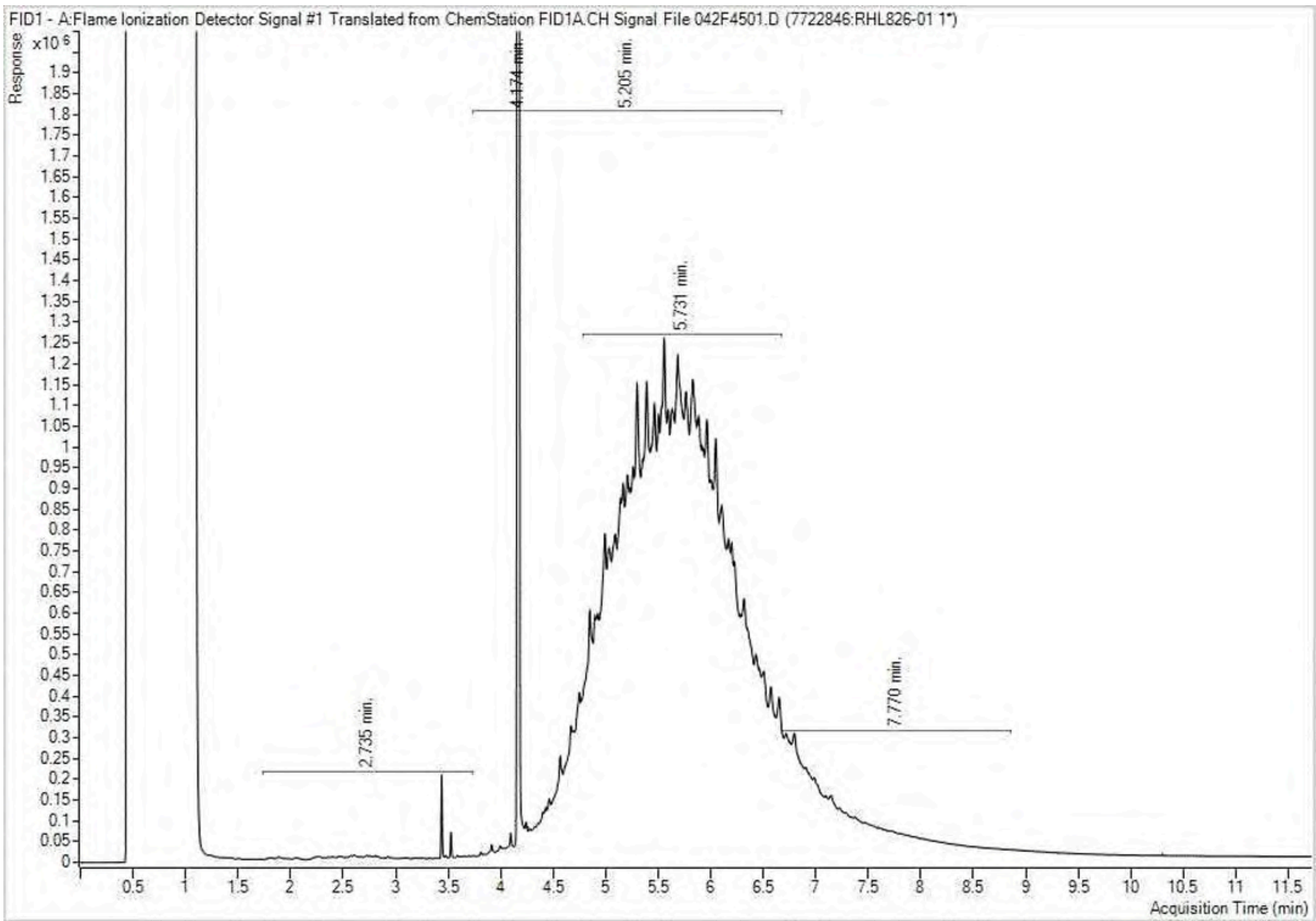


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL826

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW115

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

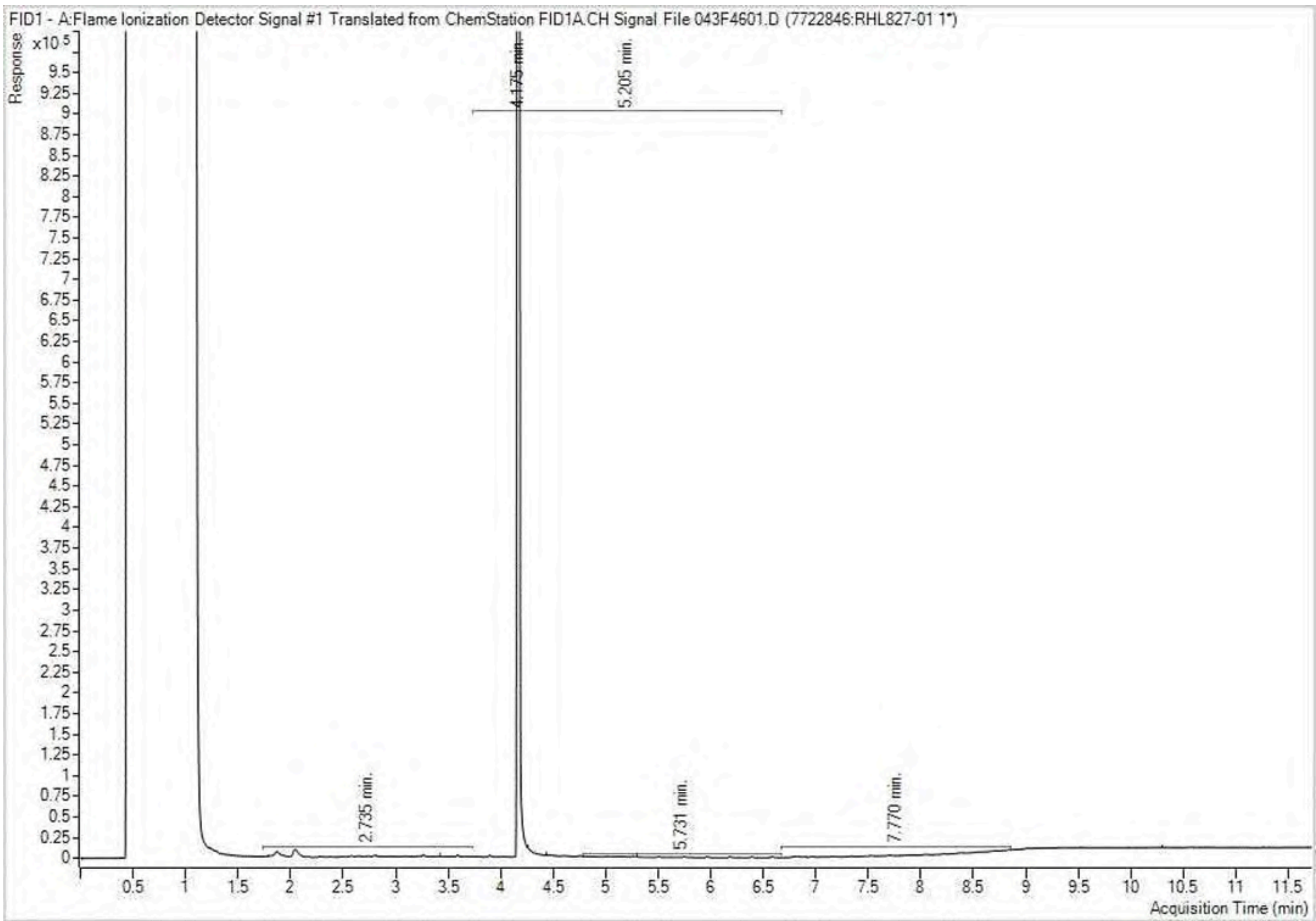


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1Y3876
Report Date: 2022/01/11
Bureau Veritas Sample: RHL827

Pinchin Ltd
Client Project #: 285722.003
Client ID: TRIP BLANK

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003
Your C.O.C. #: 796018-25-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/04/26
Report #: R6610415
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1A7975
Received: 2021/04/22, 12:00

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	8	N/A	2021/04/26	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	8	N/A	2021/04/23		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	8	2021/04/23	2021/04/23	CAM SOP-00316	CCME PHC-CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	1	2021/04/24	2021/04/24	CAM SOP-00326	CCME PHC-CWS m
PAH Compounds in Water by GC/MS (SIM) (1)	8	2021/04/23	2021/04/23	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	9	N/A	2021/04/23	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1

Your Project #: 285722.003
Your C.O.C. #: 796018-25-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/04/26
Report #: R6610415
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1A7975
Received: 2021/04/22, 12:00
Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		PJV382		
Sampling Date		2021/04/22		
COC Number		796018-25-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	7312454
Benzene	ug/L	<0.20	0.20	7312454
Bromodichloromethane	ug/L	<0.50	0.50	7312454
Bromoform	ug/L	<1.0	1.0	7312454
Bromomethane	ug/L	<0.50	0.50	7312454
Carbon Tetrachloride	ug/L	<0.20	0.20	7312454
Chlorobenzene	ug/L	<0.20	0.20	7312454
Chloroform	ug/L	<0.20	0.20	7312454
Dibromochloromethane	ug/L	<0.50	0.50	7312454
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7312454
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7312454
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7312454
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7312454
1,1-Dichloroethane	ug/L	<0.20	0.20	7312454
1,2-Dichloroethane	ug/L	<0.50	0.50	7312454
1,1-Dichloroethylene	ug/L	<0.20	0.20	7312454
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7312454
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7312454
1,2-Dichloropropane	ug/L	<0.20	0.20	7312454
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7312454
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7312454
Ethylbenzene	ug/L	<0.20	0.20	7312454
Ethylene Dibromide	ug/L	<0.20	0.20	7312454
Hexane	ug/L	<1.0	1.0	7312454
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7312454
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7312454
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7312454
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7312454
Styrene	ug/L	<0.50	0.50	7312454
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7312454
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7312454
Tetrachloroethylene	ug/L	<0.20	0.20	7312454
Toluene	ug/L	<0.20	0.20	7312454
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7312454
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7312454
Trichloroethylene	ug/L	<0.20	0.20	7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID		PJV382		
Sampling Date		2021/04/22		
COC Number		796018-25-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7312454
Vinyl Chloride	ug/L	<0.20	0.20	7312454
p+m-Xylene	ug/L	<0.20	0.20	7312454
o-Xylene	ug/L	<0.20	0.20	7312454
Total Xylenes	ug/L	<0.20	0.20	7312454
F1 (C6-C10)	ug/L	<25	25	7312454
F1 (C6-C10) - BTEX	ug/L	<25	25	7312454
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	91		7312454
D4-1,2-Dichloroethane	%	104		7312454
D8-Toluene	%	98		7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		PJV376		
Sampling Date		2021/04/22		
COC Number		796018-25-01		
	UNITS	DUP-1	RDL	QC Batch
F2-F4 Hydrocarbons				
F4G-sg (Grav. Heavy Hydrocarbons)	ug/L	4900	500	7317128

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PAHS (WATER)

BV Labs ID		PJV374	PJV375			PJV375		
Sampling Date		2021/04/22	2021/04/22			2021/04/22		
COC Number		796018-25-01	796018-25-01			796018-25-01		
	UNITS	BH2-20	BHMW3	RDL	QC Batch	BHMW3 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/L	0.13	0.19	0.071	7314910			
Polyaromatic Hydrocarbons								
Acenaphthene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Acenaphthylene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Anthracene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Benzo(a)pyrene	ug/L	<0.0090	0.043	0.0090	7315015	0.036	0.0090	7315015
Benzo(b/j)fluoranthene	ug/L	<0.050	0.064	0.050	7315015	0.050	0.050	7315015
Benzo(g,h,i)perylene	ug/L	<0.050	0.052	0.050	7315015	<0.050	0.050	7315015
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Chrysene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Fluoranthene	ug/L	<0.050	0.11	0.050	7315015	0.089	0.050	7315015
Fluorene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	7315015	<0.050	0.050	7315015
1-Methylnaphthalene	ug/L	0.13	0.082	0.050	7315015	0.065	0.050	7315015
2-Methylnaphthalene	ug/L	<0.050	0.10	0.050	7315015	0.083	0.050	7315015
Naphthalene	ug/L	0.095	0.14	0.050	7315015	0.13	0.050	7315015
Phenanthrene	ug/L	<0.030	0.099	0.030	7315015	0.077	0.030	7315015
Pyrene	ug/L	<0.050	0.12	0.050	7315015	0.094	0.050	7315015
Surrogate Recovery (%)								
D10-Anthracene	%	104	82		7315015	88		7315015
D14-Terphenyl (FS)	%	91	50		7315015	50		7315015
D8-Acenaphthylene	%	100	97		7315015	95		7315015

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 PAHS (WATER)

BV Labs ID		PJV376	PJV377	PJV378	PJV379	PJV380	PJV381		
Sampling Date		2021/04/22	2021/04/21	2021/04/21	2021/04/21	2021/04/21	2021/04/22		
COC Number		796018-25-01	796018-25-01	796018-25-01	796018-25-01	796018-25-01	796018-25-01		
	UNITS	DUP-1	BH1-20	BH3-20	BH4-20	BH5-20	BH2017-10	RDL	QC Batch
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/L	0.18	<0.071	<0.071	<0.071	<0.071	<0.071	0.071	7314910
Polyaromatic Hydrocarbons									
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Benzo(a)anthracene	ug/L	<0.050	0.054	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Benzo(a)pyrene	ug/L	0.058	0.055	<0.0090	<0.0090	0.014	<0.0090	0.0090	7315015
Benzo(b/j)fluoranthene	ug/L	0.088	0.076	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Benzo(g,h,i)perylene	ug/L	0.075	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Chrysene	ug/L	0.057	0.055	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Fluoranthene	ug/L	0.14	0.11	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
1-Methylnaphthalene	ug/L	0.077	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
2-Methylnaphthalene	ug/L	0.11	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Naphthalene	ug/L	0.14	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Phenanthrene	ug/L	0.12	0.055	<0.030	<0.030	<0.030	<0.030	0.030	7315015
Pyrene	ug/L	0.15	0.096	<0.050	<0.050	<0.050	<0.050	0.050	7315015
Surrogate Recovery (%)									
D10-Anthracene	%	73	97	106	106	101	103		7315015
D14-Terphenyl (FS)	%	48 (1)	82	95	94	89	61		7315015
D8-Acenaphthylene	%	96	92	101	102	96	99		7315015

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Surrogate recovery was below the lower control limit due to matrix interference. This may represent a low bias in some results.

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV374			PJV374			PJV375		
Sampling Date		2021/04/22			2021/04/22			2021/04/22		
COC Number		796018-25-01			796018-25-01			796018-25-01		
	UNITS	BH2-20	RDL	QC Batch	BH2-20 Lab-Dup	RDL	QC Batch	BHMW3	RDL	QC Batch
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	7314912				<0.50	0.50	7314912
Volatile Organics										
Acetone (2-Propanone)	ug/L	<10	10	7312454	<10	10	7312454	<10	10	7312454
Benzene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	1.1	0.20	7312454
Bromodichloromethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Bromoform	ug/L	<1.0	1.0	7312454	<1.0	1.0	7312454	<1.0	1.0	7312454
Bromomethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Carbon Tetrachloride	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Chlorobenzene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Chloroform	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Dibromochloromethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7312454	<1.0	1.0	7312454	<1.0	1.0	7312454
1,1-Dichloroethane	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
1,2-Dichloroethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,1-Dichloroethylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,2-Dichloropropane	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7312454	<0.30	0.30	7312454	<0.30	0.30	7312454
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7312454	<0.40	0.40	7312454	<0.40	0.40	7312454
Ethylbenzene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	0.34	0.20	7312454
Ethylene Dibromide	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Hexane	ug/L	<1.0	1.0	7312454	<1.0	1.0	7312454	1.1	1.0	7312454
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7312454	<2.0	2.0	7312454	<2.0	2.0	7312454
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7312454	<10	10	7312454	<10	10	7312454
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7312454	<5.0	5.0	7312454	<5.0	5.0	7312454
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Styrene	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Tetrachloroethylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Toluene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV374			PJV374			PJV375		
Sampling Date		2021/04/22			2021/04/22			2021/04/22		
COC Number		796018-25-01			796018-25-01			796018-25-01		
	UNITS	**BH2-20**	**RDL**	**QC Batch**	**BH2-20 Lab-Dup**	**RDL**	**QC Batch**	**BHMW3**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Trichloroethylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7312454	<0.50	0.50	7312454	<0.50	0.50	7312454
Vinyl Chloride	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
p+m-Xylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	0.41	0.20	7312454
o-Xylene	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	<0.20	0.20	7312454
Total Xylenes	ug/L	<0.20	0.20	7312454	<0.20	0.20	7312454	0.41	0.20	7312454
F1 (C6-C10)	ug/L	<25	25	7312454	<25	25	7312454	33	25	7312454
F1 (C6-C10) - BTEX	ug/L	<25	25	7312454	<25	25	7312454	31	25	7312454
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	7315019				<100	100	7315019
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	7315019				390	200	7315019
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	7315019				460	200	7315019
Reached Baseline at C50	ug/L	Yes		7315019				Yes		7315019
Surrogate Recovery (%)										
o-Terphenyl	%	96		7315019				98		7315019
4-Bromofluorobenzene	%	93		7312454	94		7312454	88		7312454
D4-1,2-Dichloroethane	%	99		7312454	100		7312454	105		7312454
D8-Toluene	%	98		7312454	97		7312454	91		7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV375			PJV376	PJV377	PJV378		
Sampling Date		2021/04/22			2021/04/22	2021/04/21	2021/04/21		
COC Number		796018-25-01			796018-25-01	796018-25-01	796018-25-01		
	UNITS	**BHMW3 Lab-Dup**	**RDL**	**QC Batch**	**DUP-1**	**BH1-20**	**BH3-20**	**RDL**	**QC Batch**
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/L				<0.50	<0.50	<0.50	0.50	7314912
Volatile Organics									
Acetone (2-Propanone)	ug/L				<10	<10	<10	10	7312454
Benzene	ug/L				1.1	<0.20	<0.20	0.20	7312454
Bromodichloromethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Bromoform	ug/L				<1.0	<1.0	<1.0	1.0	7312454
Bromomethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Carbon Tetrachloride	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Chlorobenzene	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Chloroform	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Dibromochloromethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,2-Dichlorobenzene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,3-Dichlorobenzene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,4-Dichlorobenzene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Dichlorodifluoromethane (FREON 12)	ug/L				<1.0	<1.0	<1.0	1.0	7312454
1,1-Dichloroethane	ug/L				<0.20	<0.20	<0.20	0.20	7312454
1,2-Dichloroethane	ug/L				<0.50	3.8	<0.50	0.50	7312454
1,1-Dichloroethylene	ug/L				<0.20	<0.20	<0.20	0.20	7312454
cis-1,2-Dichloroethylene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
trans-1,2-Dichloroethylene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,2-Dichloropropane	ug/L				<0.20	<0.20	<0.20	0.20	7312454
cis-1,3-Dichloropropene	ug/L				<0.30	<0.30	<0.30	0.30	7312454
trans-1,3-Dichloropropene	ug/L				<0.40	<0.40	<0.40	0.40	7312454
Ethylbenzene	ug/L				0.36	<0.20	<0.20	0.20	7312454
Ethylene Dibromide	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Hexane	ug/L				1.1	<1.0	<1.0	1.0	7312454
Methylene Chloride(Dichloromethane)	ug/L				<2.0	<2.0	<2.0	2.0	7312454
Methyl Ethyl Ketone (2-Butanone)	ug/L				<10	<10	<10	10	7312454
Methyl Isobutyl Ketone	ug/L				<5.0	<5.0	<5.0	5.0	7312454
Methyl t-butyl ether (MTBE)	ug/L				<0.50	44	3.1	0.50	7312454
Styrene	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,1,1,2-Tetrachloroethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
1,1,2,2-Tetrachloroethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Tetrachloroethylene	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Toluene	ug/L				<0.20	<0.20	<0.20	0.20	7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV375			PJV376	PJV377	PJV378		
Sampling Date		2021/04/22			2021/04/22	2021/04/21	2021/04/21		
COC Number		796018-25-01			796018-25-01	796018-25-01	796018-25-01		
	UNITS	**BHMW3 Lab-Dup**	**RDL**	**QC Batch**	**DUP-1**	**BH1-20**	**BH3-20**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L				<0.20	<0.20	<0.20	0.20	7312454
1,1,2-Trichloroethane	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Trichloroethylene	ug/L				<0.20	<0.20	<0.20	0.20	7312454
Trichlorofluoromethane (FREON 11)	ug/L				<0.50	<0.50	<0.50	0.50	7312454
Vinyl Chloride	ug/L				<0.20	<0.20	<0.20	0.20	7312454
p+m-Xylene	ug/L				0.44	<0.20	0.22	0.20	7312454
o-Xylene	ug/L				<0.20	<0.20	0.24	0.20	7312454
Total Xylenes	ug/L				0.44	<0.20	0.47	0.20	7312454
F1 (C6-C10)	ug/L				29	<25	<25	25	7312454
F1 (C6-C10) - BTEX	ug/L				27	<25	<25	25	7312454
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	7315019	<100	<100	<100	100	7315019
F3 (C16-C34 Hydrocarbons)	ug/L	310	200	7315019	550	<200	<200	200	7315019
F4 (C34-C50 Hydrocarbons)	ug/L	300	200	7315019	740	<200	<200	200	7315019
Reached Baseline at C50	ug/L	Yes		7315019	No	Yes	Yes		7315019
Surrogate Recovery (%)									
o-Terphenyl	%	99		7315019	98	96	95		7315019
4-Bromofluorobenzene	%				99	93	94		7312454
D4-1,2-Dichloroethane	%				107	106	103		7312454
D8-Toluene	%				95	99	97		7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV379	PJV380	PJV381		
Sampling Date		2021/04/21	2021/04/21	2021/04/22		
COC Number		796018-25-01	796018-25-01	796018-25-01		
	UNITS	**BH4-20**	**BH5-20**	**BH2017-10**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	0.50	7314912
Volatile Organics						
Acetone (2-Propanone)	ug/L	<10	<10	<10	10	7312454
Benzene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	7312454
Bromomethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Chloroform	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	1.0	7312454
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	7312454
1,2-Dichloroethane	ug/L	2.3	<0.50	<0.50	0.50	7312454
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	0.20	7312454
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	0.30	7312454
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	0.40	7312454
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Hexane	ug/L	<1.0	<1.0	<1.0	1.0	7312454
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	2.0	7312454
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	10	7312454
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	5.0	7312454
Methyl t-butyl ether (MTBE)	ug/L	19	<0.50	3.7	0.50	7312454
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Toluene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PJV379	PJV380	PJV381		
Sampling Date		2021/04/21	2021/04/21	2021/04/22		
COC Number		796018-25-01	796018-25-01	796018-25-01		
	UNITS	**BH4-20**	**BH5-20**	**BH2017-10**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	0.50	7312454
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	0.20	7312454
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	7312454
Total Xylenes	ug/L	<0.20	<0.20	<0.20	0.20	7312454
F1 (C6-C10)	ug/L	<25	<25	<25	25	7312454
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	7312454
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	7315019
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	200	7315019
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	200	7315019
Reached Baseline at C50	ug/L	Yes	Yes	Yes		7315019
Surrogate Recovery (%)						
o-Terphenyl	%	96	96	97		7315019
4-Bromofluorobenzene	%	86	90	89		7312454
D4-1,2-Dichloroethane	%	102	105	98		7312454
D8-Toluene	%	98	93	93		7312454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

TEST SUMMARY

BV Labs ID: PJV374
Sample ID: BH2-20
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV374 Dup
Sample ID: BH2-20
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV375
Sample ID: BHMW3
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV375 Dup
Sample ID: BHMW3
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj

BV Labs ID: PJV376
Sample ID: DUP-1
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
F4G (CCME Hydrocarbons Gravimetric)	BAL	7317128	2021/04/24	2021/04/24	Saumya Modh
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

TEST SUMMARY

BV Labs ID: PJV377
Sample ID: BH1-20
Matrix: Water

Collected: 2021/04/21
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV378
Sample ID: BH3-20
Matrix: Water

Collected: 2021/04/21
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV379
Sample ID: BH4-20
Matrix: Water

Collected: 2021/04/21
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV380
Sample ID: BH5-20
Matrix: Water

Collected: 2021/04/21
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV381
Sample ID: BH2017-10
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7314910	N/A	2021/04/26	Automated Statchk
1,3-Dichloropropene Sum	CALC	7314912	N/A	2021/04/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7315019	2021/04/23	2021/04/23	Ksenia Trofimova

TEST SUMMARY

BV Labs ID: PJV381
Sample ID: BH2017-10
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7315015	2021/04/23	2021/04/23	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

BV Labs ID: PJV382
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2021/04/22
Shipped:
Received: 2021/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7312454	N/A	2021/04/23	Anna Gabrielyan

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.7°C

All 40 ml vials for F1BTEX and VOC analyses contained visible sediment, except for the Trip Blank.
All 100 ml amber glass bottles for F2-F4 and PAH analyses contained visible sediment, which was included in the extraction .

Results relate only to the items tested.

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7312454	AYA	Matrix Spike [PJV374-03]	4-Bromofluorobenzene	2021/04/23		106	%	70 - 130
			D4-1,2-Dichloroethane	2021/04/23		100	%	70 - 130
			D8-Toluene	2021/04/23		101	%	70 - 130
			Acetone (2-Propanone)	2021/04/23		97	%	60 - 140
			Benzene	2021/04/23		92	%	70 - 130
			Bromodichloromethane	2021/04/23		98	%	70 - 130
			Bromoform	2021/04/23		101	%	70 - 130
			Bromomethane	2021/04/23		88	%	60 - 140
			Carbon Tetrachloride	2021/04/23		94	%	70 - 130
			Chlorobenzene	2021/04/23		97	%	70 - 130
			Chloroform	2021/04/23		94	%	70 - 130
			Dibromochloromethane	2021/04/23		97	%	70 - 130
			1,2-Dichlorobenzene	2021/04/23		100	%	70 - 130
			1,3-Dichlorobenzene	2021/04/23		104	%	70 - 130
			1,4-Dichlorobenzene	2021/04/23		104	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/04/23		79	%	60 - 140
			1,1-Dichloroethane	2021/04/23		90	%	70 - 130
			1,2-Dichloroethane	2021/04/23		92	%	70 - 130
			1,1-Dichloroethylene	2021/04/23		94	%	70 - 130
			cis-1,2-Dichloroethylene	2021/04/23		99	%	70 - 130
			trans-1,2-Dichloroethylene	2021/04/23		96	%	70 - 130
			1,2-Dichloropropane	2021/04/23		96	%	70 - 130
			cis-1,3-Dichloropropene	2021/04/23		101	%	70 - 130
			trans-1,3-Dichloropropene	2021/04/23		106	%	70 - 130
			Ethylbenzene	2021/04/23		95	%	70 - 130
			Ethylene Dibromide	2021/04/23		96	%	70 - 130
			Hexane	2021/04/23		94	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/04/23		108	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/04/23		109	%	60 - 140
			Methyl Isobutyl Ketone	2021/04/23		107	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/04/23		92	%	70 - 130
			Styrene	2021/04/23		111	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/04/23		98	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/04/23		99	%	70 - 130
			Tetrachloroethylene	2021/04/23		89	%	70 - 130
			Toluene	2021/04/23		90	%	70 - 130
			1,1,1-Trichloroethane	2021/04/23		99	%	70 - 130
			1,1,2-Trichloroethane	2021/04/23		99	%	70 - 130
			Trichloroethylene	2021/04/23		102	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/04/23		92	%	70 - 130
			Vinyl Chloride	2021/04/23		91	%	70 - 130
			p+m-Xylene	2021/04/23		102	%	70 - 130
			o-Xylene	2021/04/23		96	%	70 - 130
			F1 (C6-C10)	2021/04/23		104	%	60 - 140
7312454	AYA	Spiked Blank	4-Bromofluorobenzene	2021/04/23		105	%	70 - 130
			D4-1,2-Dichloroethane	2021/04/23		95	%	70 - 130
			D8-Toluene	2021/04/23		102	%	70 - 130
			Acetone (2-Propanone)	2021/04/23		89	%	60 - 140
			Benzene	2021/04/23		87	%	70 - 130
			Bromodichloromethane	2021/04/23		91	%	70 - 130
			Bromoform	2021/04/23		93	%	70 - 130
			Bromomethane	2021/04/23		88	%	60 - 140
			Carbon Tetrachloride	2021/04/23		91	%	70 - 130
			Chlorobenzene	2021/04/23		92	%	70 - 130

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chloroform	2021/04/23		89	%	70 - 130
			Dibromochloromethane	2021/04/23		90	%	70 - 130
			1,2-Dichlorobenzene	2021/04/23		93	%	70 - 130
			1,3-Dichlorobenzene	2021/04/23		98	%	70 - 130
			1,4-Dichlorobenzene	2021/04/23		98	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/04/23		82	%	60 - 140
			1,1-Dichloroethane	2021/04/23		87	%	70 - 130
			1,2-Dichloroethane	2021/04/23		86	%	70 - 130
			1,1-Dichloroethylene	2021/04/23		91	%	70 - 130
			cis-1,2-Dichloroethylene	2021/04/23		93	%	70 - 130
			trans-1,2-Dichloroethylene	2021/04/23		91	%	70 - 130
			1,2-Dichloropropane	2021/04/23		90	%	70 - 130
			cis-1,3-Dichloropropene	2021/04/23		90	%	70 - 130
			trans-1,3-Dichloropropene	2021/04/23		96	%	70 - 130
			Ethylbenzene	2021/04/23		91	%	70 - 130
			Ethylene Dibromide	2021/04/23		89	%	70 - 130
			Hexane	2021/04/23		93	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/04/23		102	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/04/23		98	%	60 - 140
			Methyl Isobutyl Ketone	2021/04/23		96	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/04/23		88	%	70 - 130
			Styrene	2021/04/23		105	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/04/23		92	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/04/23		89	%	70 - 130
			Tetrachloroethylene	2021/04/23		86	%	70 - 130
			Toluene	2021/04/23		88	%	70 - 130
			1,1,1-Trichloroethane	2021/04/23		96	%	70 - 130
			1,1,2-Trichloroethane	2021/04/23		94	%	70 - 130
			Trichloroethylene	2021/04/23		97	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/04/23		90	%	70 - 130
			Vinyl Chloride	2021/04/23		90	%	70 - 130
			p+m-Xylene	2021/04/23		98	%	70 - 130
			o-Xylene	2021/04/23		93	%	70 - 130
			F1 (C6-C10)	2021/04/23		100	%	60 - 140
7312454	AYA	Method Blank	4-Bromofluorobenzene	2021/04/23		94	%	70 - 130
			D4-1,2-Dichloroethane	2021/04/23		99	%	70 - 130
			D8-Toluene	2021/04/23		99	%	70 - 130
			Acetone (2-Propanone)	2021/04/23	<10		ug/L	
			Benzene	2021/04/23	<0.20		ug/L	
			Bromodichloromethane	2021/04/23	<0.50		ug/L	
			Bromoform	2021/04/23	<1.0		ug/L	
			Bromomethane	2021/04/23	<0.50		ug/L	
			Carbon Tetrachloride	2021/04/23	<0.20		ug/L	
			Chlorobenzene	2021/04/23	<0.20		ug/L	
			Chloroform	2021/04/23	<0.20		ug/L	
			Dibromochloromethane	2021/04/23	<0.50		ug/L	
			1,2-Dichlorobenzene	2021/04/23	<0.50		ug/L	
			1,3-Dichlorobenzene	2021/04/23	<0.50		ug/L	
			1,4-Dichlorobenzene	2021/04/23	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2021/04/23	<1.0		ug/L	
			1,1-Dichloroethane	2021/04/23	<0.20		ug/L	
			1,2-Dichloroethane	2021/04/23	<0.50		ug/L	
			1,1-Dichloroethylene	2021/04/23	<0.20		ug/L	
			cis-1,2-Dichloroethylene	2021/04/23	<0.50		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			trans-1,2-Dichloroethylene	2021/04/23	<0.50		ug/L	
			1,2-Dichloropropane	2021/04/23	<0.20		ug/L	
			cis-1,3-Dichloropropene	2021/04/23	<0.30		ug/L	
			trans-1,3-Dichloropropene	2021/04/23	<0.40		ug/L	
			Ethylbenzene	2021/04/23	<0.20		ug/L	
			Ethylene Dibromide	2021/04/23	<0.20		ug/L	
			Hexane	2021/04/23	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2021/04/23	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2021/04/23	<10		ug/L	
			Methyl Isobutyl Ketone	2021/04/23	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2021/04/23	<0.50		ug/L	
			Styrene	2021/04/23	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2021/04/23	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2021/04/23	<0.50		ug/L	
			Tetrachloroethylene	2021/04/23	<0.20		ug/L	
			Toluene	2021/04/23	<0.20		ug/L	
			1,1,1-Trichloroethane	2021/04/23	<0.20		ug/L	
			1,1,2-Trichloroethane	2021/04/23	<0.50		ug/L	
			Trichloroethylene	2021/04/23	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2021/04/23	<0.50		ug/L	
			Vinyl Chloride	2021/04/23	<0.20		ug/L	
			p+m-Xylene	2021/04/23	<0.20		ug/L	
			o-Xylene	2021/04/23	<0.20		ug/L	
			Total Xylenes	2021/04/23	<0.20		ug/L	
			F1 (C6-C10)	2021/04/23	<25		ug/L	
			F1 (C6-C10) - BTEX	2021/04/23	<25		ug/L	
7312454	AYA	RPD [PJV374-03]	Acetone (2-Propanone)	2021/04/23	NC		%	30
			Benzene	2021/04/23	NC		%	30
			Bromodichloromethane	2021/04/23	NC		%	30
			Bromoform	2021/04/23	NC		%	30
			Bromomethane	2021/04/23	NC		%	30
			Carbon Tetrachloride	2021/04/23	NC		%	30
			Chlorobenzene	2021/04/23	NC		%	30
			Chloroform	2021/04/23	NC		%	30
			Dibromochloromethane	2021/04/23	NC		%	30
			1,2-Dichlorobenzene	2021/04/23	NC		%	30
			1,3-Dichlorobenzene	2021/04/23	NC		%	30
			1,4-Dichlorobenzene	2021/04/23	NC		%	30
			Dichlorodifluoromethane (FREON 12)	2021/04/23	NC		%	30
			1,1-Dichloroethane	2021/04/23	NC		%	30
			1,2-Dichloroethane	2021/04/23	NC		%	30
			1,1-Dichloroethylene	2021/04/23	NC		%	30
			cis-1,2-Dichloroethylene	2021/04/23	NC		%	30
			trans-1,2-Dichloroethylene	2021/04/23	NC		%	30
			1,2-Dichloropropane	2021/04/23	NC		%	30
			cis-1,3-Dichloropropene	2021/04/23	NC		%	30
			trans-1,3-Dichloropropene	2021/04/23	NC		%	30
			Ethylbenzene	2021/04/23	NC		%	30
			Ethylene Dibromide	2021/04/23	NC		%	30
			Hexane	2021/04/23	NC		%	30
			Methylene Chloride(Dichloromethane)	2021/04/23	NC		%	30
			Methyl Ethyl Ketone (2-Butanone)	2021/04/23	NC		%	30
			Methyl Isobutyl Ketone	2021/04/23	NC		%	30
			Methyl t-butyl ether (MTBE)	2021/04/23	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Styrene	2021/04/23	NC		%	30
			1,1,1,2-Tetrachloroethane	2021/04/23	NC		%	30
			1,1,2,2-Tetrachloroethane	2021/04/23	NC		%	30
			Tetrachloroethylene	2021/04/23	NC		%	30
			Toluene	2021/04/23	NC		%	30
			1,1,1-Trichloroethane	2021/04/23	NC		%	30
			1,1,2-Trichloroethane	2021/04/23	NC		%	30
			Trichloroethylene	2021/04/23	NC		%	30
			Trichlorofluoromethane (FREON 11)	2021/04/23	NC		%	30
			Vinyl Chloride	2021/04/23	NC		%	30
			p+m-Xylene	2021/04/23	NC		%	30
			o-Xylene	2021/04/23	NC		%	30
			Total Xylenes	2021/04/23	NC		%	30
			F1 (C6-C10)	2021/04/23	NC		%	30
			F1 (C6-C10) - BTEX	2021/04/23	NC		%	30
7315015	RAJ	Matrix Spike [PJV374-02]	D10-Anthracene	2021/04/23		103	%	50 - 130
			D14-Terphenyl (FS)	2021/04/23		89	%	50 - 130
			D8-Acenaphthylene	2021/04/23		102	%	50 - 130
			Acenaphthene	2021/04/23		108	%	50 - 130
			Acenaphthylene	2021/04/23		103	%	50 - 130
			Anthracene	2021/04/23		105	%	50 - 130
			Benzo(a)anthracene	2021/04/23		110	%	50 - 130
			Benzo(a)pyrene	2021/04/23		97	%	50 - 130
			Benzo(b/j)fluoranthene	2021/04/23		111	%	50 - 130
			Benzo(g,h,i)perylene	2021/04/23		113	%	50 - 130
			Benzo(k)fluoranthene	2021/04/23		104	%	50 - 130
			Chrysene	2021/04/23		114	%	50 - 130
			Dibenzo(a,h)anthracene	2021/04/23		106	%	50 - 130
			Fluoranthene	2021/04/23		113	%	50 - 130
			Fluorene	2021/04/23		106	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/04/23		115	%	50 - 130
			1-Methylnaphthalene	2021/04/23		109	%	50 - 130
			2-Methylnaphthalene	2021/04/23		107	%	50 - 130
			Naphthalene	2021/04/23		103	%	50 - 130
			Phenanthrene	2021/04/23		115	%	50 - 130
			Pyrene	2021/04/23		113	%	50 - 130
7315015	RAJ	Spiked Blank	D10-Anthracene	2021/04/23		103	%	50 - 130
			D14-Terphenyl (FS)	2021/04/23		96	%	50 - 130
			D8-Acenaphthylene	2021/04/23		98	%	50 - 130
			Acenaphthene	2021/04/23		109	%	50 - 130
			Acenaphthylene	2021/04/23		101	%	50 - 130
			Anthracene	2021/04/23		106	%	50 - 130
			Benzo(a)anthracene	2021/04/23		108	%	50 - 130
			Benzo(a)pyrene	2021/04/23		99	%	50 - 130
			Benzo(b/j)fluoranthene	2021/04/23		116	%	50 - 130
			Benzo(g,h,i)perylene	2021/04/23		112	%	50 - 130
			Benzo(k)fluoranthene	2021/04/23		109	%	50 - 130
			Chrysene	2021/04/23		118	%	50 - 130
			Dibenzo(a,h)anthracene	2021/04/23		104	%	50 - 130
			Fluoranthene	2021/04/23		116	%	50 - 130
			Fluorene	2021/04/23		107	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/04/23		115	%	50 - 130
			1-Methylnaphthalene	2021/04/23		105	%	50 - 130
			2-Methylnaphthalene	2021/04/23		103	%	50 - 130

BV Labs Job #: C1A7975
Report Date: 2021/04/26

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: M.K

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Naphthalene	2021/04/23		101	%	50 - 130
			Phenanthrene	2021/04/23		116	%	50 - 130
			Pyrene	2021/04/23		116	%	50 - 130
7315015	RAJ	Method Blank	D10-Anthracene	2021/04/23		96	%	50 - 130
			D14-Terphenyl (FS)	2021/04/23		89	%	50 - 130
			D8-Acenaphthylene	2021/04/23		90	%	50 - 130
			Acenaphthene	2021/04/23	<0.050		ug/L	
			Acenaphthylene	2021/04/23	<0.050		ug/L	
			Anthracene	2021/04/23	<0.050		ug/L	
			Benzo(a)anthracene	2021/04/23	<0.050		ug/L	
			Benzo(a)pyrene	2021/04/23	<0.0090		ug/L	
			Benzo(b/j)fluoranthene	2021/04/23	<0.050		ug/L	
			Benzo(g,h,i)perylene	2021/04/23	<0.050		ug/L	
			Benzo(k)fluoranthene	2021/04/23	<0.050		ug/L	
			Chrysene	2021/04/23	<0.050		ug/L	
			Dibenzo(a,h)anthracene	2021/04/23	<0.050		ug/L	
			Fluoranthene	2021/04/23	<0.050		ug/L	
			Fluorene	2021/04/23	<0.050		ug/L	
			Indeno(1,2,3-cd)pyrene	2021/04/23	<0.050		ug/L	
			1-Methylnaphthalene	2021/04/23	<0.050		ug/L	
			2-Methylnaphthalene	2021/04/23	<0.050		ug/L	
			Naphthalene	2021/04/23	<0.050		ug/L	
			Phenanthrene	2021/04/23	<0.030		ug/L	
			Pyrene	2021/04/23	<0.050		ug/L	
7315015	RAJ	RPD [PJV375-02]	Acenaphthene	2021/04/23	NC		%	30
			Acenaphthylene	2021/04/23	NC		%	30
			Anthracene	2021/04/23	NC		%	30
			Benzo(a)anthracene	2021/04/23	NC		%	30
			Benzo(a)pyrene	2021/04/23	19		%	30
			Benzo(b/j)fluoranthene	2021/04/23	25		%	30
			Benzo(g,h,i)perylene	2021/04/23	4.3		%	30
			Benzo(k)fluoranthene	2021/04/23	NC		%	30
			Chrysene	2021/04/23	NC		%	30
			Dibenzo(a,h)anthracene	2021/04/23	NC		%	30
			Fluoranthene	2021/04/23	19		%	30
			Fluorene	2021/04/23	NC		%	30
			Indeno(1,2,3-cd)pyrene	2021/04/23	NC		%	30
			1-Methylnaphthalene	2021/04/23	23		%	30
			2-Methylnaphthalene	2021/04/23	23		%	30
			Naphthalene	2021/04/23	14		%	30
			Phenanthrene	2021/04/23	25		%	30
			Pyrene	2021/04/23	23		%	30
7315019	KTR	Matrix Spike [PJV376-02]	o-Terphenyl	2021/04/23		100	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/04/23		87	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/04/23		NC	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/04/23		NC	%	60 - 130
7315019	KTR	Spiked Blank	o-Terphenyl	2021/04/23		101	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/04/23		111	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/04/23		116	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/04/23		116	%	60 - 130
7315019	KTR	Method Blank	o-Terphenyl	2021/04/23		95	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/04/23	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/04/23	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/04/23	<200		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7315019	KTR	RPD [PJV375-02]	F2 (C10-C16 Hydrocarbons)	2021/04/23	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/04/23	24		%	30
			F4 (C34-C50 Hydrocarbons)	2021/04/23	NC		%	30
7317128	SA5	Spiked Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2021/04/24		93	%	65 - 135
7317128	SA5	RPD	F4G-sg (Grav. Heavy Hydrocarbons)	2021/04/24	0		%	20
7317128	SA5	Method Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2021/04/24	<500		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Anastassia Hamanov, Scientific Specialist

22-Apr-21 12:00
Antonella Brasil
C1A7975
J_L ENV-1324

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5
Page 1 of 1

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

Bottle Types

			Inorganics						Organics											Hydrocarbons							Volatiles				Other
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/Herb 1 of 2	Pest/Herb 2 of 2	SVOC/ABN 1 of 2	SVOC/ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin/Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	BH2-20	TS																												
2	BHMW3	↓																												
3	Dup-1	↓																												
4	BH1-20	↓																												
5	BH3-20	↓																												
6	BH4-20	↓																												
7	BH5-20	↓																												
8	BH2017-10	↓																												
9																														
10																														

Comments:

Legend:

P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print) Jzyn

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

RUSH!

22-Apr-21 12:00
Antonella Brasil
C1A7975

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#982 Pinchin Ltd	Company Name		Quotation #	A70927
Attention	Accounts Payable	Attention	Matt, Ryan, Mike	P.O. #	
Address	1 Hines Road Suite 200	Address		Project	285722.003
	Kanata ON K2K 3C7			Project Name	
Tel	(613) 592-3387 Fax (613) 592-5897	Tel	Fax	Site #	
Email	ap@pinchin.com	Email	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By	M. Kosiw

J L ENV-1324

Bottle Order #: 796018

COC #: C#796018-25-01

Project Manager: Antonella Brasil

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☒ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☒ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☒ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality	
☐ Table	☐ PWQO ☐ Reg 406 Table	
	☐ Other	

Include Criteria on Certificate of Analysis (Y/N)? N

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: ASAP (April 23) Time Required:
Rush Confirmation Number: ABR042120 (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 ICPMS Metals (GW)	O Reg 153 PHCs BTEX/F1-F4 (GW)	O Reg 153 VOCs by HS (GW)	O Reg 153 PAHs (GW)	pH CaCl2 EXTRACT	Sieve, 75um					# of Bottles	Comments
1		BH2-20	April 22, 2021	AM	GW			X	X	X							5	
2		BHMW3	↓	↓	↓			X	X	X							5	
3		Dup-1	↓	↓	↓			X	X	X							5	
4		BH1-20	April 21, 2021	PM	↓			X	X	X							5	
5		BH3-20	↓	↓	↓			X	X	X							5	
6		BH4-20	↓	↓	↓			X	X	X							5	ON Ice pack
7		BH5-20	↓	↓	↓			X	X	X							5	
8		BH2017-10	April 22 2021	AM	↓			X	X	X							6	
9		Trip Blank	↓	↓	↓			X	X								2	VOCs + F1
10																		

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only			
Mike Kosiw	April 22 2021	11:30 Am	[signature]	2021/04/22	12:00		Time Sensitive	Temperature (°C) on Recei	Custody Seal Present	Yes
			[signature]	2021/04/23	08:00			10, 10, 9	Intact	✓

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

4, 3, 4
ON Ice

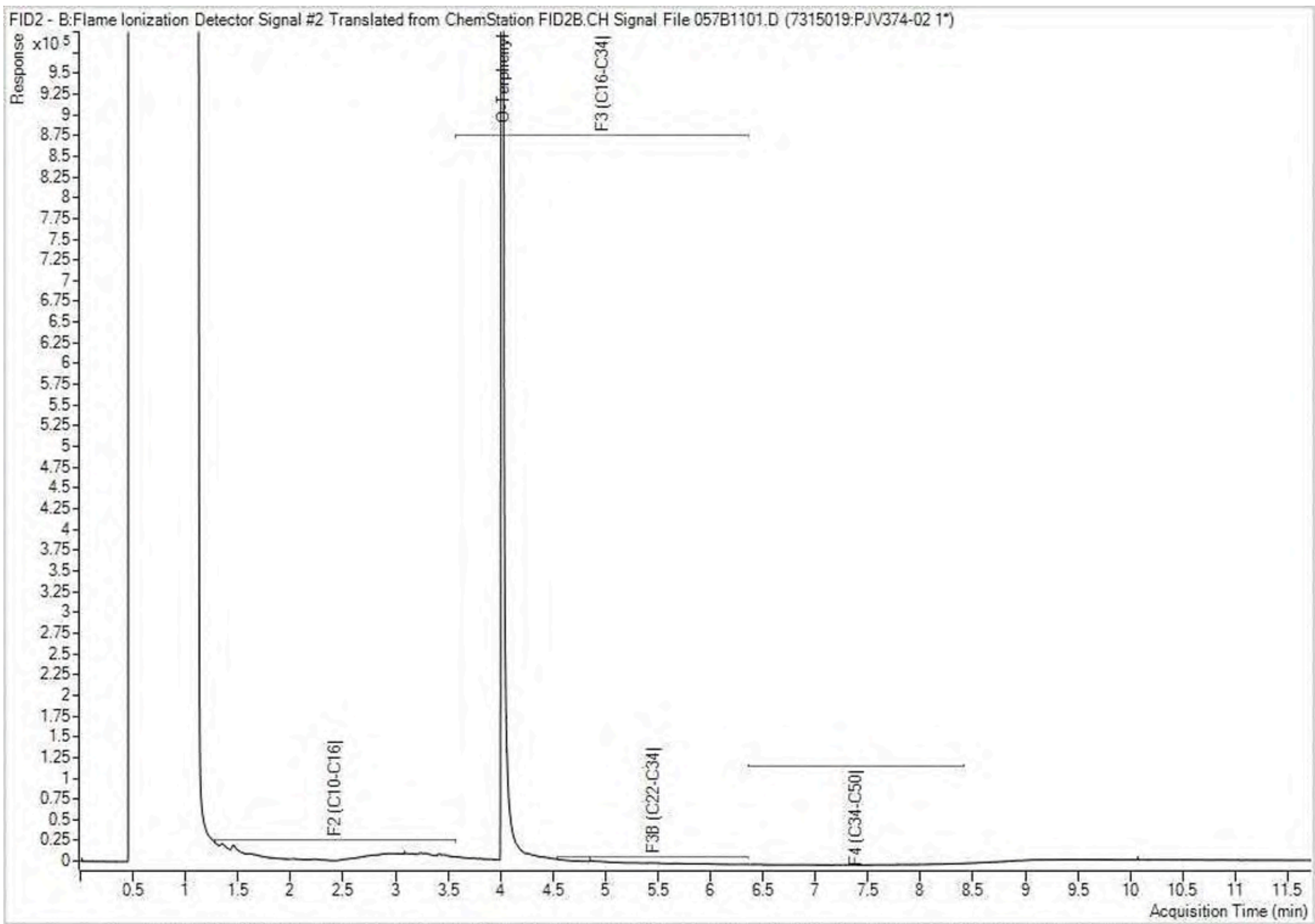
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV374

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH2-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

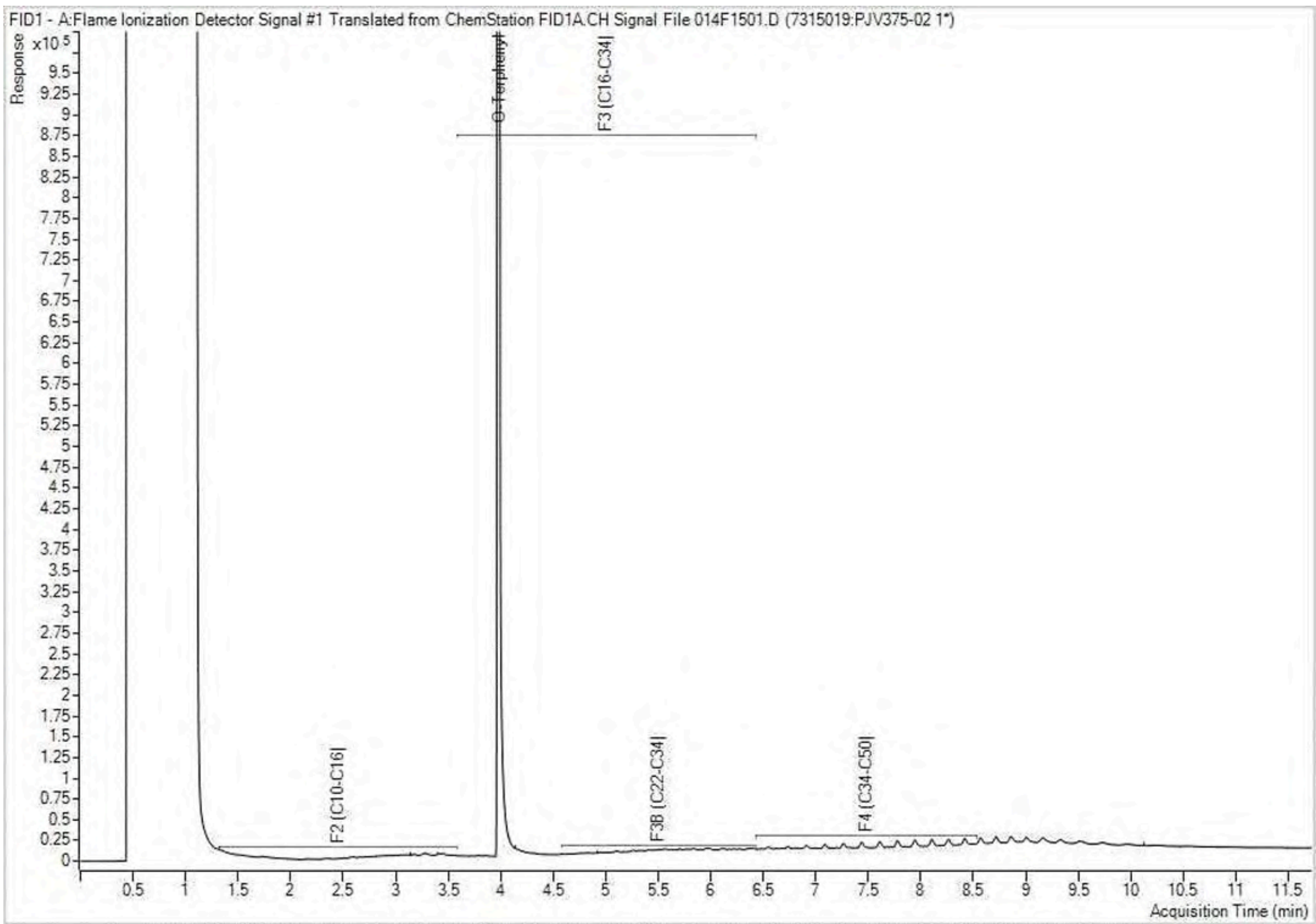


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV375

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

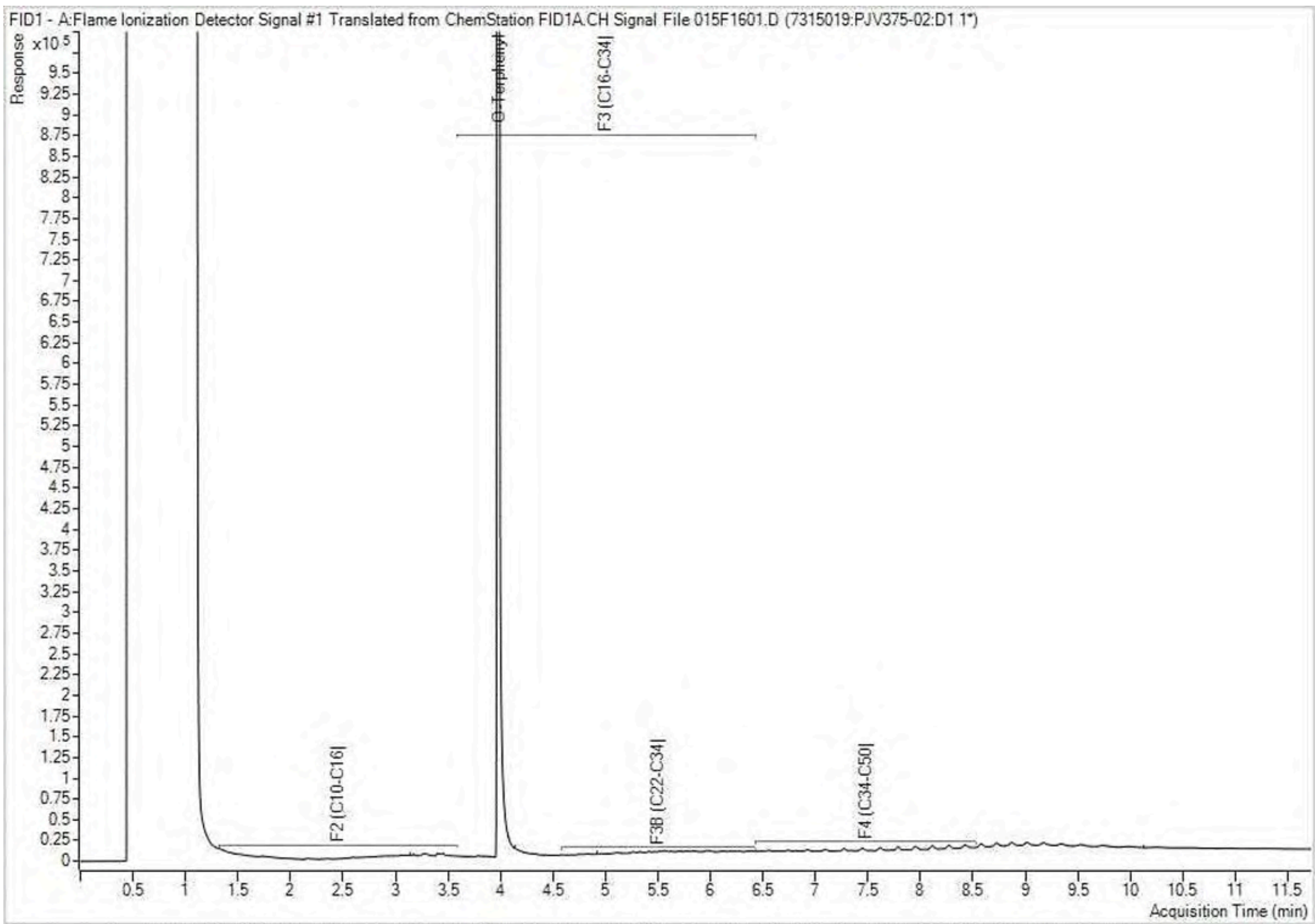


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV375 Lab-Dup

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

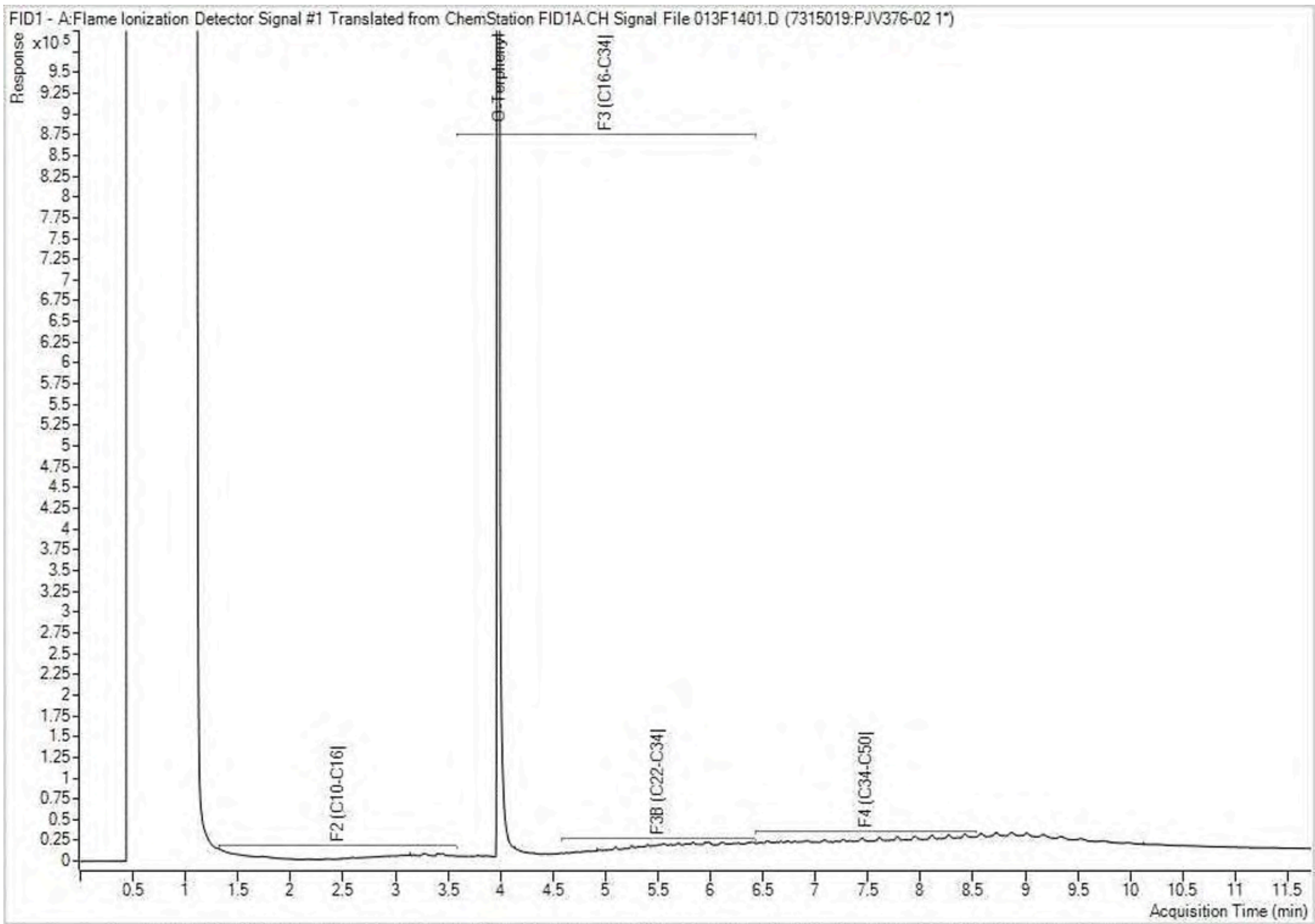


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV376

Pinchin Ltd
Client Project #: 285722.003
Client ID: DUP-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

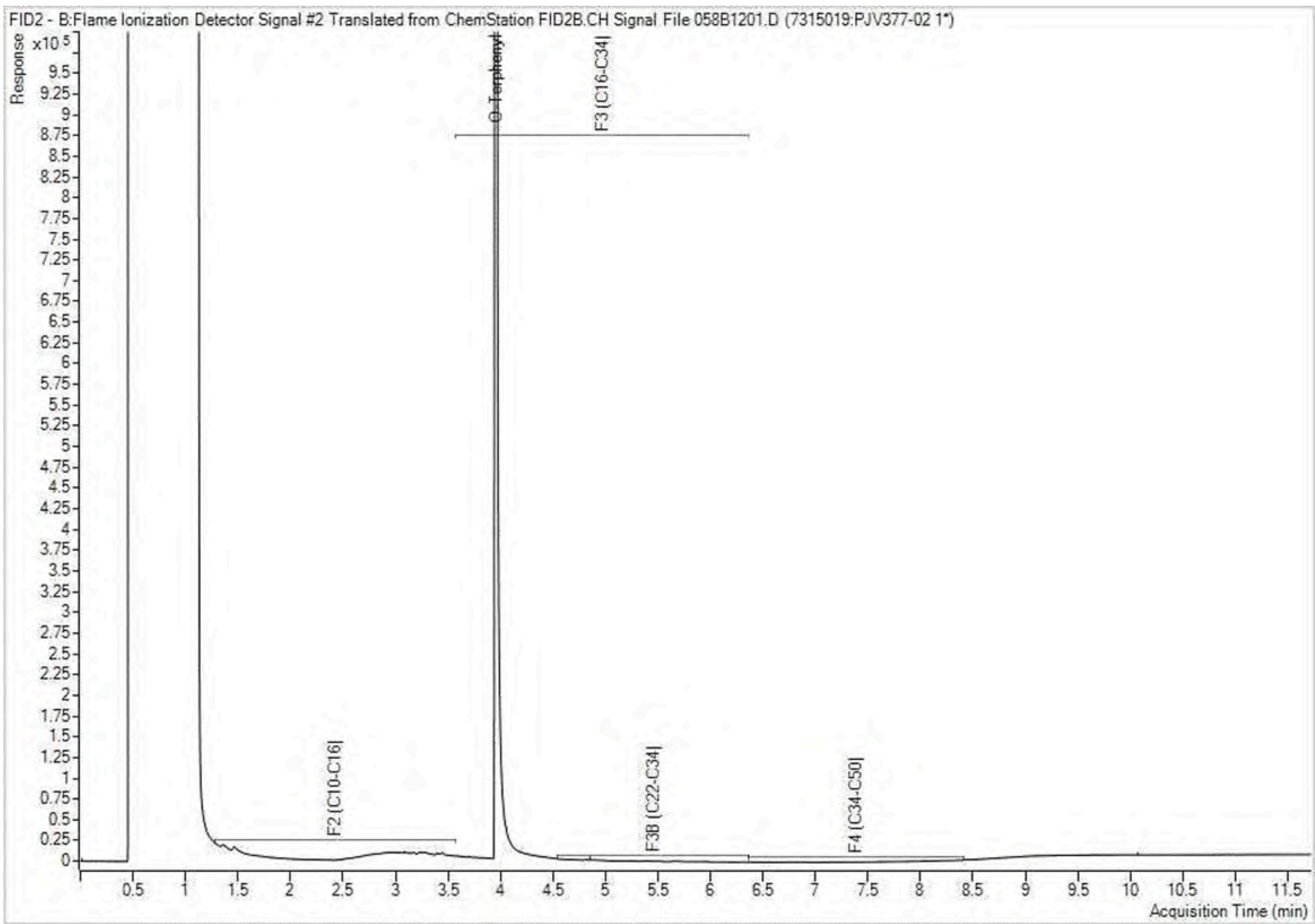


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV377

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH1-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

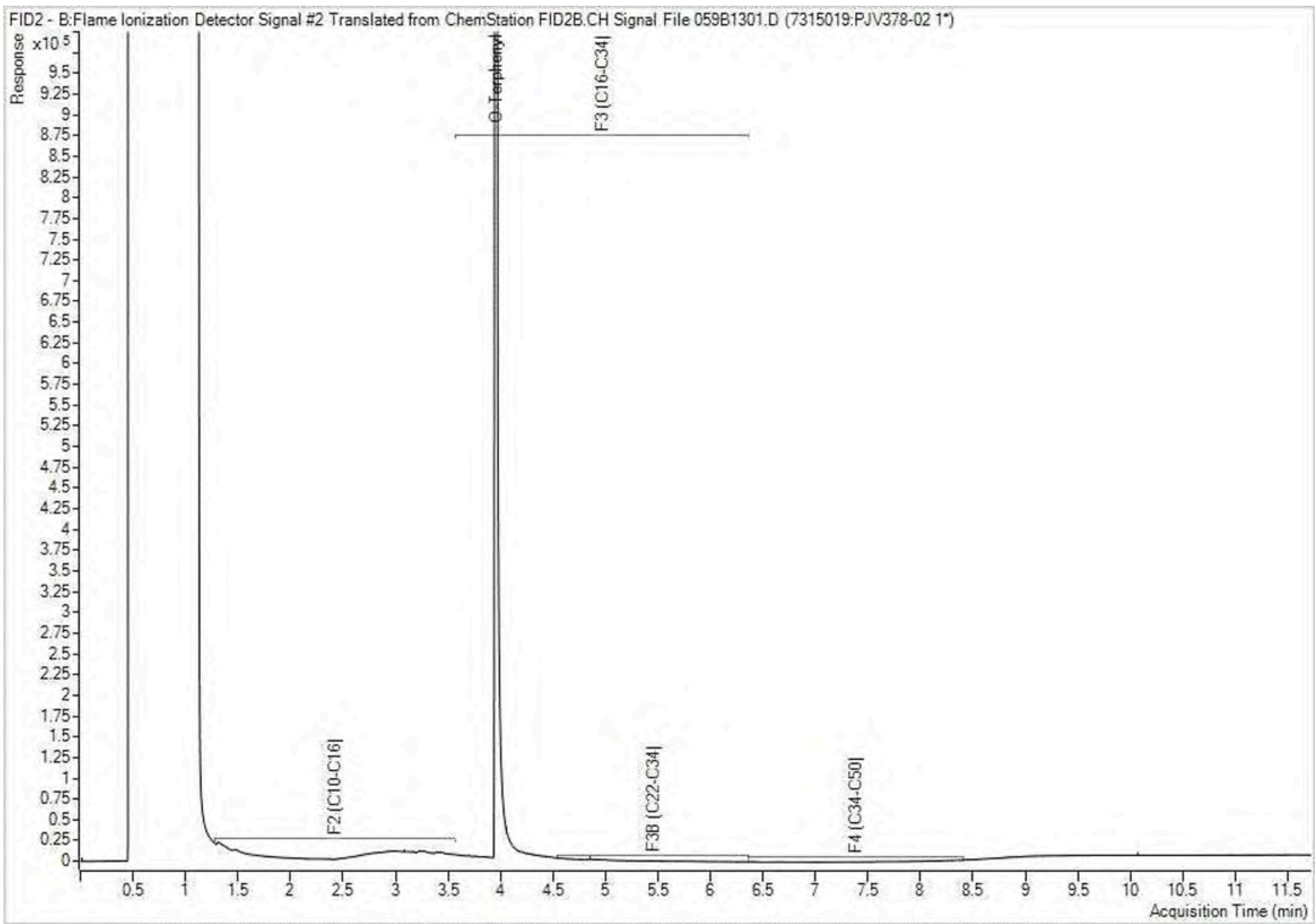


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV378

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH3-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

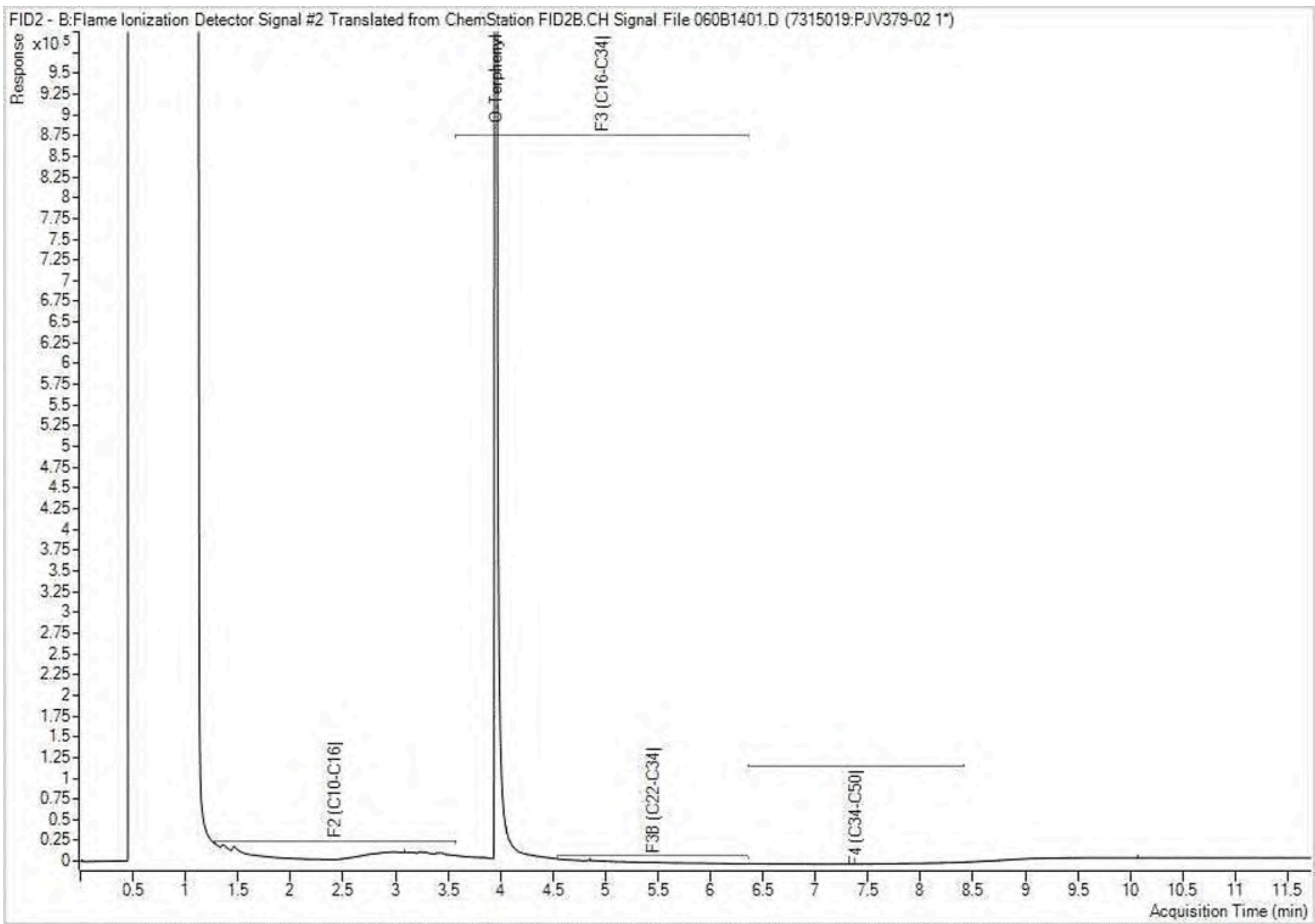


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV379

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH4-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

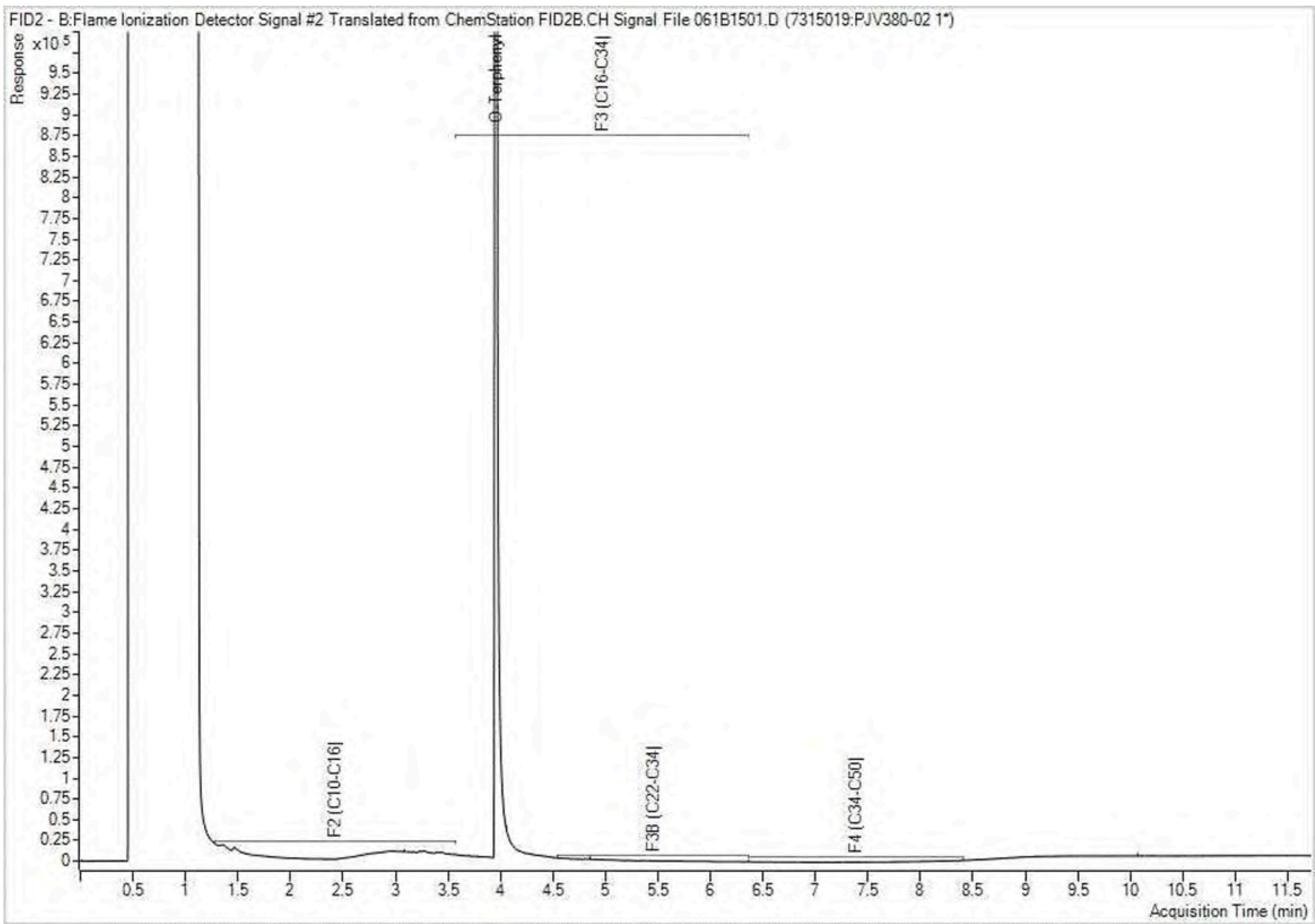


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV380

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH5-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

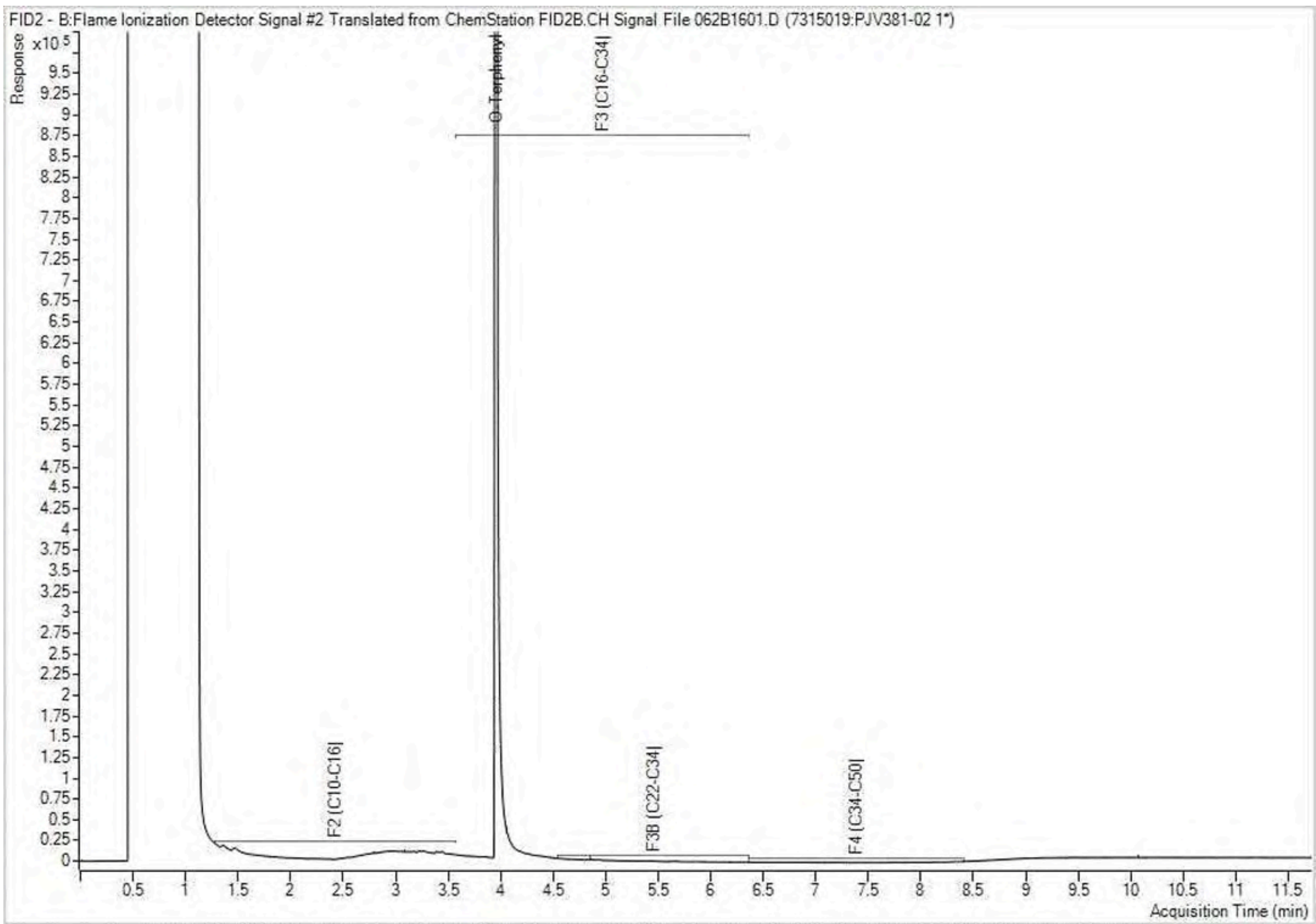


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1A7975
Report Date: 2021/04/26
BV Labs Sample: PJV381

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH2017-10

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Your C.O.C. #: 823853-01-01, 823853-02-01, 823853-03-01

Report Date: 2021/05/06
Report #: R6624111
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1B6083
Received: 2021/04/29, 12:45

Sample Matrix: Soil
Samples Received: 27

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	18	N/A	2021/05/05	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum (1)	7	N/A	2021/05/06	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	10	N/A	2021/05/06		EPA 8260C m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	15	N/A	2021/05/04	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	24	2021/05/03	2021/05/04	CAM SOP-00316	CCME CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	1	2021/05/04	2021/05/05	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	3	2021/05/06	2021/05/06	CAM SOP-00316	CCME PHC-CWS m
Acid Extractable Metals by ICPMS (1)	12	2021/05/03	2021/05/05	CAM SOP-00447	EPA 6020B m
Moisture (1)	27	N/A	2021/04/30	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	25	2021/05/03	2021/05/04	CAM SOP-00318	EPA 8270D m
pH CaCl2 EXTRACT (1)	10	2021/05/05	2021/05/05	CAM SOP-00413	EPA 9045 D m
Sieve, 75um (1)	10	N/A	2021/05/04	CAM SOP-00467	ASTM D1140 -17 m
Volatile Organic Compounds and F1 PHCs (1)	10	N/A	2021/05/06	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Your Project #: 285722.003

Attention: Matt, Ryan, Mike

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Your C.O.C. #: 823853-01-01, 823853-02-01, 823853-03-01

Report Date: 2021/05/06
Report #: R6624111
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1B6083
Received: 2021/04/29, 12:45

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga
(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		PLN551	PLN553	PLN555	PLN557	PLN559		
Sampling Date		2021/04/26	2021/04/26	2021/04/26	2021/04/26	2021/04/26		
COC Number		823853-01-01	823853-01-01	823853-01-01	823853-01-01	823853-01-01		
	UNITS	**BH101 SS-2**	**BH102 SS-2**	**BH103 SS-2**	**BH104 SS-4**	**BH105 SS-2**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	1.0	1.5	0.38	3.8	1.1	0.20	7330536
Acid Extractable Arsenic (As)	ug/g	12	23	5.1	16	7.9	1.0	7330536
Acid Extractable Barium (Ba)	ug/g	300	360	40	150	100	0.50	7330536
Acid Extractable Beryllium (Be)	ug/g	0.71	1.3	0.33	0.33	0.39	0.20	7330536
Acid Extractable Boron (B)	ug/g	7.7	11	11	12	9.0	5.0	7330536
Acid Extractable Cadmium (Cd)	ug/g	0.61	0.48	0.15	0.76	0.15	0.10	7330536
Acid Extractable Chromium (Cr)	ug/g	84	77	30	26	19	1.0	7330536
Acid Extractable Cobalt (Co)	ug/g	17	16	6.8	13	6.6	0.10	7330536
Acid Extractable Copper (Cu)	ug/g	120	66	16	130	19	0.50	7330536
Acid Extractable Lead (Pb)	ug/g	90	150	51	500	45	1.0	7330536
Acid Extractable Molybdenum (Mo)	ug/g	1.6	2.4	2.8	2.2	0.92	0.50	7330536
Acid Extractable Nickel (Ni)	ug/g	49	48	18	23	15	0.50	7330536
Acid Extractable Selenium (Se)	ug/g	0.96	2.5	<0.50	0.53	<0.50	0.50	7330536
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	<0.20	1.2	<0.20	0.20	7330536
Acid Extractable Thallium (Tl)	ug/g	0.36	0.53	0.33	0.11	0.15	0.050	7330536
Acid Extractable Uranium (U)	ug/g	0.82	0.99	0.58	0.46	0.51	0.050	7330536
Acid Extractable Vanadium (V)	ug/g	79	75	31	25	28	5.0	7330536
Acid Extractable Zinc (Zn)	ug/g	210	280	65	200	56	5.0	7330536
Acid Extractable Mercury (Hg)	ug/g	0.26	0.23	<0.050	0.18	0.079	0.050	7330536

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		PLN575	PLN577	PLN578	PLN580	PLN637		
Sampling Date		2021/04/26	2021/04/26	2021/04/26	2021/04/26	2021/04/27		
COC Number		823853-02-01	823853-02-01	823853-02-01	823853-02-01	823853-03-01		
	UNITS	BH106 SS-4	BH107 SS-3	DUP-1	BHMW108 SS-2	BHMW12 SS-3	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7330536
Acid Extractable Arsenic (As)	ug/g	1.8	2.0	1.5	<1.0	1.6	1.0	7330536
Acid Extractable Barium (Ba)	ug/g	43	43	47	31	430	0.50	7330536
Acid Extractable Beryllium (Be)	ug/g	0.25	0.32	0.25	0.20	0.92	0.20	7330536
Acid Extractable Boron (B)	ug/g	7.0	9.7	7.7	5.4	8.8	5.0	7330536
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	<0.10	0.11	0.10	7330536
Acid Extractable Chromium (Cr)	ug/g	11	16	22	15	110	1.0	7330536
Acid Extractable Cobalt (Co)	ug/g	3.6	4.8	5.2	4.1	23	0.10	7330536
Acid Extractable Copper (Cu)	ug/g	11	14	14	6.0	50	0.50	7330536
Acid Extractable Lead (Pb)	ug/g	4.3	4.0	4.1	3.9	7.6	1.0	7330536
Acid Extractable Molybdenum (Mo)	ug/g	1.1	0.76	1.9	<0.50	<0.50	0.50	7330536
Acid Extractable Nickel (Ni)	ug/g	8.1	11	12	8.3	63	0.50	7330536
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7330536
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7330536
Acid Extractable Thallium (Tl)	ug/g	0.075	0.11	0.096	0.081	0.43	0.050	7330536
Acid Extractable Uranium (U)	ug/g	0.50	0.39	0.47	0.49	0.58	0.050	7330536
Acid Extractable Vanadium (V)	ug/g	20	36	34	46	97	5.0	7330536
Acid Extractable Zinc (Zn)	ug/g	16	21	19	19	130	5.0	7330536
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7330536

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		PLN640	PLN642		
Sampling Date		2021/04/28	2021/04/28		
COC Number		823853-03-01	823853-03-01		
	UNITS	BH113 SS-7	BHMW115 SS-7	RDL	QC Batch
Metals					
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	0.20	7330536
Acid Extractable Arsenic (As)	ug/g	<1.0	<1.0	1.0	7330536
Acid Extractable Barium (Ba)	ug/g	140	180	0.50	7330536
Acid Extractable Beryllium (Be)	ug/g	0.57	0.57	0.20	7330536
Acid Extractable Boron (B)	ug/g	6.5	5.5	5.0	7330536
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	0.10	7330536
Acid Extractable Chromium (Cr)	ug/g	33	40	1.0	7330536
Acid Extractable Cobalt (Co)	ug/g	9.8	11	0.10	7330536
Acid Extractable Copper (Cu)	ug/g	25	24	0.50	7330536
Acid Extractable Lead (Pb)	ug/g	5.0	6.3	1.0	7330536
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	0.50	7330536
Acid Extractable Nickel (Ni)	ug/g	23	24	0.50	7330536
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	0.50	7330536
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	0.20	7330536
Acid Extractable Thallium (Tl)	ug/g	0.23	0.26	0.050	7330536
Acid Extractable Uranium (U)	ug/g	0.53	0.57	0.050	7330536
Acid Extractable Vanadium (V)	ug/g	56	64	5.0	7330536
Acid Extractable Zinc (Zn)	ug/g	52	66	5.0	7330536
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	0.050	7330536

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PAHS (SOIL)

BV Labs ID		PLN551			PLN552		PLN553		
Sampling Date		2021/04/26			2021/04/26		2021/04/26		
COC Number		823853-01-01			823853-01-01		823853-01-01		
	UNITS	BH101 SS-2	RDL	QC Batch	BH101 SS-6	QC Batch	BH102 SS-2	RDL	QC Batch
Inorganics									
Moisture	%	24	1.0	7328936	38	7328861	19	1.0	7328936
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	0.44	0.21	7327390	<0.0071	7327390	0.084	0.0071	7327390
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	0.43	0.050	7331295	<0.0050	7331308	0.046	0.0050	7331295
Acenaphthylene	ug/g	0.18	0.050	7331295	<0.0050	7331308	0.073	0.0050	7331295
Anthracene	ug/g	0.43	0.050	7331295	<0.0050	7331308	0.18	0.0050	7331295
Benzo(a)anthracene	ug/g	1.2	0.050	7331295	<0.0050	7331308	0.49	0.0050	7331295
Benzo(a)pyrene	ug/g	1.3	0.050	7331295	<0.0050	7331308	0.50	0.0050	7331295
Benzo(b/j)fluoranthene	ug/g	1.8	0.050	7331295	<0.0050	7331308	0.63	0.0050	7331295
Benzo(g,h,i)perylene	ug/g	0.96	0.050	7331295	<0.0050	7331308	0.35	0.0050	7331295
Benzo(k)fluoranthene	ug/g	0.68	0.050	7331295	<0.0050	7331308	0.23	0.0050	7331295
Chrysene	ug/g	1.0	0.050	7331295	<0.0050	7331308	0.43	0.0050	7331295
Dibenzo(a,h)anthracene	ug/g	0.25	0.050	7331295	<0.0050	7331308	0.089	0.0050	7331295
Fluoranthene	ug/g	2.6	0.050	7331295	<0.0050	7331308	1.1	0.0050	7331295
Fluorene	ug/g	0.35	0.050	7331295	<0.0050	7331308	0.11	0.0050	7331295
Indeno(1,2,3-cd)pyrene	ug/g	0.98	0.050	7331295	<0.0050	7331308	0.35	0.0050	7331295
1-Methylnaphthalene	ug/g	0.44	0.050	7331295	<0.0050	7331308	0.046	0.0050	7331295
2-Methylnaphthalene	ug/g	<0.20 (1)	0.20	7331295	<0.0050	7331308	0.038	0.0050	7331295
Naphthalene	ug/g	<0.30 (1)	0.30	7331295	<0.0050	7331308	0.026	0.0050	7331295
Phenanthrene	ug/g	1.7	0.050	7331295	<0.0050	7331308	0.75	0.0050	7331295
Pyrene	ug/g	2.2	0.050	7331295	<0.0050	7331308	1.0	0.0050	7331295
Surrogate Recovery (%)									
D10-Anthracene	%	99		7331295	90	7331308	82		7331295
D14-Terphenyl (FS)	%	93		7331295	89	7331308	93		7331295
D8-Acenaphthylene	%	95		7331295	83	7331308	77		7331295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) DL was raised due to matrix interference.

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (SOIL)

BV Labs ID		PLN554			PLN555			PLN556		
Sampling Date		2021/04/26			2021/04/26			2021/04/26		
COC Number		823853-01-01			823853-01-01			823853-01-01		
	UNITS	BH102 SS-6	RDL	QC Batch	BH103 SS-2	RDL	QC Batch	BH103 SS-7	RDL	QC Batch
Inorganics										
Moisture	%	30	1.0	7328861	9.2	1.0	7328936	35	1.0	7328861
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	7327390	<0.071	0.071	7328686	<0.0071	0.0071	7328686
Polyaromatic Hydrocarbons										
Acenaphthene	ug/g	0.018	0.0050	7331308	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Acenaphthylene	ug/g	<0.0050	0.0050	7331308	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Anthracene	ug/g	0.0085	0.0050	7331308	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Benzo(a)anthracene	ug/g	<0.0050	0.0050	7331308	0.081	0.050	7331295	<0.0050	0.0050	7331308
Benzo(a)pyrene	ug/g	<0.0050	0.0050	7331308	0.081	0.050	7331295	<0.0050	0.0050	7331308
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	7331308	0.13	0.050	7331295	0.0053	0.0050	7331308
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	7331308	0.058	0.050	7331295	<0.0050	0.0050	7331308
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	7331308	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Chrysene	ug/g	<0.0050	0.0050	7331308	0.077	0.050	7331295	<0.0050	0.0050	7331308
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	7331308	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Fluoranthene	ug/g	<0.0050	0.0050	7331308	0.21	0.050	7331295	0.0093	0.0050	7331308
Fluorene	ug/g	0.031	0.0050	7331308	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	7331308	0.064	0.050	7331295	<0.0050	0.0050	7331308
1-Methylnaphthalene	ug/g	<0.0050	0.0050	7331308	<0.050	0.050	7331295	<0.0050	0.0050	7331308
2-Methylnaphthalene	ug/g	<0.0050	0.0050	7331308	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Naphthalene	ug/g	<0.0050	0.0050	7331308	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Phenanthrene	ug/g	0.022	0.0050	7331308	0.11	0.050	7331295	0.0083	0.0050	7331308
Pyrene	ug/g	0.0076	0.0050	7331308	0.17	0.050	7331295	0.0075	0.0050	7331308
Surrogate Recovery (%)										
D10-Anthracene	%	86		7331308	100		7331295	89		7331308
D14-Terphenyl (FS)	%	87		7331308	104		7331295	90		7331308
D8-Acenaphthylene	%	84		7331308	86		7331295	87		7331308

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PAHS (SOIL)

BV Labs ID		PLN557			PLN558			PLN559		
Sampling Date		2021/04/26			2021/04/26			2021/04/26		
COC Number		823853-01-01			823853-01-01			823853-01-01		
	UNITS	BH104 SS-4	RDL	QC Batch	BH104 SS-7	RDL	QC Batch	BH105 SS-2	RDL	QC Batch
Inorganics										
Moisture	%	26	1.0	7328936	36	1.0	7328861	10	1.0	7328936
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/g	<0.071	0.071	7328686	<0.0071	0.0071	7328686	0.32	0.071	7328686
Polyaromatic Hydrocarbons										
Acenaphthene	ug/g	0.052	0.050	7331295	0.018	0.0050	7331865	0.084	0.050	7331295
Acenaphthylene	ug/g	0.16	0.050	7331295	<0.0050	0.0050	7331865	0.076	0.050	7331295
Anthracene	ug/g	0.21	0.050	7331295	0.0063	0.0050	7331865	0.29	0.050	7331295
Benzo(a)anthracene	ug/g	0.97	0.050	7331295	<0.0050	0.0050	7331865	1.2	0.050	7331295
Benzo(a)pyrene	ug/g	1.3	0.050	7331295	<0.0050	0.0050	7331865	1.2	0.050	7331295
Benzo(b/j)fluoranthene	ug/g	1.8	0.050	7331295	<0.0050	0.0050	7331865	1.4	0.050	7331295
Benzo(g,h,i)perylene	ug/g	1.1	0.050	7331295	<0.0050	0.0050	7331865	0.70	0.050	7331295
Benzo(k)fluoranthene	ug/g	0.66	0.050	7331295	<0.0050	0.0050	7331865	0.55	0.050	7331295
Chrysene	ug/g	0.86	0.050	7331295	<0.0050	0.0050	7331865	1.0	0.050	7331295
Dibenzo(a,h)anthracene	ug/g	0.25	0.050	7331295	<0.0050	0.0050	7331865	0.20	0.050	7331295
Fluoranthene	ug/g	1.7	0.050	7331295	0.012	0.0050	7331865	2.0	0.050	7331295
Fluorene	ug/g	0.066	0.050	7331295	<0.0050	0.0050	7331865	0.23	0.050	7331295
Indeno(1,2,3-cd)pyrene	ug/g	1.1	0.050	7331295	<0.0050	0.0050	7331865	0.70	0.050	7331295
1-Methylnaphthalene	ug/g	<0.050	0.050	7331295	<0.0050	0.0050	7331865	0.18	0.050	7331295
2-Methylnaphthalene	ug/g	0.064	0.050	7331295	<0.0050	0.0050	7331865	0.14	0.050	7331295
Naphthalene	ug/g	0.062	0.050	7331295	<0.0050	0.0050	7331865	0.072	0.050	7331295
Phenanthrene	ug/g	0.76	0.050	7331295	0.031	0.0050	7331865	1.5	0.050	7331295
Pyrene	ug/g	1.4	0.050	7331295	0.025	0.0050	7331865	2.3	0.050	7331295
Surrogate Recovery (%)										
D10-Anthracene	%	89		7331295	110		7331865	92		7331295
D14-Terphenyl (FS)	%	94		7331295	110		7331865	98		7331295
D8-Acenaphthylene	%	84		7331295	91		7331865	88		7331295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (SOIL)

BV Labs ID		PLN560			PLN575		PLN576		
Sampling Date		2021/04/26			2021/04/26		2021/04/26		
COC Number		823853-01-01			823853-02-01		823853-02-01		
	UNITS	BH105 SS-7	RDL	QC Batch	BH106 SS-4	QC Batch	BH106 SS-8	RDL	QC Batch
Inorganics									
Moisture	%	31	1.0	7328861					
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.011	0.011	7328686	<0.0071	7327390	<0.0071	0.0071	7327390
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	0.065	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Acenaphthylene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Anthracene	ug/g	<0.050 (1)	0.050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Benzo(a)anthracene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Benzo(a)pyrene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Chrysene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Fluoranthene	ug/g	0.020	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Fluorene	ug/g	<0.020 (1)	0.020	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
1-Methylnaphthalene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
2-Methylnaphthalene	ug/g	<0.010 (1)	0.010	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Naphthalene	ug/g	<0.010 (1)	0.010	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Phenanthrene	ug/g	<0.0050	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Pyrene	ug/g	0.069	0.0050	7331295	<0.0050	7331295	<0.0050	0.0050	7331308
Surrogate Recovery (%)									
D10-Anthracene	%	81		7331295	91	7331295	87		7331308
D14-Terphenyl (FS)	%	94		7331295	99	7331295	90		7331308
D8-Acenaphthylene	%	78		7331295	81	7331295	85		7331308

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) DL was raised due to matrix interference.

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O.REG 153 PAHS (SOIL)

BV Labs ID		PLN577	PLN578			PLN579		
Sampling Date		2021/04/26	2021/04/26			2021/04/26		
COC Number		823853-02-01	823853-02-01			823853-02-01		
	UNITS	BH107 SS-3	DUP-1	RDL	QC Batch	BH107 SS-7	RDL	QC Batch
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	<0.071	<0.071	0.071	7327390	<0.0071	0.0071	7327390
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	<0.050	<0.050	0.050	7331295	<0.010 (1)	0.010	7331308
Acenaphthylene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Anthracene	ug/g	<0.050	<0.050	0.050	7331295	0.014	0.0050	7331308
Benzo(a)anthracene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Benzo(a)pyrene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Benzo(b/j)fluoranthene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Benzo(g,h,i)perylene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Benzo(k)fluoranthene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Chrysene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Dibenzo(a,h)anthracene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Fluoranthene	ug/g	<0.050	<0.050	0.050	7331295	0.010	0.0050	7331308
Fluorene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Indeno(1,2,3-cd)pyrene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
1-Methylnaphthalene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
2-Methylnaphthalene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Naphthalene	ug/g	<0.050	<0.050	0.050	7331295	<0.0050	0.0050	7331308
Phenanthrene	ug/g	<0.050	<0.050	0.050	7331295	0.0071	0.0050	7331308
Pyrene	ug/g	<0.050	<0.050	0.050	7331295	0.017	0.0050	7331308
Surrogate Recovery (%)								
D10-Anthracene	%	103	96		7331295	90		7331308
D14-Terphenyl (FS)	%	94	98		7331295	93		7331308
D8-Acenaphthylene	%	88	82		7331295	92		7331308

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) DL was raised due to matrix interference.

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (SOIL)

BV Labs ID		PLN580		PLN581			PLN581		
Sampling Date		2021/04/26		2021/04/26			2021/04/26		
COC Number		823853-02-01		823853-02-01			823853-02-01		
	UNITS	BHMW108 SS-2	QC Batch	BHMW108 SS-8	RDL	QC Batch	BHMW108 SS-8 Lab-Dup	RDL	QC Batch
Inorganics									
Moisture	%	5.2	7328861	8.7	1.0	7328936			
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	7327390	0.17	0.0071	7327390			
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Acenaphthylene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Anthracene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Benzo(a)anthracene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Benzo(a)pyrene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Benzo(b/j)fluoranthene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Benzo(g,h,i)perylene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Benzo(k)fluoranthene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Chrysene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Dibenzo(a,h)anthracene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Fluoranthene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Fluorene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
1-Methylnaphthalene	ug/g	<0.0050	7331308	0.049	0.0050	7331295	0.068	0.0050	7331295
2-Methylnaphthalene	ug/g	<0.0050	7331308	0.12	0.0050	7331295	0.17	0.0050	7331295
Naphthalene	ug/g	<0.0050	7331308	0.23	0.0050	7331295	0.29	0.0050	7331295
Phenanthrene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	0.0053	0.0050	7331295
Pyrene	ug/g	<0.0050	7331308	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Surrogate Recovery (%)									
D10-Anthracene	%	90	7331308	92		7331295	90		7331295
D14-Terphenyl (FS)	%	91	7331308	97		7331295	93		7331295
D8-Acenaphthylene	%	88	7331308	81		7331295	81		7331295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (SOIL)

BV Labs ID		PLN582	PLN583	PLN584			PLN636		
Sampling Date		2021/04/27	2021/04/27	2021/04/27			2021/04/27		
COC Number		823853-02-01	823853-02-01	823853-02-01			823853-03-01		
	UNITS	BHMW109 SS-7	BHMW110 SS-7	DUP-2	RDL	QC Batch	BHMW111 SS-6	RDL	QC Batch
Inorganics									
Moisture	%	8.3	17	12	1.0	7328936			
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.26	0.16	0.0071	7327390	8.4	0.0071	7327390
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	0.039	0.0050	7331295
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	<0.010 (1)	0.010	7331295
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	0.011	0.0050	7331295
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Dibenzo(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	0.0096	0.0050	7331295
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	0.042	0.0050	7331295
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	<0.0050	0.0050	7331295
1-Methylnaphthalene	ug/g	<0.0050	0.071	0.043	0.0050	7331295	3.0	0.0050	7331295
2-Methylnaphthalene	ug/g	<0.0050	0.19	0.12	0.0050	7331295	5.4	0.0050	7331295
Naphthalene	ug/g	<0.0050	0.049	0.028	0.0050	7331295	5.3	0.0050	7331295
Phenanthrene	ug/g	0.0056	<0.0050	<0.0050	0.0050	7331295	0.055	0.0050	7331295
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	7331295	0.013	0.0050	7331295
Surrogate Recovery (%)									
D10-Anthracene	%	90	89	89		7331295	85		7331295
D14-Terphenyl (FS)	%	89	93	96		7331295	95		7331295
D8-Acenaphthylene	%	83	78	80		7331295	81		7331295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) DL was raised due to matrix interference.

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (SOIL)

BV Labs ID		PLN637			PLN638	PLN640	PLN642		
Sampling Date		2021/04/27			2021/04/27	2021/04/28	2021/04/28		
COC Number		823853-03-01			823853-03-01	823853-03-01	823853-03-01		
	UNITS	**BHMW12 SS-3**	**RDL**	**QC Batch**	**BHMW12 SS-7**	**BH113 SS-7**	**BHMW115 SS-7**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	3.9	1.0	7328861					
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	0.027	0.0071	7327390	<0.0071	<0.0071	<0.0071	0.0071	7327390
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Acenaphthylene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Anthracene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Benzo(a)anthracene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Benzo(a)pyrene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	7331295	0.0053	<0.0050	<0.0050	0.0050	7331295
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Chrysene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Fluoranthene	ug/g	<0.0050	0.0050	7331295	0.010	<0.0050	<0.0050	0.0050	7331295
Fluorene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
1-Methylnaphthalene	ug/g	0.010	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
2-Methylnaphthalene	ug/g	0.017	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Naphthalene	ug/g	0.0057	0.0050	7331295	<0.0050	<0.0050	<0.0050	0.0050	7331295
Phenanthrene	ug/g	<0.0050	0.0050	7331295	0.0064	<0.0050	0.0094	0.0050	7331295
Pyrene	ug/g	<0.0050	0.0050	7331295	0.0087	<0.0050	0.0093	0.0050	7331295
Surrogate Recovery (%)									
D10-Anthracene	%	86		7331295	85	86	88		7331295
D14-Terphenyl (FS)	%	93		7331295	81	92	85		7331295
D8-Acenaphthylene	%	76		7331295	74	80	79		7331295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		PLN551		PLN552		PLN553		PLN554		
Sampling Date		2021/04/26		2021/04/26		2021/04/26		2021/04/26		
COC Number		823853-01-01		823853-01-01		823853-01-01		823853-01-01		
	UNITS	**BH101 SS-2**	**QC Batch**	**BH101 SS-6**	**QC Batch**	**BH102 SS-2**	**QC Batch**	**BH102 SS-6**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons										
Benzene	ug/g	<0.020	7332664	<0.020	7332664	<0.020	7332664	<0.020	0.020	7332664
Toluene	ug/g	0.024	7332664	<0.020	7332664	<0.020	7332664	<0.020	0.020	7332664
Ethylbenzene	ug/g	<0.020	7332664	<0.020	7332664	<0.020	7332664	<0.020	0.020	7332664
o-Xylene	ug/g	<0.020	7332664	<0.020	7332664	<0.020	7332664	<0.020	0.020	7332664
p+m-Xylene	ug/g	<0.040	7332664	<0.040	7332664	<0.040	7332664	<0.040	0.040	7332664
Total Xylenes	ug/g	<0.040	7332664	<0.040	7332664	<0.040	7332664	<0.040	0.040	7332664
F1 (C6-C10)	ug/g	<10	7332664	<10	7332664	<10	7332664	<10	10	7332664
F1 (C6-C10) - BTEX	ug/g	<10	7332664	<10	7332664	<10	7332664	<10	10	7332664
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	550	7331287	<10	7330915	<10	7331287	<10	10	7330915
F3 (C16-C34 Hydrocarbons)	ug/g	690	7331287	<50	7330915	82	7331287	<50	50	7330915
F4 (C34-C50 Hydrocarbons)	ug/g	110	7331287	<50	7330915	54	7331287	<50	50	7330915
Reached Baseline at C50	ug/g	Yes	7331287	Yes	7330915	Yes	7331287	Yes		7330915
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	99	7332664	99	7332664	101	7332664	100		7332664
4-Bromofluorobenzene	%	98	7332664	97	7332664	97	7332664	97		7332664
D10-o-Xylene	%	81	7332664	79	7332664	77	7332664	78		7332664
D4-1,2-Dichloroethane	%	100	7332664	101	7332664	98	7332664	100		7332664
o-Terphenyl	%	99	7331287	88	7330915	94	7331287	88		7330915

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		PLN555		PLN556		PLN557		
Sampling Date		2021/04/26		2021/04/26		2021/04/26		
COC Number		823853-01-01		823853-01-01		823853-01-01		
	UNITS	BH103 SS-2	QC Batch	BH103 SS-7	QC Batch	BH104 SS-4	RDL	QC Batch
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.020	7332664	<0.020	7332664	<0.020	0.020	7332664
Toluene	ug/g	<0.020	7332664	<0.020	7332664	<0.020	0.020	7332664
Ethylbenzene	ug/g	<0.020	7332664	<0.020	7332664	<0.020	0.020	7332664
o-Xylene	ug/g	<0.020	7332664	<0.020	7332664	<0.020	0.020	7332664
p+m-Xylene	ug/g	<0.040	7332664	<0.040	7332664	<0.040	0.040	7332664
Total Xylenes	ug/g	<0.040	7332664	<0.040	7332664	<0.040	0.040	7332664
F1 (C6-C10)	ug/g	<10	7332664	<10	7332664	<10	10	7332664
F1 (C6-C10) - BTEX	ug/g	<10	7332664	<10	7332664	<10	10	7332664
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	7331287	<10	7330915	<10	10	7331287
F3 (C16-C34 Hydrocarbons)	ug/g	<50	7331287	<50	7330915	210	50	7331287
F4 (C34-C50 Hydrocarbons)	ug/g	91	7331287	<50	7330915	170	50	7331287
Reached Baseline at C50	ug/g	Yes	7331287	Yes	7330915	Yes		7331287
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	100	7332664	101	7332664	100		7332664
4-Bromofluorobenzene	%	97	7332664	95	7332664	97		7332664
D10-o-Xylene	%	81	7332664	92	7332664	77		7332664
D4-1,2-Dichloroethane	%	96	7332664	96	7332664	100		7332664
o-Terphenyl	%	96	7331287	88	7330915	95		7331287

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		PLN558			PLN559	PLN560			PLN575		
Sampling Date		2021/04/26			2021/04/26	2021/04/26			2021/04/26		
COC Number		823853-01-01			823853-01-01	823853-01-01			823853-02-01		
	UNITS	BH104 SS-7	RDL	QC Batch	BH105 SS-2	BH105 SS-7	RDL	QC Batch	BH106 SS-4	RDL	QC Batch
Inorganics											
Moisture	%								5.4	1.0	7328936
BTEX & F1 Hydrocarbons											
Benzene	ug/g	<0.020	0.020	7332664	<0.020	<0.020	0.020	7332664	<0.020	0.020	7332664
Toluene	ug/g	<0.020	0.020	7332664	<0.020	<0.020	0.020	7332664	<0.020	0.020	7332664
Ethylbenzene	ug/g	<0.020	0.020	7332664	<0.020	<0.020	0.020	7332664	<0.020	0.020	7332664
o-Xylene	ug/g	<0.020	0.020	7332664	<0.020	<0.020	0.020	7332664	<0.020	0.020	7332664
p+m-Xylene	ug/g	<0.040	0.040	7332664	<0.040	<0.040	0.040	7332664	<0.040	0.040	7332664
Total Xylenes	ug/g	<0.040	0.040	7332664	<0.040	<0.040	0.040	7332664	<0.040	0.040	7332664
F1 (C6-C10)	ug/g	<10	10	7332664	<10	11	10	7332664	<10	10	7332664
F1 (C6-C10) - BTEX	ug/g	<10	10	7332664	<10	11	10	7332664	<10	10	7332664
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/g	130	20	7333129	<10	280	10	7331287	<10	10	7331287
F3 (C16-C34 Hydrocarbons)	ug/g	160	100	7333129	190	340	50	7331287	<50	50	7331287
F4 (C34-C50 Hydrocarbons)	ug/g	<100	100	7333129	300	<50	50	7331287	<50	50	7331287
Reached Baseline at C50	ug/g	Yes		7333129	No	Yes		7331287	Yes		7331287
Surrogate Recovery (%)											
1,4-Difluorobenzene	%	100		7332664	101	98		7332664	101		7332664
4-Bromofluorobenzene	%	97		7332664	95	98		7332664	97		7332664
D10-o-Xylene	%	91		7332664	92	81		7332664	86		7332664
D4-1,2-Dichloroethane	%	98		7332664	98	100		7332664	99		7332664
o-Terphenyl	%	88		7333129	97	97		7331287	96		7331287

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		PLN576		PLN577	PLN578		PLN579		
Sampling Date		2021/04/26		2021/04/26	2021/04/26		2021/04/26		
COC Number		823853-02-01		823853-02-01	823853-02-01		823853-02-01		
	UNITS	BH106 SS-8	QC Batch	BH107 SS-3	DUP-1	QC Batch	BH107 SS-7	RDL	QC Batch
Inorganics									
Moisture	%	33	7328861	4.5	4.7	7328936	20	1.0	7328861
BTEX & F1 Hydrocarbons									
Benzene	ug/g	<0.020	7332664	<0.020	<0.020	7332664	<0.020	0.020	7332664
Toluene	ug/g	<0.020	7332664	<0.020	<0.020	7332664	<0.020	0.020	7332664
Ethylbenzene	ug/g	<0.020	7332664	<0.020	<0.020	7332664	<0.020	0.020	7332664
o-Xylene	ug/g	<0.020	7332664	<0.020	<0.020	7332664	<0.020	0.020	7332664
p+m-Xylene	ug/g	<0.040	7332664	<0.040	<0.040	7332664	<0.040	0.040	7332664
Total Xylenes	ug/g	<0.040	7332664	<0.040	<0.040	7332664	<0.040	0.040	7332664
F1 (C6-C10)	ug/g	<10	7332664	<10	<10	7332664	<10	10	7332664
F1 (C6-C10) - BTEX	ug/g	<10	7332664	<10	<10	7332664	<10	10	7332664
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	7330915	<10	<10	7331287	<10	10	7330915
F3 (C16-C34 Hydrocarbons)	ug/g	<50	7330915	130	320	7331287	<50	50	7330915
F4 (C34-C50 Hydrocarbons)	ug/g	<50	7330915	430	1100	7331287	<50	50	7330915
Reached Baseline at C50	ug/g	Yes	7330915	No	No	7331287	Yes		7330915
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	101	7332664	101	101	7332664	100		7332664
4-Bromofluorobenzene	%	96	7332664	96	96	7332664	97		7332664
D10-o-Xylene	%	79	7332664	81	77	7332664	82		7332664
D4-1,2-Dichloroethane	%	99	7332664	97	99	7332664	99		7332664
o-Terphenyl	%	88	7330915	98	97	7331287	90		7330915

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PLN581			PLN581			PLN582		
Sampling Date		2021/04/26			2021/04/26			2021/04/27		
COC Number		823853-02-01			823853-02-01			823853-02-01		
	UNITS	BHMW108 SS-8	RDL	QC Batch	BHMW108 SS-8 Lab-Dup	RDL	QC Batch	BHMW109 SS-7	RDL	QC Batch
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	7327981				<0.050	0.050	7327981
Volatile Organics										
Acetone (2-Propanone)	ug/g	<0.50	0.50	7329609				<0.50	0.50	7329609
Benzene	ug/g	0.30	0.020	7329609				<0.020	0.020	7329609
Bromodichloromethane	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Bromoform	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Bromomethane	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Carbon Tetrachloride	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Chlorobenzene	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Chloroform	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Dibromochloromethane	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
1,2-Dichlorobenzene	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
1,3-Dichlorobenzene	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
1,4-Dichlorobenzene	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
1,1-Dichloroethane	ug/g	<0.080 (1)	0.080	7329609				<0.050	0.050	7329609
1,2-Dichloroethane	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
1,1-Dichloroethylene	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
1,2-Dichloropropane	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	7329609				<0.030	0.030	7329609
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	7329609				<0.040	0.040	7329609
Ethylbenzene	ug/g	9.2	0.020	7329609				<0.020	0.020	7329609
Ethylene Dibromide	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Hexane	ug/g	24	0.050	7329609				1.2	0.050	7329609
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	7329609				<0.50	0.50	7329609
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	7329609				<0.50	0.50	7329609
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Styrene	ug/g	<0.20 (2)	0.20	7329609				<0.050	0.050	7329609

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) The detection limit was raised due to matrix interference.
(2) The detection limit was raised due to interference from coeluting o-xylene.

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PLN581			PLN581			PLN582		
Sampling Date		2021/04/26			2021/04/26			2021/04/27		
COC Number		823853-02-01			823853-02-01			823853-02-01		
	UNITS	**BHMW108 SS-8**	**RDL**	**QC Batch**	**BHMW108 SS-8 Lab-Dup**	**RDL**	**QC Batch**	**BHMW109 SS-7**	**RDL**	**QC Batch**
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Tetrachloroethylene	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Toluene	ug/g	12	0.020	7329609				<0.020	0.020	7329609
1,1,1-Trichloroethane	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
1,1,2-Trichloroethane	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Trichloroethylene	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	7329609				<0.050	0.050	7329609
Vinyl Chloride	ug/g	<0.020	0.020	7329609				<0.020	0.020	7329609
p+m-Xylene	ug/g	39	0.10	7329609				0.093	0.020	7329609
o-Xylene	ug/g	13	0.10	7329609				<0.020	0.020	7329609
Total Xylenes	ug/g	52	0.10	7329609				0.093	0.020	7329609
F1 (C6-C10)	ug/g	600	50	7329609				15	10	7329609
F1 (C6-C10) - BTEX	ug/g	520	50	7329609				15	10	7329609
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	27	10	7331287	43	10	7331287	<10	10	7331287
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	7331287	<50	50	7331287	<50	50	7331287
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	7331287	<50	50	7331287	<50	50	7331287
Reached Baseline at C50	ug/g	Yes		7331287	Yes		7331287	Yes		7331287
Surrogate Recovery (%)										
o-Terphenyl	%	96		7331287	97		7331287	96		7331287
4-Bromofluorobenzene	%	107		7329609				94		7329609
D10-o-Xylene	%	111		7329609				117		7329609
D4-1,2-Dichloroethane	%	98		7329609				100		7329609
D8-Toluene	%	98		7329609				101		7329609

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PLN583	PLN584			PLN636		
Sampling Date		2021/04/27	2021/04/27			2021/04/27		
COC Number		823853-02-01	823853-02-01			823853-03-01		
	UNITS	**BHMW110 SS-7**	**DUP-2**	**RDL**	**QC Batch**	**BHMW111 SS-6**	**RDL**	**QC Batch**
Inorganics								
Moisture	%					19	1.0	7328936
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	0.050	7328687	<0.050	0.050	7327981
Volatile Organics								
Acetone (2-Propanone)	ug/g	<1.0 (1)	<1.0 (1)	1.0	7329609	<3.5 (1)	3.5	7329609
Benzene	ug/g	<0.020	<0.020	0.020	7329609	<0.020	0.020	7329609
Bromodichloromethane	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Bromoform	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Bromomethane	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Carbon Tetrachloride	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Chlorobenzene	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Chloroform	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Dibromochloromethane	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
1,1-Dichloroethane	ug/g	<0.050	<0.050	0.050	7329609	<0.10 (1)	0.10	7329609
1,2-Dichloroethane	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
1,1-Dichloroethylene	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
1,2-Dichloropropane	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	0.030	7329609	<0.030	0.030	7329609
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	0.040	7329609	<0.040	0.040	7329609
Ethylbenzene	ug/g	1.8	1.7	0.020	7329609	49	0.40	7329609
Ethylene Dibromide	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Hexane	ug/g	21	16	0.050	7329609	51	0.050	7329609
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	0.50	7329609	<0.50	0.50	7329609
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	0.50	7329609	<0.50	0.50	7329609
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Styrene	ug/g	<0.050	<0.050	0.050	7329609	<0.40 (2)	0.40	7329609

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) The detection limit was raised due to matrix interference.
(2) The detection limit was raised due to interference from coeluting o-xylene.

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PLN583	PLN584			PLN636		
Sampling Date		2021/04/27	2021/04/27			2021/04/27		
COC Number		823853-02-01	823853-02-01			823853-03-01		
	UNITS	**BHMW110 SS-7**	**DUP-2**	**RDL**	**QC Batch**	**BHMW111 SS-6**	**RDL**	**QC Batch**
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Tetrachloroethylene	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Toluene	ug/g	<0.020	<0.020	0.020	7329609	2.8	0.020	7329609
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Trichloroethylene	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	0.050	7329609	<0.050	0.050	7329609
Vinyl Chloride	ug/g	<0.020	<0.020	0.020	7329609	<0.020	0.020	7329609
p+m-Xylene	ug/g	2.7	2.3	0.020	7329609	230	0.40	7329609
o-Xylene	ug/g	0.33	0.19	0.020	7329609	49	0.40	7329609
Total Xylenes	ug/g	3.0	2.5	0.020	7329609	280	0.40	7329609
F1 (C6-C10)	ug/g	400	590	100	7329609	2900	200	7329609
F1 (C6-C10) - BTEX	ug/g	390	580	100	7329609	2600	200	7329609
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	90	39	10	7331287	400	10	7331287
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	7331287	<50	50	7331287
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	7331287	<50	50	7331287
Reached Baseline at C50	ug/g	Yes	Yes		7331287	Yes		7331287
Surrogate Recovery (%)								
o-Terphenyl	%	95	96		7331287	94		7331287
4-Bromofluorobenzene	%	105	103		7329609	96		7329609
D10-o-Xylene	%	113	112		7329609	118		7329609
D4-1,2-Dichloroethane	%	101	98		7329609	96		7329609
D8-Toluene	%	99	100		7329609	103		7329609

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PLN638		PLN639	PLN640		
Sampling Date		2021/04/27		2021/04/28	2021/04/28		
COC Number		823853-03-01		823853-03-01	823853-03-01		
	UNITS	BHMW12 SS-7	QC Batch	BH113 SS-3	BH113 SS-7	RDL	QC Batch
Inorganics							
Moisture	%	28	7328861	11	20	1.0	7328936
Calculated Parameters							
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	7327981	<0.050	<0.050	0.050	7327981
Volatile Organics							
Acetone (2-Propanone)	ug/g	<0.50	7329609	<0.50	<0.50	0.50	7329609
Benzene	ug/g	<0.020	7329609	<0.020	<0.020	0.020	7329609
Bromodichloromethane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Bromoform	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Bromomethane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Carbon Tetrachloride	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Chlorobenzene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Chloroform	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Dibromochloromethane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,2-Dichlorobenzene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,3-Dichlorobenzene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,4-Dichlorobenzene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,1-Dichloroethane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,2-Dichloroethane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,1-Dichloroethylene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
cis-1,2-Dichloroethylene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
trans-1,2-Dichloroethylene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,2-Dichloropropane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
cis-1,3-Dichloropropene	ug/g	<0.030	7329609	<0.030	<0.030	0.030	7329609
trans-1,3-Dichloropropene	ug/g	<0.040	7329609	<0.040	<0.040	0.040	7329609
Ethylbenzene	ug/g	<0.020	7329609	<0.020	<0.020	0.020	7329609
Ethylene Dibromide	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Hexane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Methylene Chloride(Dichloromethane)	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	7329609	<0.50	<0.50	0.50	7329609
Methyl Isobutyl Ketone	ug/g	<0.50	7329609	<0.50	<0.50	0.50	7329609
Methyl t-butyl ether (MTBE)	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Styrene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,1,1,2-Tetrachloroethane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,1,2,2-Tetrachloroethane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PLN638		PLN639	PLN640		
Sampling Date		2021/04/27		2021/04/28	2021/04/28		
COC Number		823853-03-01		823853-03-01	823853-03-01		
	UNITS	BHMW12 SS-7	QC Batch	BH113 SS-3	BH113 SS-7	RDL	QC Batch
Tetrachloroethylene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Toluene	ug/g	<0.020	7329609	<0.020	<0.020	0.020	7329609
1,1,1-Trichloroethane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
1,1,2-Trichloroethane	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Trichloroethylene	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	7329609	<0.050	<0.050	0.050	7329609
Vinyl Chloride	ug/g	<0.020	7329609	<0.020	<0.020	0.020	7329609
p+m-Xylene	ug/g	<0.020	7329609	<0.020	<0.020	0.020	7329609
o-Xylene	ug/g	<0.020	7329609	<0.020	<0.020	0.020	7329609
Total Xylenes	ug/g	<0.020	7329609	<0.020	<0.020	0.020	7329609
F1 (C6-C10)	ug/g	21	7329609	<10	<10	10	7329609
F1 (C6-C10) - BTEX	ug/g	21	7329609	<10	<10	10	7329609
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	120	7331287	<10	27	10	7331287
F3 (C16-C34 Hydrocarbons)	ug/g	<50	7331287	<50	1600	50	7331287
F4 (C34-C50 Hydrocarbons)	ug/g	<50	7331287	<50	170	50	7331287
Reached Baseline at C50	ug/g	Yes	7331287	Yes	Yes		7331287
Surrogate Recovery (%)							
o-Terphenyl	%	97	7331287	96	96		7331287
4-Bromofluorobenzene	%	103	7329609	91	95		7329609
D10-o-Xylene	%	103	7329609	95	102		7329609
D4-1,2-Dichloroethane	%	95	7329609	101	101		7329609
D8-Toluene	%	99	7329609	100	100		7329609

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PLN640			PLN641	PLN642		
Sampling Date		2021/04/28			2021/04/28	2021/04/28		
COC Number		823853-03-01			823853-03-01	823853-03-01		
	UNITS	**BH113 SS-7 Lab-Dup**	**RDL**	**QC Batch**	**BHMW115 SS-3**	**BHMW115 SS-7**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	19	1.0	7328936	8.2	22	1.0	7328936
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g				<0.050	<0.050	0.050	7327981
Volatile Organics								
Acetone (2-Propanone)	ug/g				<0.50	<0.50	0.50	7329609
Benzene	ug/g				<0.020	0.021	0.020	7329609
Bromodichloromethane	ug/g				<0.050	<0.050	0.050	7329609
Bromoform	ug/g				<0.050	<0.050	0.050	7329609
Bromomethane	ug/g				<0.050	<0.050	0.050	7329609
Carbon Tetrachloride	ug/g				<0.050	<0.050	0.050	7329609
Chlorobenzene	ug/g				<0.050	<0.050	0.050	7329609
Chloroform	ug/g				<0.050	<0.050	0.050	7329609
Dibromochloromethane	ug/g				<0.050	<0.050	0.050	7329609
1,2-Dichlorobenzene	ug/g				<0.050	<0.050	0.050	7329609
1,3-Dichlorobenzene	ug/g				<0.050	<0.050	0.050	7329609
1,4-Dichlorobenzene	ug/g				<0.050	<0.050	0.050	7329609
Dichlorodifluoromethane (FREON 12)	ug/g				<0.050	<0.050	0.050	7329609
1,1-Dichloroethane	ug/g				<0.050	<0.050	0.050	7329609
1,2-Dichloroethane	ug/g				<0.050	<0.050	0.050	7329609
1,1-Dichloroethylene	ug/g				<0.050	<0.050	0.050	7329609
cis-1,2-Dichloroethylene	ug/g				<0.050	<0.050	0.050	7329609
trans-1,2-Dichloroethylene	ug/g				<0.050	<0.050	0.050	7329609
1,2-Dichloropropane	ug/g				<0.050	<0.050	0.050	7329609
cis-1,3-Dichloropropene	ug/g				<0.030	<0.030	0.030	7329609
trans-1,3-Dichloropropene	ug/g				<0.040	<0.040	0.040	7329609
Ethylbenzene	ug/g				<0.020	<0.020	0.020	7329609
Ethylene Dibromide	ug/g				<0.050	<0.050	0.050	7329609
Hexane	ug/g				<0.050	<0.050	0.050	7329609
Methylene Chloride(Dichloromethane)	ug/g				<0.050	<0.050	0.050	7329609
Methyl Ethyl Ketone (2-Butanone)	ug/g				<0.50	<0.50	0.50	7329609
Methyl Isobutyl Ketone	ug/g				<0.50	<0.50	0.50	7329609
Methyl t-butyl ether (MTBE)	ug/g				<0.050	<0.050	0.050	7329609
Styrene	ug/g				<0.050	<0.050	0.050	7329609
1,1,1,2-Tetrachloroethane	ug/g				<0.050	<0.050	0.050	7329609

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PLN640			PLN641	PLN642		
Sampling Date		2021/04/28			2021/04/28	2021/04/28		
COC Number		823853-03-01			823853-03-01	823853-03-01		
	UNITS	**BH113 SS-7 Lab-Dup**	**RDL**	**QC Batch**	**BHMW115 SS-3**	**BHMW115 SS-7**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/g				<0.050	<0.050	0.050	7329609
Tetrachloroethylene	ug/g				<0.050	<0.050	0.050	7329609
Toluene	ug/g				<0.020	<0.020	0.020	7329609
1,1,1-Trichloroethane	ug/g				<0.050	<0.050	0.050	7329609
1,1,2-Trichloroethane	ug/g				<0.050	<0.050	0.050	7329609
Trichloroethylene	ug/g				<0.050	<0.050	0.050	7329609
Trichlorofluoromethane (FREON 11)	ug/g				<0.050	<0.050	0.050	7329609
Vinyl Chloride	ug/g				<0.020	<0.020	0.020	7329609
p+m-Xylene	ug/g				<0.020	<0.020	0.020	7329609
o-Xylene	ug/g				<0.020	<0.020	0.020	7329609
Total Xylenes	ug/g				<0.020	<0.020	0.020	7329609
F1 (C6-C10)	ug/g				<10	<10	10	7329609
F1 (C6-C10) - BTEX	ug/g				<10	<10	10	7329609
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g				<10	<10	10	7331287
F3 (C16-C34 Hydrocarbons)	ug/g				<50	590	50	7331287
F4 (C34-C50 Hydrocarbons)	ug/g				<50	69	50	7331287
Reached Baseline at C50	ug/g				Yes	Yes		7331287
Surrogate Recovery (%)								
o-Terphenyl	%				97	98		7331287
4-Bromofluorobenzene	%				91	95		7329609
D10-o-Xylene	%				97	97		7329609
D4-1,2-Dichloroethane	%				104	103		7329609
D8-Toluene	%				100	100		7329609

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

RESULTS OF ANALYSES OF SOIL

BV Labs ID		PLN555	PLN556	PLN559	PLN560	PLN580	PLN582		
Sampling Date		2021/04/26	2021/04/26	2021/04/26	2021/04/26	2021/04/26	2021/04/27		
COC Number		823853-01-01	823853-01-01	823853-01-01	823853-01-01	823853-02-01	823853-02-01		
	UNITS	**BH103 SS-2**	**BH103 SS-7**	**BH105 SS-2**	**BH105 SS-7**	**BHMW108 SS-2**	**BHMW109 SS-7**	**RDL**	**QC Batch**
Inorganics									
Available (CaCl2) pH	pH	7.97	7.82	7.80	7.42	8.06	7.78		7334676
Miscellaneous Parameters									
Grain Size	%	COARSE	FINE	COARSE	FINE	COARSE	COARSE	N/A	7330357
Sieve - #200 (<0.075mm)	%	31	98	41	97	41	41	1	7330357
Sieve - #200 (>0.075mm)	%	69	2	59	3	59	59	1	7330357

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

BV Labs ID		PLN637	PLN638	PLN639	PLN640		
Sampling Date		2021/04/27	2021/04/27	2021/04/28	2021/04/28		
COC Number		823853-03-01	823853-03-01	823853-03-01	823853-03-01		
	UNITS	**BHMW12 SS-3**	**BHMW12 SS-7**	**BH113 SS-3**	**BH113 SS-7**	**RDL**	**QC Batch**
Inorganics							
Available (CaCl2) pH	pH	8.05	7.73	7.94	7.70		7334676
Miscellaneous Parameters							
Grain Size	%	COARSE	FINE	COARSE	FINE	N/A	7330357
Sieve - #200 (<0.075mm)	%	49	97	41	72	1	7330357
Sieve - #200 (>0.075mm)	%	51	3	59	28	1	7330357

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		PLN559	PLN577	PLN577	PLN578		
Sampling Date		2021/04/26	2021/04/26	2021/04/26	2021/04/26		
COC Number		823853-01-01	823853-02-01	823853-02-01	823853-02-01		
	UNITS	**BH105 SS-2**	**BH107 SS-3**	**BH107 SS-3 Lab-Dup**	**DUP-1**	**RDL**	**QC Batch**
F2-F4 Hydrocarbons							
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	1000	1100	1200	3100	100	7336989

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

TEST SUMMARY

BV Labs ID: PLN551
Sample ID: BH101 SS-2
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN552
Sample ID: BH101 SS-6
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/06	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7330915	2021/05/03	2021/05/04	Dennis Ngondu
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331308	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN553
Sample ID: BH102 SS-2
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN554
Sample ID: BH102 SS-6
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/06	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7330915	2021/05/03	2021/05/04	Dennis Ngondu
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331308	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN555
Sample ID: BH103 SS-2
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7328686	N/A	2021/05/05	Automated Statchk

TEST SUMMARY

BV Labs ID: PLN555
Sample ID: BH103 SS-2
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel

BV Labs ID: PLN556
Sample ID: BH103 SS-7
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7328686	N/A	2021/05/06	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7330915	2021/05/03	2021/05/04	Dennis Ngondu
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331308	2021/05/03	2021/05/04	Mitesh Raj
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel

BV Labs ID: PLN557
Sample ID: BH104 SS-4
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7328686	N/A	2021/05/05	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN558
Sample ID: BH104 SS-7
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7328686	N/A	2021/05/06	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7333129	2021/05/04	2021/05/05	(Kent) Maolin Li
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331865	2021/05/03	2021/05/04	Mitesh Raj

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

BV Labs ID: PLN559
Sample ID: BH105 SS-2
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7328686	N/A	2021/05/05	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
F4G (CCME Hydrocarbons Gravimetric)	BAL	7336989	2021/05/06	2021/05/06	Rashmi Dubey
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel

BV Labs ID: PLN560
Sample ID: BH105 SS-7
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7328686	N/A	2021/05/05	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel

BV Labs ID: PLN575
Sample ID: BH106 SS-4
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN576
Sample ID: BH106 SS-8
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/06	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7330915	2021/05/03	2021/05/04	Dennis Ngondu
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331308	2021/05/03	2021/05/04	Mitesh Raj

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

BV Labs ID: PLN577
Sample ID: BH107 SS-3
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
F4G (CCME Hydrocarbons Gravimetric)	BAL	7336989	2021/05/06	2021/05/06	Rashmi Dubey
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN577 Dup
Sample ID: BH107 SS-3
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
F4G (CCME Hydrocarbons Gravimetric)	BAL	7336989	2021/05/06	2021/05/06	Rashmi Dubey

BV Labs ID: PLN578
Sample ID: DUP-1
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
F4G (CCME Hydrocarbons Gravimetric)	BAL	7336989	2021/05/06	2021/05/06	Rashmi Dubey
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN579
Sample ID: BH107 SS-7
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/06	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7332664	N/A	2021/05/04	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7330915	2021/05/03	2021/05/04	Dennis Ngondu
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331308	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN580
Sample ID: BHMW108 SS-2
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/06	Automated Statchk
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel

BUREAU VERITAS

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

BV Labs ID: PLN580
Sample ID: BHMW108 SS-2
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331308	2021/05/03	2021/05/04	Mitesh Raj
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel

BV Labs ID: PLN581
Sample ID: BHMW108 SS-8
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
1,3-Dichloropropene Sum	CALC	7327981	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

BV Labs ID: PLN581 Dup
Sample ID: BHMW108 SS-8
Matrix: Soil

Collected: 2021/04/26
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj

BV Labs ID: PLN582
Sample ID: BHMW109 SS-7
Matrix: Soil

Collected: 2021/04/27
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
1,3-Dichloropropene Sum	CALC	7327981	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

BV Labs ID: PLN583
Sample ID: BHMW110 SS-7
Matrix: Soil

Collected: 2021/04/27
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
1,3-Dichloropropene Sum	CALC	7328687	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel

TEST SUMMARY

BV Labs ID: PLN583 **Collected:** 2021/04/27
Sample ID: BHMW110 SS-7 **Shipped:**
Matrix: Soil **Received:** 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

BV Labs ID: PLN584 **Collected:** 2021/04/27
Sample ID: DUP-2 **Shipped:**
Matrix: Soil **Received:** 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
1,3-Dichloropropene Sum	CALC	7328687	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

BV Labs ID: PLN636 **Collected:** 2021/04/27
Sample ID: BHMW111 SS-6 **Shipped:**
Matrix: Soil **Received:** 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
1,3-Dichloropropene Sum	CALC	7327981	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

BV Labs ID: PLN637 **Collected:** 2021/04/27
Sample ID: BHMW12 SS-3 **Shipped:**
Matrix: Soil **Received:** 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel

BV Labs ID: PLN638 **Collected:** 2021/04/27
Sample ID: BHMW12 SS-7 **Shipped:**
Matrix: Soil **Received:** 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
1,3-Dichloropropene Sum	CALC	7327981	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

BV Labs ID: PLN638
Sample ID: BHMW12 SS-7
Matrix: Soil

Collected: 2021/04/27
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	7328861	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

BV Labs ID: PLN639
Sample ID: BH113 SS-3
Matrix: Soil

Collected: 2021/04/28
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7327981	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

BV Labs ID: PLN640
Sample ID: BH113 SS-7
Matrix: Soil

Collected: 2021/04/28
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
1,3-Dichloropropene Sum	CALC	7327981	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
pH CaCl2 EXTRACT	AT	7334676	2021/05/05	2021/05/05	Yogesh Patel
Sieve, 75um	SIEV	7330357	N/A	2021/05/04	Kruti Jitesh Patel
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

BV Labs ID: PLN640 Dup
Sample ID: BH113 SS-7
Matrix: Soil

Collected: 2021/04/28
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel

BV Labs ID: PLN641
Sample ID: BHMW115 SS-3
Matrix: Soil

Collected: 2021/04/28
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7327981	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

BV Labs ID: PLN641
Sample ID: BHMW115 SS-3
Matrix: Soil

Collected: 2021/04/28
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

BV Labs ID: PLN642
Sample ID: BHMW115 SS-7
Matrix: Soil

Collected: 2021/04/28
Shipped:
Received: 2021/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7327390	N/A	2021/05/05	Automated Statchk
1,3-Dichloropropene Sum	CALC	7327981	N/A	2021/05/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7331287	2021/05/03	2021/05/04	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7330536	2021/05/03	2021/05/05	Viviana Canzonieri
Moisture	BAL	7328936	N/A	2021/04/30	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7331295	2021/05/03	2021/05/04	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7329609	N/A	2021/05/06	Rebecca McClean

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.3°C

Cooler custody seal was present and intact.

Sample PLN551 [BH101 SS-2] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample PLN552 [BH101 SS-6] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Sample PLN553 [BH102 SS-2] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Sample PLN555 [BH103 SS-2] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample PLN557 [BH104 SS-4] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample PLN558 [BH104 SS-7] : F2-F4 Analysis: Detection limits were adjusted for high moisture content.

Sample PLN559 [BH105 SS-2] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample PLN576 [BH106 SS-8] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Sample PLN577 [BH107 SS-3] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample PLN578 [DUP-1] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample PLN579 [BH107 SS-7] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Sample PLN581 [BHMW108 SS-8] : VOCF1 Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly. In order to meet required regulatory criteria, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Sample PLN583 [BHMW110 SS-7] : VOCF1 Analysis: Due to a level of petroleum hydrocarbon compounds beyond the appropriate range, the sample required dilution. The detection limits were adjusted accordingly. In order to meet required regulatory criteria, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Sample PLN584 [DUP-2] : VOCF1 Analysis: Due to a level of petroleum hydrocarbon compounds beyond the appropriate range, the sample required dilution. The detection limits were adjusted accordingly. In order to meet required regulatory criteria, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Sample PLN636 [BHMW111 SS-6] : VOCF1 Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly. In order to meet required regulatory criteria, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Results relate only to the items tested.

BV Labs Job #: C1B6083
Report Date: 2021/05/06

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7328861	MYG	RPD	Moisture	2021/04/30	1.0		%	20
7328936	MYG	RPD [PLN640-01]	Moisture	2021/04/30	5.2		%	20
7329609	RSC	Matrix Spike	4-Bromofluorobenzene	2021/05/06		103	%	60 - 140
			D10-o-Xylene	2021/05/06		107	%	60 - 130
			D4-1,2-Dichloroethane	2021/05/06		103	%	60 - 140
			D8-Toluene	2021/05/06		101	%	60 - 140
			Acetone (2-Propanone)	2021/05/06		100	%	60 - 140
			Benzene	2021/05/06		89	%	60 - 140
			Bromodichloromethane	2021/05/06		100	%	60 - 140
			Bromoform	2021/05/06		101	%	60 - 140
			Bromomethane	2021/05/06		91	%	60 - 140
			Carbon Tetrachloride	2021/05/06		95	%	60 - 140
			Chlorobenzene	2021/05/06		94	%	60 - 140
			Chloroform	2021/05/06		96	%	60 - 140
			Dibromochloromethane	2021/05/06		97	%	60 - 140
			1,2-Dichlorobenzene	2021/05/06		97	%	60 - 140
			1,3-Dichlorobenzene	2021/05/06		99	%	60 - 140
			1,4-Dichlorobenzene	2021/05/06		108	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2021/05/06		105	%	60 - 140
			1,1-Dichloroethane	2021/05/06		93	%	60 - 140
			1,2-Dichloroethane	2021/05/06		93	%	60 - 140
			1,1-Dichloroethylene	2021/05/06		95	%	60 - 140
			cis-1,2-Dichloroethylene	2021/05/06		96	%	60 - 140
			trans-1,2-Dichloroethylene	2021/05/06		93	%	60 - 140
			1,2-Dichloropropane	2021/05/06		97	%	60 - 140
			cis-1,3-Dichloropropene	2021/05/06		88	%	60 - 140
			trans-1,3-Dichloropropene	2021/05/06		92	%	60 - 140
			Ethylbenzene	2021/05/06		87	%	60 - 140
			Ethylene Dibromide	2021/05/06		93	%	60 - 140
			Hexane	2021/05/06		97	%	60 - 140
			Methylene Chloride(Dichloromethane)	2021/05/06		98	%	60 - 140
			Methyl Ethyl Ketone (2-Butanone)	2021/05/06		108	%	60 - 140
			Methyl Isobutyl Ketone	2021/05/06		101	%	60 - 140
			Methyl t-butyl ether (MTBE)	2021/05/06		88	%	60 - 140
			Styrene	2021/05/06		102	%	60 - 140
			1,1,1,2-Tetrachloroethane	2021/05/06		100	%	60 - 140
			1,1,2,2-Tetrachloroethane	2021/05/06		100	%	60 - 140
			Tetrachloroethylene	2021/05/06		87	%	60 - 140
			Toluene	2021/05/06		87	%	60 - 140
			1,1,1-Trichloroethane	2021/05/06		98	%	60 - 140
			1,1,2-Trichloroethane	2021/05/06		100	%	60 - 140
			Trichloroethylene	2021/05/06		98	%	60 - 140
			Trichlorofluoromethane (FREON 11)	2021/05/06		95	%	60 - 140
			Vinyl Chloride	2021/05/06		94	%	60 - 140
			p+m-Xylene	2021/05/06		91	%	60 - 140
			o-Xylene	2021/05/06		90	%	60 - 140
			F1 (C6-C10)	2021/05/06		100	%	60 - 140
7329609	RSC	Spiked Blank	4-Bromofluorobenzene	2021/05/06		103	%	60 - 140
			D10-o-Xylene	2021/05/06		107	%	60 - 130
			D4-1,2-Dichloroethane	2021/05/06		105	%	60 - 140
			D8-Toluene	2021/05/06		102	%	60 - 140
			Acetone (2-Propanone)	2021/05/06		108	%	60 - 140
			Benzene	2021/05/06		96	%	60 - 130
			Bromodichloromethane	2021/05/06		108	%	60 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Bromoform	2021/05/06		109	%	60 - 130
			Bromomethane	2021/05/06		97	%	60 - 140
			Carbon Tetrachloride	2021/05/06		102	%	60 - 130
			Chlorobenzene	2021/05/06		101	%	60 - 130
			Chloroform	2021/05/06		104	%	60 - 130
			Dibromochloromethane	2021/05/06		104	%	60 - 130
			1,2-Dichlorobenzene	2021/05/06		105	%	60 - 130
			1,3-Dichlorobenzene	2021/05/06		107	%	60 - 130
			1,4-Dichlorobenzene	2021/05/06		115	%	60 - 130
			Dichlorodifluoromethane (FREON 12)	2021/05/06		114	%	60 - 140
			1,1-Dichloroethane	2021/05/06		100	%	60 - 130
			1,2-Dichloroethane	2021/05/06		101	%	60 - 130
			1,1-Dichloroethylene	2021/05/06		103	%	60 - 130
			cis-1,2-Dichloroethylene	2021/05/06		104	%	60 - 130
			trans-1,2-Dichloroethylene	2021/05/06		102	%	60 - 130
			1,2-Dichloropropane	2021/05/06		105	%	60 - 130
			cis-1,3-Dichloropropene	2021/05/06		89	%	60 - 130
			trans-1,3-Dichloropropene	2021/05/06		92	%	60 - 130
			Ethylbenzene	2021/05/06		93	%	60 - 130
			Ethylene Dibromide	2021/05/06		101	%	60 - 130
			Hexane	2021/05/06		104	%	60 - 130
			Methylene Chloride(Dichloromethane)	2021/05/06		107	%	60 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/05/06		115	%	60 - 140
			Methyl Isobutyl Ketone	2021/05/06		109	%	60 - 130
			Methyl t-butyl ether (MTBE)	2021/05/06		95	%	60 - 130
			Styrene	2021/05/06		111	%	60 - 130
			1,1,1,2-Tetrachloroethane	2021/05/06		107	%	60 - 130
			1,1,2,2-Tetrachloroethane	2021/05/06		109	%	60 - 130
			Tetrachloroethylene	2021/05/06		95	%	60 - 130
			Toluene	2021/05/06		93	%	60 - 130
			1,1,1-Trichloroethane	2021/05/06		106	%	60 - 130
			1,1,2-Trichloroethane	2021/05/06		108	%	60 - 130
			Trichloroethylene	2021/05/06		106	%	60 - 130
			Trichlorofluoromethane (FREON 11)	2021/05/06		103	%	60 - 130
			Vinyl Chloride	2021/05/06		103	%	60 - 130
			p+m-Xylene	2021/05/06		98	%	60 - 130
			o-Xylene	2021/05/06		96	%	60 - 130
			F1 (C6-C10)	2021/05/06		96	%	80 - 120
7329609	RSC	Method Blank	4-Bromofluorobenzene	2021/05/06		89	%	60 - 140
			D10-o-Xylene	2021/05/06		95	%	60 - 130
			D4-1,2-Dichloroethane	2021/05/06		104	%	60 - 140
			D8-Toluene	2021/05/06		99	%	60 - 140
			Acetone (2-Propanone)	2021/05/06	<0.50		ug/g	
			Benzene	2021/05/06	<0.020		ug/g	
			Bromodichloromethane	2021/05/06	<0.050		ug/g	
			Bromoform	2021/05/06	<0.050		ug/g	
			Bromomethane	2021/05/06	<0.050		ug/g	
			Carbon Tetrachloride	2021/05/06	<0.050		ug/g	
			Chlorobenzene	2021/05/06	<0.050		ug/g	
			Chloroform	2021/05/06	<0.050		ug/g	
			Dibromochloromethane	2021/05/06	<0.050		ug/g	
			1,2-Dichlorobenzene	2021/05/06	<0.050		ug/g	
			1,3-Dichlorobenzene	2021/05/06	<0.050		ug/g	
			1,4-Dichlorobenzene	2021/05/06	<0.050		ug/g	

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			Dichlorodifluoromethane (FREON 12)	2021/05/06	<0.050		ug/g	
			1,1-Dichloroethane	2021/05/06	<0.050		ug/g	
			1,2-Dichloroethane	2021/05/06	<0.050		ug/g	
			1,1-Dichloroethylene	2021/05/06	<0.050		ug/g	
			cis-1,2-Dichloroethylene	2021/05/06	<0.050		ug/g	
			trans-1,2-Dichloroethylene	2021/05/06	<0.050		ug/g	
			1,2-Dichloropropane	2021/05/06	<0.050		ug/g	
			cis-1,3-Dichloropropene	2021/05/06	<0.030		ug/g	
			trans-1,3-Dichloropropene	2021/05/06	<0.040		ug/g	
			Ethylbenzene	2021/05/06	<0.020		ug/g	
			Ethylene Dibromide	2021/05/06	<0.050		ug/g	
			Hexane	2021/05/06	<0.050		ug/g	
			Methylene Chloride(Dichloromethane)	2021/05/06	<0.050		ug/g	
			Methyl Ethyl Ketone (2-Butanone)	2021/05/06	<0.50		ug/g	
			Methyl Isobutyl Ketone	2021/05/06	<0.50		ug/g	
			Methyl t-butyl ether (MTBE)	2021/05/06	<0.050		ug/g	
			Styrene	2021/05/06	<0.050		ug/g	
			1,1,1,2-Tetrachloroethane	2021/05/06	<0.050		ug/g	
			1,1,2,2-Tetrachloroethane	2021/05/06	<0.050		ug/g	
			Tetrachloroethylene	2021/05/06	<0.050		ug/g	
			Toluene	2021/05/06	<0.020		ug/g	
			1,1,1-Trichloroethane	2021/05/06	<0.050		ug/g	
			1,1,2-Trichloroethane	2021/05/06	<0.050		ug/g	
			Trichloroethylene	2021/05/06	<0.050		ug/g	
			Trichlorofluoromethane (FREON 11)	2021/05/06	<0.050		ug/g	
			Vinyl Chloride	2021/05/06	<0.020		ug/g	
			p+m-Xylene	2021/05/06	<0.020		ug/g	
			o-Xylene	2021/05/06	<0.020		ug/g	
			Total Xylenes	2021/05/06	<0.020		ug/g	
			F1 (C6-C10)	2021/05/06	<10		ug/g	
			F1 (C6-C10) - BTEX	2021/05/06	<10		ug/g	
7329609	RSC	RPD	Acetone (2-Propanone)	2021/05/06	NC		%	50
			Benzene	2021/05/06	NC		%	50
			Bromodichloromethane	2021/05/06	NC		%	50
			Bromoform	2021/05/06	NC		%	50
			Bromomethane	2021/05/06	NC		%	50
			Carbon Tetrachloride	2021/05/06	NC		%	50
			Chlorobenzene	2021/05/06	NC		%	50
			Chloroform	2021/05/06	NC		%	50
			Dibromochloromethane	2021/05/06	NC		%	50
			1,2-Dichlorobenzene	2021/05/06	NC		%	50
			1,3-Dichlorobenzene	2021/05/06	NC		%	50
			1,4-Dichlorobenzene	2021/05/06	NC		%	50
			Dichlorodifluoromethane (FREON 12)	2021/05/06	NC		%	50
			1,1-Dichloroethane	2021/05/06	NC		%	50
			1,2-Dichloroethane	2021/05/06	NC		%	50
			1,1-Dichloroethylene	2021/05/06	NC		%	50
			cis-1,2-Dichloroethylene	2021/05/06	NC		%	50
			trans-1,2-Dichloroethylene	2021/05/06	NC		%	50
			1,2-Dichloropropane	2021/05/06	NC		%	50
			cis-1,3-Dichloropropene	2021/05/06	NC		%	50
			trans-1,3-Dichloropropene	2021/05/06	NC		%	50
			Ethylbenzene	2021/05/06	NC		%	50
			Ethylene Dibromide	2021/05/06	NC		%	50

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Hexane	2021/05/06	NC		%	50
			Methylene Chloride(Dichloromethane)	2021/05/06	NC		%	50
			Methyl Ethyl Ketone (2-Butanone)	2021/05/06	NC		%	50
			Methyl Isobutyl Ketone	2021/05/06	NC		%	50
			Methyl t-butyl ether (MTBE)	2021/05/06	NC		%	50
			Styrene	2021/05/06	NC		%	50
			1,1,1,2-Tetrachloroethane	2021/05/06	NC		%	50
			1,1,2,2-Tetrachloroethane	2021/05/06	NC		%	50
			Tetrachloroethylene	2021/05/06	NC		%	50
			Toluene	2021/05/06	NC		%	50
			1,1,1-Trichloroethane	2021/05/06	NC		%	50
			1,1,2-Trichloroethane	2021/05/06	NC		%	50
			Trichloroethylene	2021/05/06	NC		%	50
			Trichlorofluoromethane (FREON 11)	2021/05/06	NC		%	50
			Vinyl Chloride	2021/05/06	NC		%	50
			p+m-Xylene	2021/05/06	NC		%	50
			o-Xylene	2021/05/06	NC		%	50
			Total Xylenes	2021/05/06	NC		%	50
			F1 (C6-C10)	2021/05/06	NC		%	30
			F1 (C6-C10) - BTEX	2021/05/06	NC		%	30
7330357	GYA	QC Standard	Sieve - #200 (<0.075mm)	2021/05/04		57	%	53 - 58
			Sieve - #200 (>0.075mm)	2021/05/04		44	%	42 - 47
7330357	GYA	RPD	Sieve - #200 (<0.075mm)	2021/05/04	0.14		%	20
			Sieve - #200 (>0.075mm)	2021/05/04	0.38		%	20
7330536	VIV	Matrix Spike	Acid Extractable Antimony (Sb)	2021/05/05		96	%	75 - 125
			Acid Extractable Arsenic (As)	2021/05/05		103	%	75 - 125
			Acid Extractable Barium (Ba)	2021/05/05		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2021/05/05		104	%	75 - 125
			Acid Extractable Boron (B)	2021/05/05		97	%	75 - 125
			Acid Extractable Cadmium (Cd)	2021/05/05		101	%	75 - 125
			Acid Extractable Chromium (Cr)	2021/05/05		101	%	75 - 125
			Acid Extractable Cobalt (Co)	2021/05/05		99	%	75 - 125
			Acid Extractable Copper (Cu)	2021/05/05		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2021/05/05		NC	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2021/05/05		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2021/05/05		96	%	75 - 125
			Acid Extractable Selenium (Se)	2021/05/05		99	%	75 - 125
			Acid Extractable Silver (Ag)	2021/05/05		100	%	75 - 125
			Acid Extractable Thallium (Tl)	2021/05/05		99	%	75 - 125
			Acid Extractable Uranium (U)	2021/05/05		96	%	75 - 125
			Acid Extractable Vanadium (V)	2021/05/05		103	%	75 - 125
			Acid Extractable Zinc (Zn)	2021/05/05		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2021/05/05		86	%	75 - 125
7330536	VIV	Spiked Blank	Acid Extractable Antimony (Sb)	2021/05/05		102	%	80 - 120
			Acid Extractable Arsenic (As)	2021/05/05		102	%	80 - 120
			Acid Extractable Barium (Ba)	2021/05/05		101	%	80 - 120
			Acid Extractable Beryllium (Be)	2021/05/05		99	%	80 - 120
			Acid Extractable Boron (B)	2021/05/05		97	%	80 - 120
			Acid Extractable Cadmium (Cd)	2021/05/05		99	%	80 - 120
			Acid Extractable Chromium (Cr)	2021/05/05		99	%	80 - 120
			Acid Extractable Cobalt (Co)	2021/05/05		98	%	80 - 120
			Acid Extractable Copper (Cu)	2021/05/05		101	%	80 - 120
			Acid Extractable Lead (Pb)	2021/05/05		99	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2021/05/05		98	%	80 - 120

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Nickel (Ni)	2021/05/05		100	%	80 - 120
			Acid Extractable Selenium (Se)	2021/05/05		100	%	80 - 120
			Acid Extractable Silver (Ag)	2021/05/05		98	%	80 - 120
			Acid Extractable Thallium (Tl)	2021/05/05		103	%	80 - 120
			Acid Extractable Uranium (U)	2021/05/05		99	%	80 - 120
			Acid Extractable Vanadium (V)	2021/05/05		100	%	80 - 120
			Acid Extractable Zinc (Zn)	2021/05/05		97	%	80 - 120
			Acid Extractable Mercury (Hg)	2021/05/05		91	%	80 - 120
7330536	VIV	Method Blank	Acid Extractable Antimony (Sb)	2021/05/05	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2021/05/05	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2021/05/05	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2021/05/05	<0.20		ug/g	
			Acid Extractable Boron (B)	2021/05/05	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2021/05/05	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2021/05/05	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2021/05/05	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2021/05/05	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2021/05/05	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2021/05/05	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2021/05/05	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2021/05/05	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2021/05/05	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2021/05/05	<0.050		ug/g	
			Acid Extractable Uranium (U)	2021/05/05	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2021/05/05	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2021/05/05	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2021/05/05	<0.050		ug/g	
7330536	VIV	RPD	Acid Extractable Antimony (Sb)	2021/05/05	7.5		%	30
			Acid Extractable Arsenic (As)	2021/05/05	1.9		%	30
			Acid Extractable Barium (Ba)	2021/05/05	3.9		%	30
			Acid Extractable Beryllium (Be)	2021/05/05	3.1		%	30
			Acid Extractable Boron (B)	2021/05/05	0.22		%	30
			Acid Extractable Cadmium (Cd)	2021/05/05	0.77		%	30
			Acid Extractable Chromium (Cr)	2021/05/05	0.11		%	30
			Acid Extractable Cobalt (Co)	2021/05/05	2.5		%	30
			Acid Extractable Copper (Cu)	2021/05/05	0.87		%	30
			Acid Extractable Lead (Pb)	2021/05/05	3.4		%	30
			Acid Extractable Molybdenum (Mo)	2021/05/05	0.11		%	30
			Acid Extractable Nickel (Ni)	2021/05/05	6.4		%	30
			Acid Extractable Selenium (Se)	2021/05/05	NC		%	30
			Acid Extractable Silver (Ag)	2021/05/05	NC		%	30
			Acid Extractable Thallium (Tl)	2021/05/05	13		%	30
			Acid Extractable Uranium (U)	2021/05/05	0.27		%	30
			Acid Extractable Vanadium (V)	2021/05/05	3.4		%	30
			Acid Extractable Zinc (Zn)	2021/05/05	4.9		%	30
			Acid Extractable Mercury (Hg)	2021/05/05	5.4		%	30
7330915	DN0	Matrix Spike	o-Terphenyl	2021/05/03		88	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/03		92	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2021/05/03		95	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2021/05/03		99	%	50 - 130
7330915	DN0	Spiked Blank	o-Terphenyl	2021/05/03		85	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/03		90	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2021/05/03		92	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2021/05/03		95	%	80 - 120

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7330915	DN0	Method Blank	o-Terphenyl	2021/05/03		88	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/03	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2021/05/03	<50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2021/05/03	<50		ug/g	
7330915	DN0	RPD	F2 (C10-C16 Hydrocarbons)	2021/05/03	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/05/03	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/05/03	NC		%	30
7331287	KTR	Matrix Spike [PLN581-01]	o-Terphenyl	2021/05/03		100	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/03		107	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2021/05/03		108	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2021/05/03		108	%	50 - 130
7331287	KTR	Spiked Blank	o-Terphenyl	2021/05/03		97	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/03		103	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2021/05/03		103	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2021/05/03		102	%	80 - 120
7331287	KTR	Method Blank	o-Terphenyl	2021/05/03		100	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/03	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2021/05/03	<50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2021/05/03	<50		ug/g	
7331287	KTR	RPD [PLN581-01]	F2 (C10-C16 Hydrocarbons)	2021/05/04	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/05/04	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/05/04	NC		%	30
7331295	RAJ	Matrix Spike [PLN581-01]	D10-Anthracene	2021/05/04		91	%	50 - 130
			D14-Terphenyl (FS)	2021/05/04		103	%	50 - 130
			D8-Acenaphthylene	2021/05/04		82	%	50 - 130
			Acenaphthene	2021/05/04		89	%	50 - 130
			Acenaphthylene	2021/05/04		80	%	50 - 130
			Anthracene	2021/05/04		90	%	50 - 130
			Benzo(a)anthracene	2021/05/04		95	%	50 - 130
			Benzo(a)pyrene	2021/05/04		84	%	50 - 130
			Benzo(b/j)fluoranthene	2021/05/04		98	%	50 - 130
			Benzo(g,h,i)perylene	2021/05/04		94	%	50 - 130
			Benzo(k)fluoranthene	2021/05/04		102	%	50 - 130
			Chrysene	2021/05/04		99	%	50 - 130
			Dibenzo(a,h)anthracene	2021/05/04		94	%	50 - 130
			Fluoranthene	2021/05/04		109	%	50 - 130
			Fluorene	2021/05/04		93	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/05/04		95	%	50 - 130
			1-Methylnaphthalene	2021/05/04		120	%	50 - 130
			2-Methylnaphthalene	2021/05/04		151 (1)	%	50 - 130
			Naphthalene	2021/05/04		118	%	50 - 130
			Phenanthrene	2021/05/04		96	%	50 - 130
			Pyrene	2021/05/04		110	%	50 - 130
7331295	RAJ	Spiked Blank	D10-Anthracene	2021/05/04		91	%	50 - 130
			D14-Terphenyl (FS)	2021/05/04		101	%	50 - 130
			D8-Acenaphthylene	2021/05/04		83	%	50 - 130
			Acenaphthene	2021/05/04		93	%	50 - 130
			Acenaphthylene	2021/05/04		84	%	50 - 130
			Anthracene	2021/05/04		93	%	50 - 130
			Benzo(a)anthracene	2021/05/04		97	%	50 - 130
			Benzo(a)pyrene	2021/05/04		88	%	50 - 130
			Benzo(b/j)fluoranthene	2021/05/04		102	%	50 - 130
			Benzo(g,h,i)perylene	2021/05/04		97	%	50 - 130
			Benzo(k)fluoranthene	2021/05/04		109	%	50 - 130

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chrysene	2021/05/04		100	%	50 - 130
			Dibenzo(a,h)anthracene	2021/05/04		93	%	50 - 130
			Fluoranthene	2021/05/04		111	%	50 - 130
			Fluorene	2021/05/04		94	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/05/04		101	%	50 - 130
			1-Methylnaphthalene	2021/05/04		109	%	50 - 130
			2-Methylnaphthalene	2021/05/04		107	%	50 - 130
			Naphthalene	2021/05/04		92	%	50 - 130
			Phenanthrene	2021/05/04		96	%	50 - 130
			Pyrene	2021/05/04		110	%	50 - 130
7331295	RAJ	Method Blank	D10-Anthracene	2021/05/04		92	%	50 - 130
			D14-Terphenyl (FS)	2021/05/04		100	%	50 - 130
			D8-Acenaphthylene	2021/05/04		82	%	50 - 130
			Acenaphthene	2021/05/04	<0.0050		ug/g	
			Acenaphthylene	2021/05/04	<0.0050		ug/g	
			Anthracene	2021/05/04	<0.0050		ug/g	
			Benzo(a)anthracene	2021/05/04	<0.0050		ug/g	
			Benzo(a)pyrene	2021/05/04	<0.0050		ug/g	
			Benzo(b/j)fluoranthene	2021/05/04	<0.0050		ug/g	
			Benzo(g,h,i)perylene	2021/05/04	<0.0050		ug/g	
			Benzo(k)fluoranthene	2021/05/04	<0.0050		ug/g	
			Chrysene	2021/05/04	<0.0050		ug/g	
			Dibenzo(a,h)anthracene	2021/05/04	<0.0050		ug/g	
			Fluoranthene	2021/05/04	<0.0050		ug/g	
			Fluorene	2021/05/04	<0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2021/05/04	<0.0050		ug/g	
			1-Methylnaphthalene	2021/05/04	<0.0050		ug/g	
			2-Methylnaphthalene	2021/05/04	<0.0050		ug/g	
			Naphthalene	2021/05/04	<0.0050		ug/g	
			Phenanthrene	2021/05/04	<0.0050		ug/g	
			Pyrene	2021/05/04	<0.0050		ug/g	
7331295	RAJ	RPD [PLN581-01]	Acenaphthene	2021/05/04	NC		%	40
			Acenaphthylene	2021/05/04	NC		%	40
			Anthracene	2021/05/04	NC		%	40
			Benzo(a)anthracene	2021/05/04	NC		%	40
			Benzo(a)pyrene	2021/05/04	NC		%	40
			Benzo(b/j)fluoranthene	2021/05/04	NC		%	40
			Benzo(g,h,i)perylene	2021/05/04	NC		%	40
			Benzo(k)fluoranthene	2021/05/04	NC		%	40
			Chrysene	2021/05/04	NC		%	40
			Dibenzo(a,h)anthracene	2021/05/04	NC		%	40
			Fluoranthene	2021/05/04	NC		%	40
			Fluorene	2021/05/04	NC		%	40
			Indeno(1,2,3-cd)pyrene	2021/05/04	NC		%	40
			1-Methylnaphthalene	2021/05/04	32		%	40
			2-Methylnaphthalene	2021/05/04	37		%	40
			Naphthalene	2021/05/04	22		%	40
			Phenanthrene	2021/05/04	4.9		%	40
			Pyrene	2021/05/04	NC		%	40
7331308	RAJ	Matrix Spike	D10-Anthracene	2021/05/04		86	%	50 - 130
			D14-Terphenyl (FS)	2021/05/04		88	%	50 - 130
			D8-Acenaphthylene	2021/05/04		86	%	50 - 130
			Acenaphthene	2021/05/04		89	%	50 - 130
			Acenaphthylene	2021/05/04		88	%	50 - 130

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Anthracene	2021/05/04		90	%	50 - 130
			Benzo(a)anthracene	2021/05/04		94	%	50 - 130
			Benzo(a)pyrene	2021/05/04		83	%	50 - 130
			Benzo(b/j)fluoranthene	2021/05/04		101	%	50 - 130
			Benzo(g,h,i)perylene	2021/05/04		90	%	50 - 130
			Benzo(k)fluoranthene	2021/05/04		80	%	50 - 130
			Chrysene	2021/05/04		102	%	50 - 130
			Dibenzo(a,h)anthracene	2021/05/04		93	%	50 - 130
			Fluoranthene	2021/05/04		98	%	50 - 130
			Fluorene	2021/05/04		94	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/05/04		93	%	50 - 130
			1-Methylnaphthalene	2021/05/04		91	%	50 - 130
			2-Methylnaphthalene	2021/05/04		83	%	50 - 130
			Naphthalene	2021/05/04		78	%	50 - 130
			Phenanthrene	2021/05/04		94	%	50 - 130
			Pyrene	2021/05/04		99	%	50 - 130
7331308	RAJ	Spiked Blank	D10-Anthracene	2021/05/04		91	%	50 - 130
			D14-Terphenyl (FS)	2021/05/04		91	%	50 - 130
			D8-Acenaphthylene	2021/05/04		90	%	50 - 130
			Acenaphthene	2021/05/04		89	%	50 - 130
			Acenaphthylene	2021/05/04		89	%	50 - 130
			Anthracene	2021/05/04		92	%	50 - 130
			Benzo(a)anthracene	2021/05/04		96	%	50 - 130
			Benzo(a)pyrene	2021/05/04		86	%	50 - 130
			Benzo(b/j)fluoranthene	2021/05/04		100	%	50 - 130
			Benzo(g,h,i)perylene	2021/05/04		97	%	50 - 130
			Benzo(k)fluoranthene	2021/05/04		91	%	50 - 130
			Chrysene	2021/05/04		102	%	50 - 130
			Dibenzo(a,h)anthracene	2021/05/04		97	%	50 - 130
			Fluoranthene	2021/05/04		101	%	50 - 130
			Fluorene	2021/05/04		93	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/05/04		99	%	50 - 130
			1-Methylnaphthalene	2021/05/04		95	%	50 - 130
			2-Methylnaphthalene	2021/05/04		92	%	50 - 130
			Naphthalene	2021/05/04		86	%	50 - 130
			Phenanthrene	2021/05/04		97	%	50 - 130
			Pyrene	2021/05/04		101	%	50 - 130
7331308	RAJ	Method Blank	D10-Anthracene	2021/05/04		87	%	50 - 130
			D14-Terphenyl (FS)	2021/05/04		86	%	50 - 130
			D8-Acenaphthylene	2021/05/04		86	%	50 - 130
			Acenaphthene	2021/05/04	<0.0050		ug/g	
			Acenaphthylene	2021/05/04	<0.0050		ug/g	
			Anthracene	2021/05/04	<0.0050		ug/g	
			Benzo(a)anthracene	2021/05/04	<0.0050		ug/g	
			Benzo(a)pyrene	2021/05/04	<0.0050		ug/g	
			Benzo(b/j)fluoranthene	2021/05/04	<0.0050		ug/g	
			Benzo(g,h,i)perylene	2021/05/04	<0.0050		ug/g	
			Benzo(k)fluoranthene	2021/05/04	<0.0050		ug/g	
			Chrysene	2021/05/04	<0.0050		ug/g	
			Dibenzo(a,h)anthracene	2021/05/04	<0.0050		ug/g	
			Fluoranthene	2021/05/04	<0.0050		ug/g	
			Fluorene	2021/05/04	<0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2021/05/04	<0.0050		ug/g	
			1-Methylnaphthalene	2021/05/04	<0.0050		ug/g	

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			2-Methylnaphthalene	2021/05/04	<0.0050		ug/g	
			Naphthalene	2021/05/04	<0.0050		ug/g	
			Phenanthrene	2021/05/04	<0.0050		ug/g	
			Pyrene	2021/05/04	<0.0050		ug/g	
7331308	RAJ	RPD	Acenaphthene	2021/05/04	NC		%	40
			Acenaphthylene	2021/05/04	NC		%	40
			Anthracene	2021/05/04	NC		%	40
			Benzo(a)anthracene	2021/05/04	NC		%	40
			Benzo(a)pyrene	2021/05/04	NC		%	40
			Benzo(b/j)fluoranthene	2021/05/04	NC		%	40
			Benzo(g,h,i)perylene	2021/05/04	NC		%	40
			Benzo(k)fluoranthene	2021/05/04	NC		%	40
			Chrysene	2021/05/04	NC		%	40
			Dibenzo(a,h)anthracene	2021/05/04	NC		%	40
			Fluoranthene	2021/05/04	NC		%	40
			Fluorene	2021/05/04	NC		%	40
			Indeno(1,2,3-cd)pyrene	2021/05/04	NC		%	40
			1-Methylnaphthalene	2021/05/04	NC		%	40
			2-Methylnaphthalene	2021/05/04	78 (1)		%	40
			Naphthalene	2021/05/04	NC		%	40
			Phenanthrene	2021/05/04	15		%	40
			Pyrene	2021/05/04	NC		%	40
7331865	RAJ	Matrix Spike	D10-Anthracene	2021/05/04		118	%	50 - 130
			D14-Terphenyl (FS)	2021/05/04		108	%	50 - 130
			D8-Acenaphthylene	2021/05/04		101	%	50 - 130
			Acenaphthene	2021/05/04		108	%	50 - 130
			Acenaphthylene	2021/05/04		100	%	50 - 130
			Anthracene	2021/05/04		114	%	50 - 130
			Benzo(a)anthracene	2021/05/04		114	%	50 - 130
			Benzo(a)pyrene	2021/05/04		99	%	50 - 130
			Benzo(b/j)fluoranthene	2021/05/04		116	%	50 - 130
			Benzo(g,h,i)perylene	2021/05/04		123	%	50 - 130
			Benzo(k)fluoranthene	2021/05/04		106	%	50 - 130
			Chrysene	2021/05/04		118	%	50 - 130
			Dibenzo(a,h)anthracene	2021/05/04		120	%	50 - 130
			Fluoranthene	2021/05/04		123	%	50 - 130
			Fluorene	2021/05/04		113	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/05/04		124	%	50 - 130
			1-Methylnaphthalene	2021/05/04		113	%	50 - 130
			2-Methylnaphthalene	2021/05/04		103	%	50 - 130
			Naphthalene	2021/05/04		94	%	50 - 130
			Phenanthrene	2021/05/04		113	%	50 - 130
			Pyrene	2021/05/04		121	%	50 - 130
7331865	RAJ	Spiked Blank	D10-Anthracene	2021/05/03		119	%	50 - 130
			D14-Terphenyl (FS)	2021/05/03		117	%	50 - 130
			D8-Acenaphthylene	2021/05/03		103	%	50 - 130
			Acenaphthene	2021/05/03		106	%	50 - 130
			Acenaphthylene	2021/05/03		97	%	50 - 130
			Anthracene	2021/05/03		110	%	50 - 130
			Benzo(a)anthracene	2021/05/03		111	%	50 - 130
			Benzo(a)pyrene	2021/05/03		97	%	50 - 130
			Benzo(b/j)fluoranthene	2021/05/03		115	%	50 - 130
			Benzo(g,h,i)perylene	2021/05/03		121	%	50 - 130
			Benzo(k)fluoranthene	2021/05/03		101	%	50 - 130

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chrysene	2021/05/03		115	%	50 - 130
			Dibenzo(a,h)anthracene	2021/05/03		110	%	50 - 130
			Fluoranthene	2021/05/03		124	%	50 - 130
			Fluorene	2021/05/03		110	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/05/03		123	%	50 - 130
			1-Methylnaphthalene	2021/05/03		107	%	50 - 130
			2-Methylnaphthalene	2021/05/03		97	%	50 - 130
			Naphthalene	2021/05/03		90	%	50 - 130
			Phenanthrene	2021/05/03		110	%	50 - 130
			Pyrene	2021/05/03		123	%	50 - 130
7331865	RAJ	Method Blank	D10-Anthracene	2021/05/03		129	%	50 - 130
			D14-Terphenyl (FS)	2021/05/03		118	%	50 - 130
			D8-Acenaphthylene	2021/05/03		98	%	50 - 130
			Acenaphthene	2021/05/03	<0.0050		ug/g	
			Acenaphthylene	2021/05/03	<0.0050		ug/g	
			Anthracene	2021/05/03	<0.0050		ug/g	
			Benzo(a)anthracene	2021/05/03	<0.0050		ug/g	
			Benzo(a)pyrene	2021/05/03	<0.0050		ug/g	
			Benzo(b/j)fluoranthene	2021/05/03	<0.0050		ug/g	
			Benzo(g,h,i)perylene	2021/05/03	<0.0050		ug/g	
			Benzo(k)fluoranthene	2021/05/03	<0.0050		ug/g	
			Chrysene	2021/05/03	<0.0050		ug/g	
			Dibenzo(a,h)anthracene	2021/05/03	<0.0050		ug/g	
			Fluoranthene	2021/05/03	<0.0050		ug/g	
			Fluorene	2021/05/03	<0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2021/05/03	<0.0050		ug/g	
			1-Methylnaphthalene	2021/05/03	<0.0050		ug/g	
			2-Methylnaphthalene	2021/05/03	<0.0050		ug/g	
			Naphthalene	2021/05/03	<0.0050		ug/g	
			Phenanthrene	2021/05/03	<0.0050		ug/g	
			Pyrene	2021/05/03	<0.0050		ug/g	
7331865	RAJ	RPD	Acenaphthene	2021/05/04	NC		%	40
			Acenaphthylene	2021/05/04	NC		%	40
			Anthracene	2021/05/04	NC		%	40
			Benzo(a)anthracene	2021/05/04	NC		%	40
			Benzo(a)pyrene	2021/05/04	NC		%	40
			Benzo(b/j)fluoranthene	2021/05/04	NC		%	40
			Benzo(g,h,i)perylene	2021/05/04	NC		%	40
			Benzo(k)fluoranthene	2021/05/04	NC		%	40
			Chrysene	2021/05/04	NC		%	40
			Dibenzo(a,h)anthracene	2021/05/04	NC		%	40
			Fluoranthene	2021/05/04	NC		%	40
			Fluorene	2021/05/04	NC		%	40
			Indeno(1,2,3-cd)pyrene	2021/05/04	NC		%	40
			1-Methylnaphthalene	2021/05/04	NC		%	40
			2-Methylnaphthalene	2021/05/04	NC		%	40
			Naphthalene	2021/05/04	NC		%	40
			Phenanthrene	2021/05/04	NC		%	40
			Pyrene	2021/05/04	NC		%	40
7332664	DAN	Matrix Spike	1,4-Difluorobenzene	2021/05/04		98	%	60 - 140
			4-Bromofluorobenzene	2021/05/04		99	%	60 - 140
			D10-o-Xylene	2021/05/04		75	%	60 - 140
			D4-1,2-Dichloroethane	2021/05/04		97	%	60 - 140
			Benzene	2021/05/04		84	%	50 - 140

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Toluene	2021/05/04		88	%	50 - 140
			Ethylbenzene	2021/05/04		94	%	50 - 140
			o-Xylene	2021/05/04		93	%	50 - 140
			p+m-Xylene	2021/05/04		100	%	50 - 140
			F1 (C6-C10)	2021/05/04		77	%	60 - 140
7332664	DAN	Spiked Blank	1,4-Difluorobenzene	2021/05/04		99	%	60 - 140
			4-Bromofluorobenzene	2021/05/04		100	%	60 - 140
			D10-o-Xylene	2021/05/04		93	%	60 - 140
			D4-1,2-Dichloroethane	2021/05/04		94	%	60 - 140
			Benzene	2021/05/04		92	%	50 - 140
			Toluene	2021/05/04		95	%	50 - 140
			Ethylbenzene	2021/05/04		101	%	50 - 140
			o-Xylene	2021/05/04		98	%	50 - 140
			p+m-Xylene	2021/05/04		107	%	50 - 140
			F1 (C6-C10)	2021/05/04		85	%	80 - 120
7332664	DAN	Method Blank	1,4-Difluorobenzene	2021/05/04		101	%	60 - 140
			4-Bromofluorobenzene	2021/05/04		97	%	60 - 140
			D10-o-Xylene	2021/05/04		81	%	60 - 140
			D4-1,2-Dichloroethane	2021/05/04		97	%	60 - 140
			Benzene	2021/05/04	<0.020		ug/g	
			Toluene	2021/05/04	<0.020		ug/g	
			Ethylbenzene	2021/05/04	<0.020		ug/g	
			o-Xylene	2021/05/04	<0.020		ug/g	
			p+m-Xylene	2021/05/04	<0.040		ug/g	
			Total Xylenes	2021/05/04	<0.040		ug/g	
			F1 (C6-C10)	2021/05/04	<10		ug/g	
			F1 (C6-C10) - BTEX	2021/05/04	<10		ug/g	
7332664	DAN	RPD	Benzene	2021/05/04	NC		%	50
			Toluene	2021/05/04	NC		%	50
			Ethylbenzene	2021/05/04	NC		%	50
			o-Xylene	2021/05/04	NC		%	50
			p+m-Xylene	2021/05/04	NC		%	50
			Total Xylenes	2021/05/04	NC		%	50
			F1 (C6-C10)	2021/05/04	NC		%	30
			F1 (C6-C10) - BTEX	2021/05/04	NC		%	30
7333129	KLI	Matrix Spike	o-Terphenyl	2021/05/05		93	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/05		103	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2021/05/05		104	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2021/05/05		100	%	50 - 130
7333129	KLI	Spiked Blank	o-Terphenyl	2021/05/05		87	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/05		96	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2021/05/05		95	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2021/05/05		91	%	80 - 120
7333129	KLI	Method Blank	o-Terphenyl	2021/05/05		90	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/05	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2021/05/05	<50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2021/05/05	<50		ug/g	
7333129	KLI	RPD	F2 (C10-C16 Hydrocarbons)	2021/05/05	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/05/05	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/05/05	NC		%	30
7334676	YPA	Spiked Blank	Available (CaCl2) pH	2021/05/05		101	%	97 - 103
7334676	YPA	RPD	Available (CaCl2) pH	2021/05/05	1.4		%	N/A
7336989	RDU	Matrix Spike [PLN559-01]	F4G-sg (Grav. Heavy Hydrocarbons)	2021/05/06		98	%	65 - 135
7336989	RDU	Spiked Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2021/05/06		102	%	65 - 135

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7336989	RDU	Method Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2021/05/06	<100		ug/g	
7336989	RDU	RPD [PLN577-01]	F4G-sg (Grav. Heavy Hydrocarbons)	2021/05/06	5.7		%	50

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva Pranjic CHARTERED CHEMIST

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free 800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

29-Apr-21 12:45
Antonella Brasil
C1B6083
ATM ENV-766

Page 1 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#982 Pinchin Ltd	Company Name		Quotation #	A70927
Attention	Accounts Payable	Attention	Matt, Ryan, Mike	P.O. #	
Address	1 Hines Road Suite 200	Address		Project	285722.003
	Kanata ON K2K 3C7			Project Name	
Tel	(613) 592-3387 Fax (613) 592-5897	Tel	Fax	Site #	
Email	ap@pinchin.com	Email	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By	MKOSIW

Bottle Order #: 823853
COC #: C#823853-01-01
Project Manager: Antonella Brasil

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 ☐ Res/Park ☒ Medium/Fine ☒; Table 2 ☐ Ind/Comm ☐ Coarse ☐; Table 3 ☒ Agri/Other ☐ For RSC ☐; Table ☐

Other Regulations: CCME ☐ Sanitary Sewer Bylaw ☐; Reg 558 ☐ Storm Sewer Bylaw ☐; MISA ☐ Municipality; PWQO ☐ Reg 406 Table ☐; Other ☐

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; O.Reg 153 VOCs by HS (Soil); Petroleum Hydrocarbons F2-F4 in Soil; O.Reg 153 Metals Package (Soil) ICPMS; PAHs; pH; Texture; BTEX

Turnaround Time (TAT) Required: Please provide advance notice for rush projects
Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	VOCs	PHC F2-F4	Metals ICPMS	PAHs	pH	Texture	BTEX			# of Bottles	Comments
1		BH101 SS-2	April 26 2021	AM	SOIL			X	X	X			X			2	
2		BH101 SS-6						X		X						2	
3		BH102 SS-2						X	X	X			X			2	
4		BH102 SS-6						X		X						2	
5		BH103 SS-2						X	X	X	X	X	X			2	RECEIVED IN OTTAWA
6		BH103 SS-7						X		X	X	X				2	
7		BH104 SS-4						X	X	X			X			2	
8		BH104 SS-7						X		X						2	
9		BH105 SS-2		PM				X	X	X	X	X	X			2	Melted Ice
10		BH105 SS-7						X		X	X	X				2	ON Ice packs

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mike Koc	April 29 2021	9:00 AM	[signature]	2021/04/29	12:45	
			[signature]	2021/04/30	08:00	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Recei 4, 4, 5; Custody Seal Present / Intact: Yes / No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

6.5, 3 on Ice

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

Page 2 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#982 Pinchin Ltd	Company Name:		Quotation #:	A70927	BV Labs Job #:	Bottle Order #: 823853
Attention:	Accounts Payable	Attention:	Matt, Ryan, Mike	P.O. #:			
Address:	1 Hines Road Suite 200, Kanata ON K2K 3C7	Address:		Project:	285722.003	COC #: C#823853-02-01	Project Manager: Antonella Brasil
Tel:	(613) 592-3387 Fax: (613) 592-5897	Tel: Fax:		Project Name:			
Email:	ap@pinchin.com	Email:	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Site #:			
				Sampled By:	M Kosiw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1 / Table 2 / Table 3 / Table ___; Res/Park / Ind/Comm / Agri/Other; Medium/Fine / Coarse / For RSC

Other Regulations: CCME / Reg 558 / MISA / PWQO / Other; Sanitary Sewer Bylaw / Storm Sewer Bylaw / Municipality ___ / Reg 406 Table ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 VOCs by HS (Water) Soil	Petroleum Hydrocarbons F2-F4 in Water Soil	O.Reg 153 Metals Package (Water) ICPMS	PAHS	BTEX	PH	Texture			# of Bottles	Comments
1		BH106 SS-4	April 26	PM	SOIL			X	X	X	X					2	
2		BH106 SS-8						X		X						2	
3		BH107 SS-3						X	X	X	X					2	
4		Dup-1						X	X	X	X					2	
5		BH107 SS-7						X		X						2	
6		BHMW108 SS-2							X	X		X	X			1	RECEIVED IN OTTAWA
7		BHMW108 SS-8					X	X		X						2	
8		BH MW109 SS-7	April 27	AM			X	X		X		X	X			2	
9		BH MW110 SS-7					X	X		X						2	
10		Dup-2					X	X		X						2	see p. 1

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Laboratory Use Only
Mike Kosiw	April 29, 2024	9:15 Am	See page 1					Temperature (°C) on Recei; Custody Seal Yes No; Present; Intact

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Page 3 of 3

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#982 Pinchin Ltd	Company Name:		Quotation #:	A70927	BV Labs Job #:	Bottle Order #: 823853
Attention:	Accounts Payable	Attention:	Matt, Ryan, Mike	P.O. #:			
Address:	1 Hines Road Suite 200, Kanata ON K2K 3C7	Address:		Project:	285722.003	COC #: C#823853-03-01	Project Manager: Antonella Brasil
Tel:	(613) 592-3387 Fax: (613) 592-5897	Tel: Fax:		Project Name:			
Email:	ap@pinchin.com	Email:	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Site #:			
				Sampled By:	M Kosiw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 VOCs by HS (Water)	Petroleum Hydrocarbons F2-F4 in Water	O Reg 153 Metals Package (Water) ICPMS	PAHs	BTEX	pH	texture				# of Bottles	Comments
1		BHMW111 SS-6	April 27	PM	SOIL		X	X		X							2	
2		BHMW12 SS-3	↓	↓	↓				X	X		X	X				[illegible]	
3		BHMW12 SS-7	↓				X	X		X		X	X				2	
4		BHMW13 SS-3	April 28				X	X				X	X				2	
5		BH113 SS-7					X	X	X	X		X	X				2	RECEIVED IN OTTAWA
6		BHMW15 SS-3					X	X									2	
7		BHMW15 SS-7	↓	↓	↓		X	X	X	X							2	
8																		
9																		
10																		See P1

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Laboratory Use Only
Mike Kosiw	April 29 2021	9:30	See PAGE 1					Temperature (°C) on Recei; Custody Seal Yes No; Present; Intact

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

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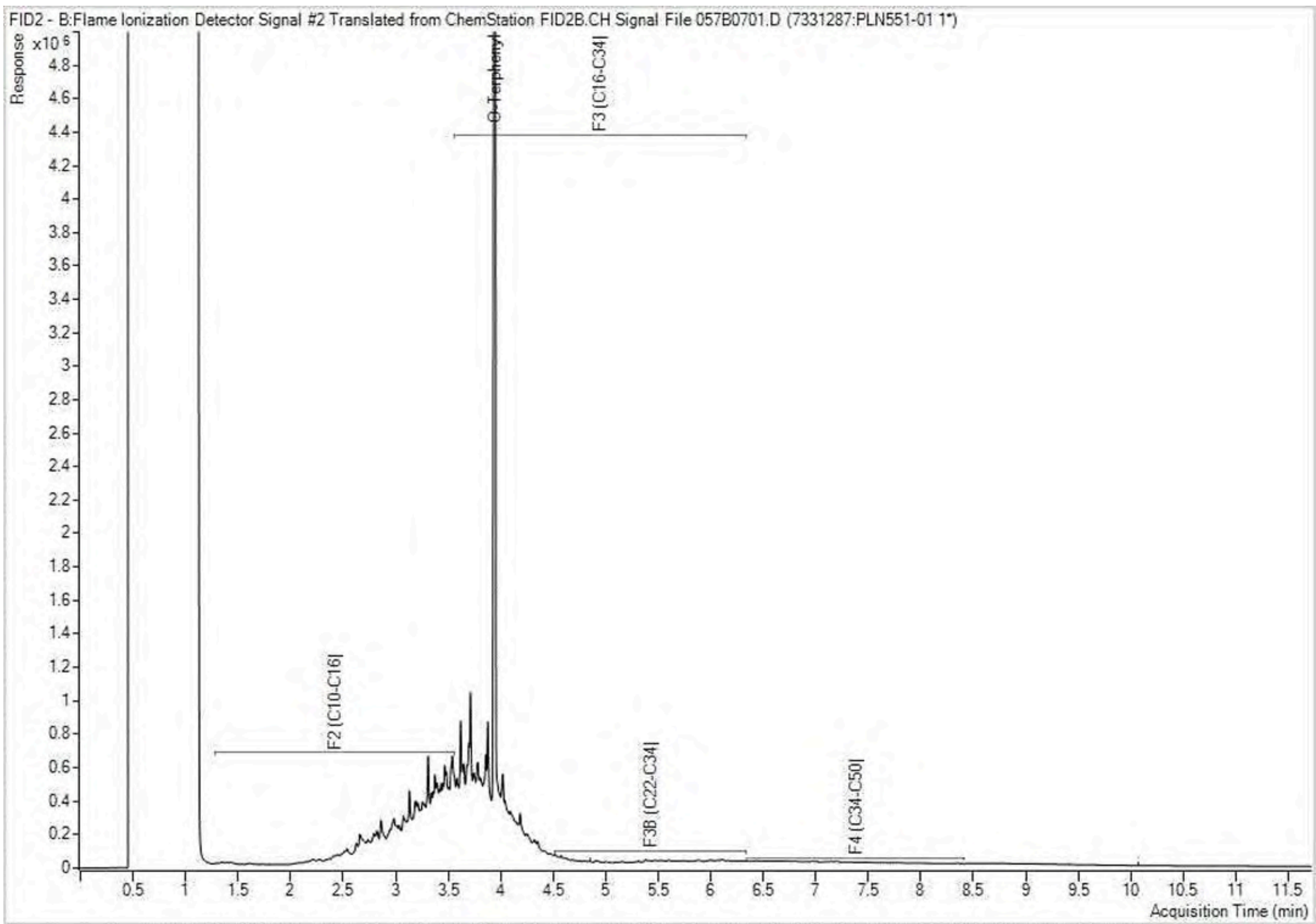
** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

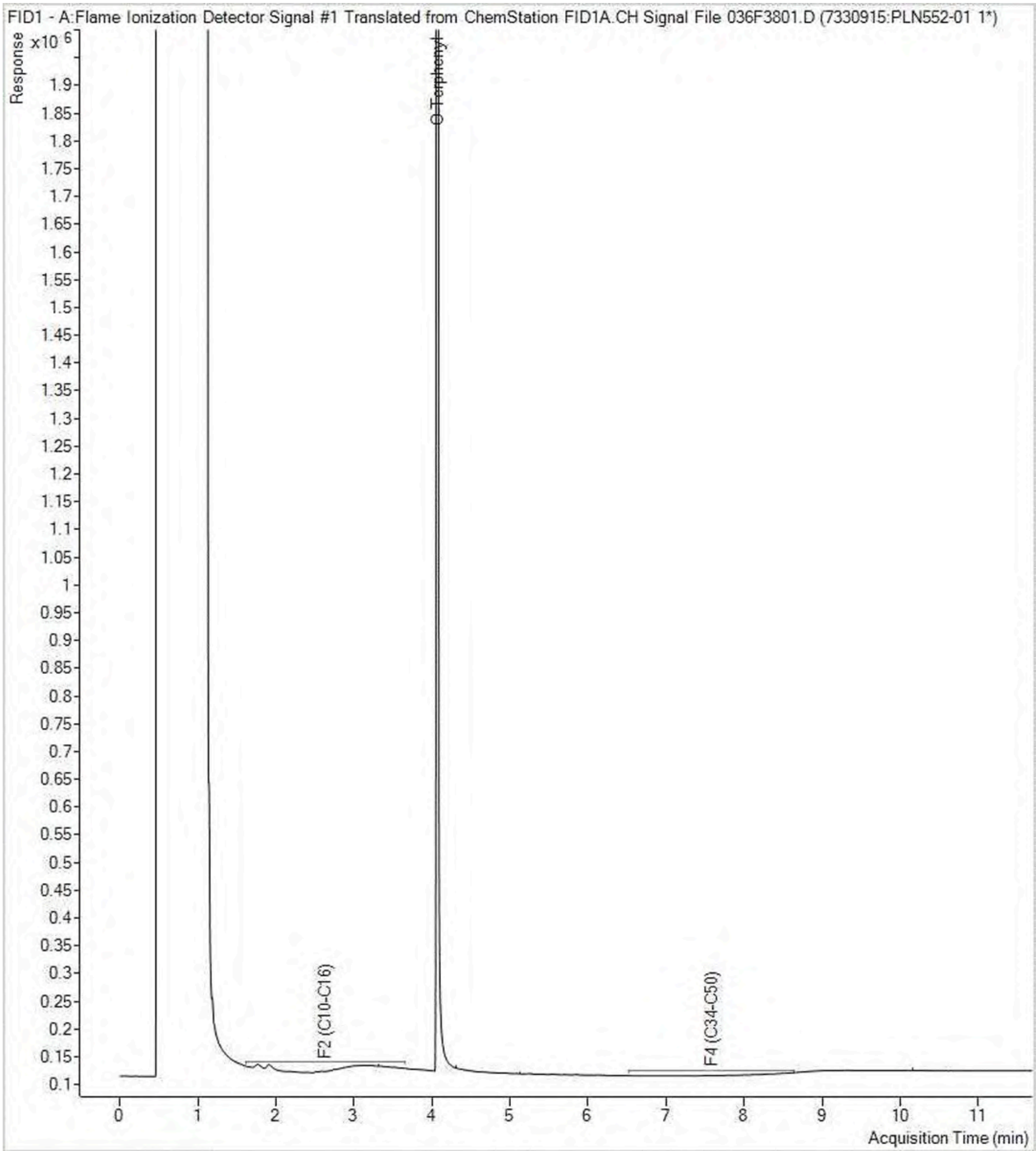


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN552

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH101 SS-6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

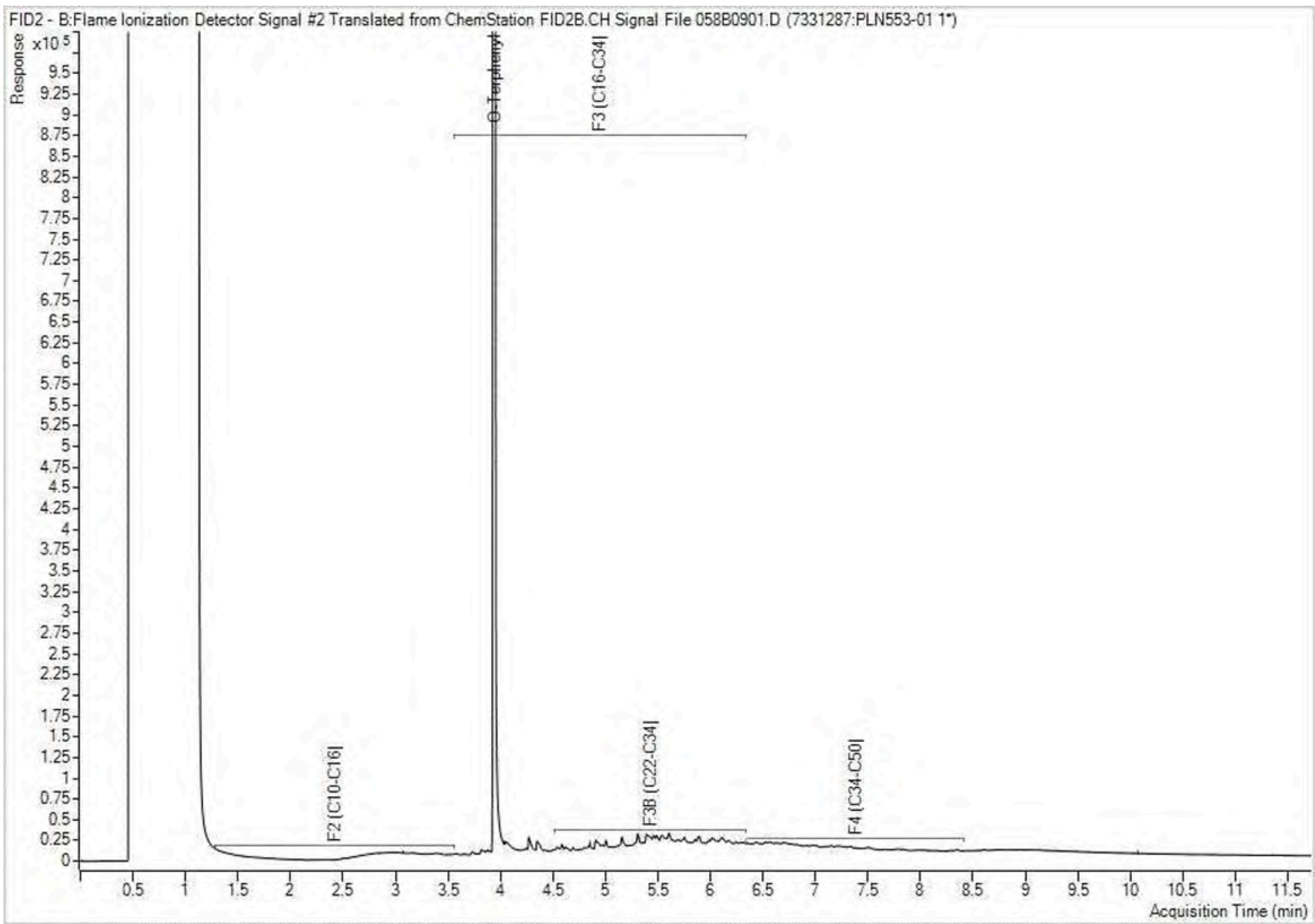


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN553

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH102 SS-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

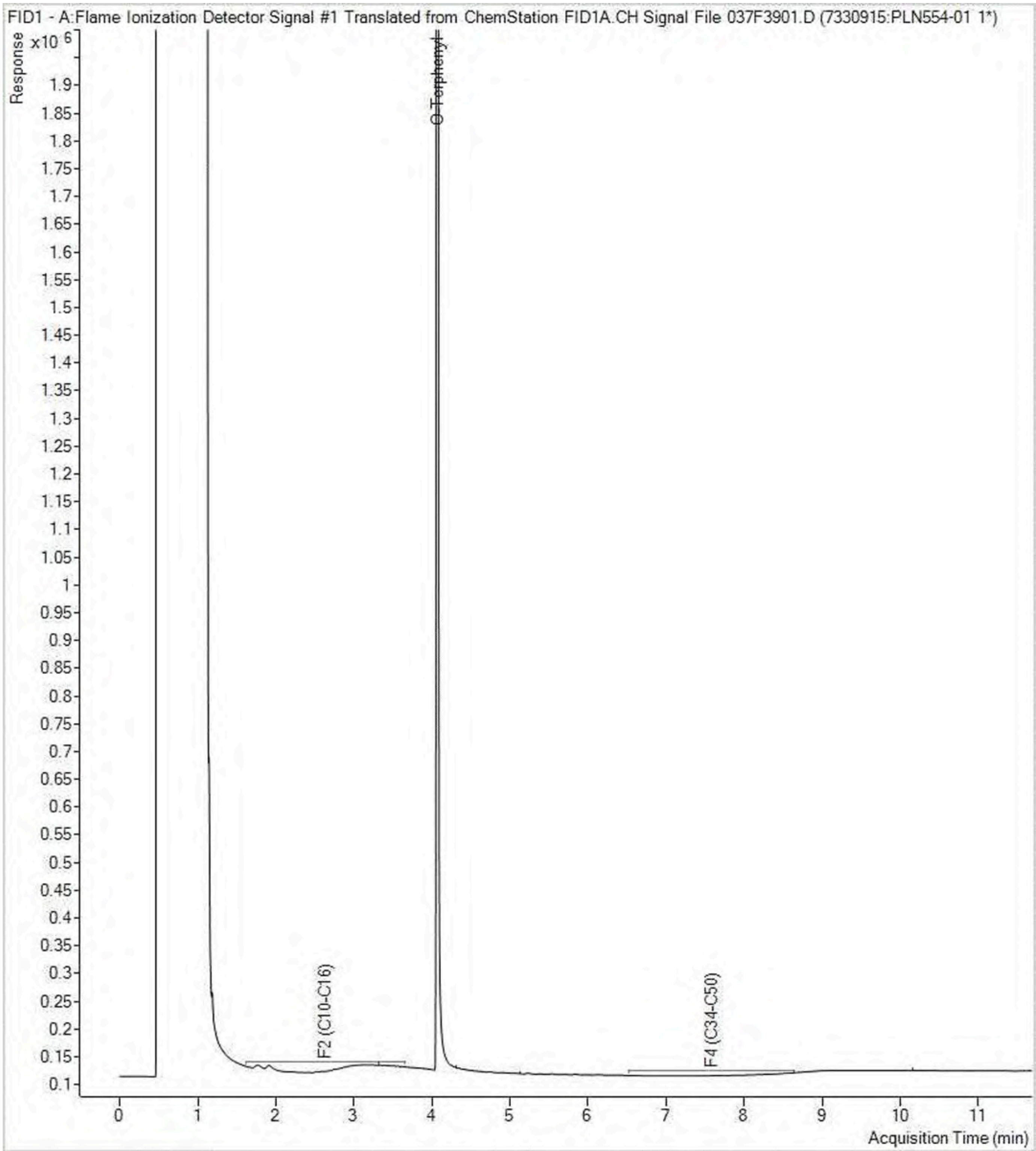


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN554

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH102 SS-6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

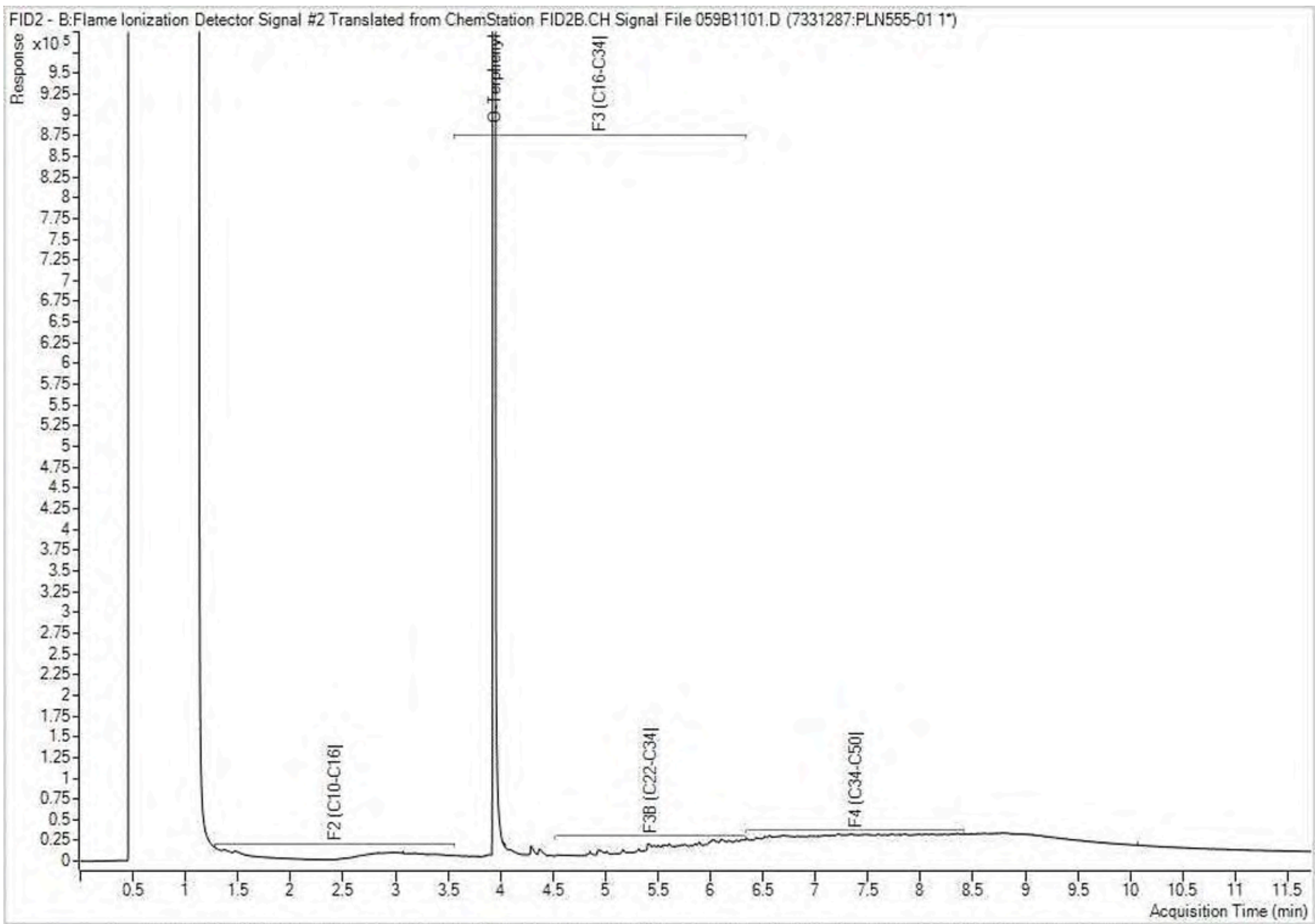


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN555

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH103 SS-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

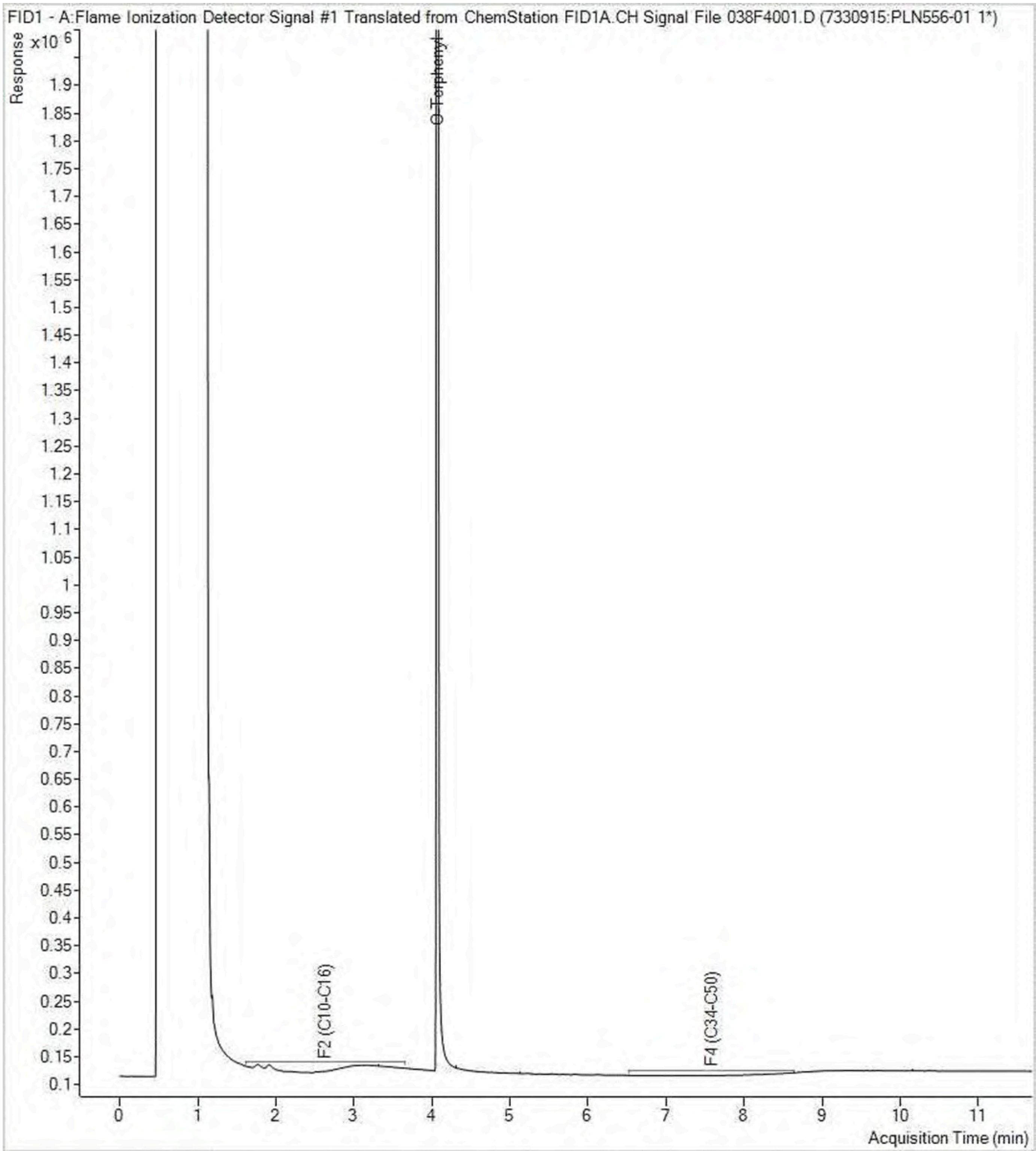


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN556

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH103 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

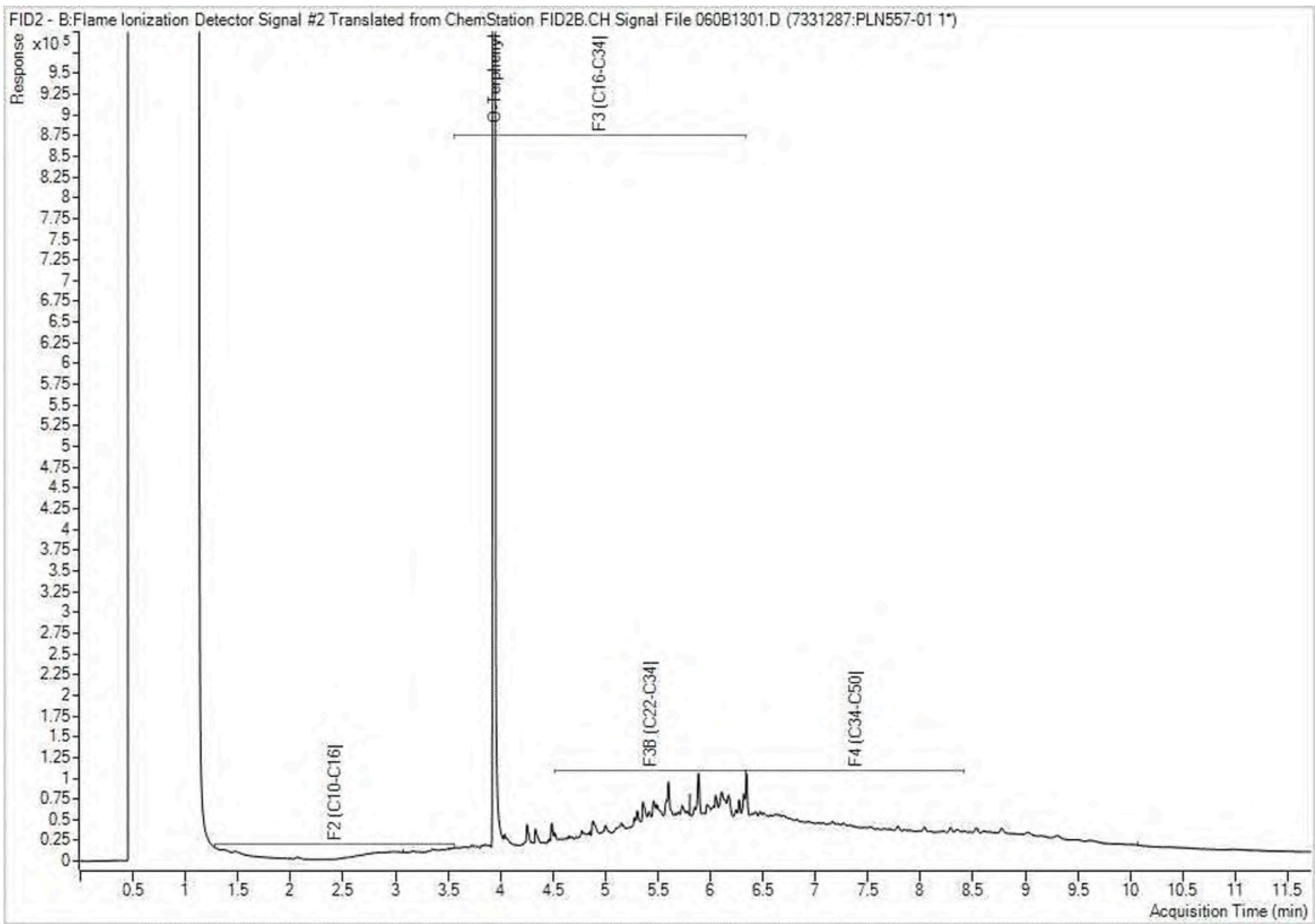


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN557

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH104 SS-4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

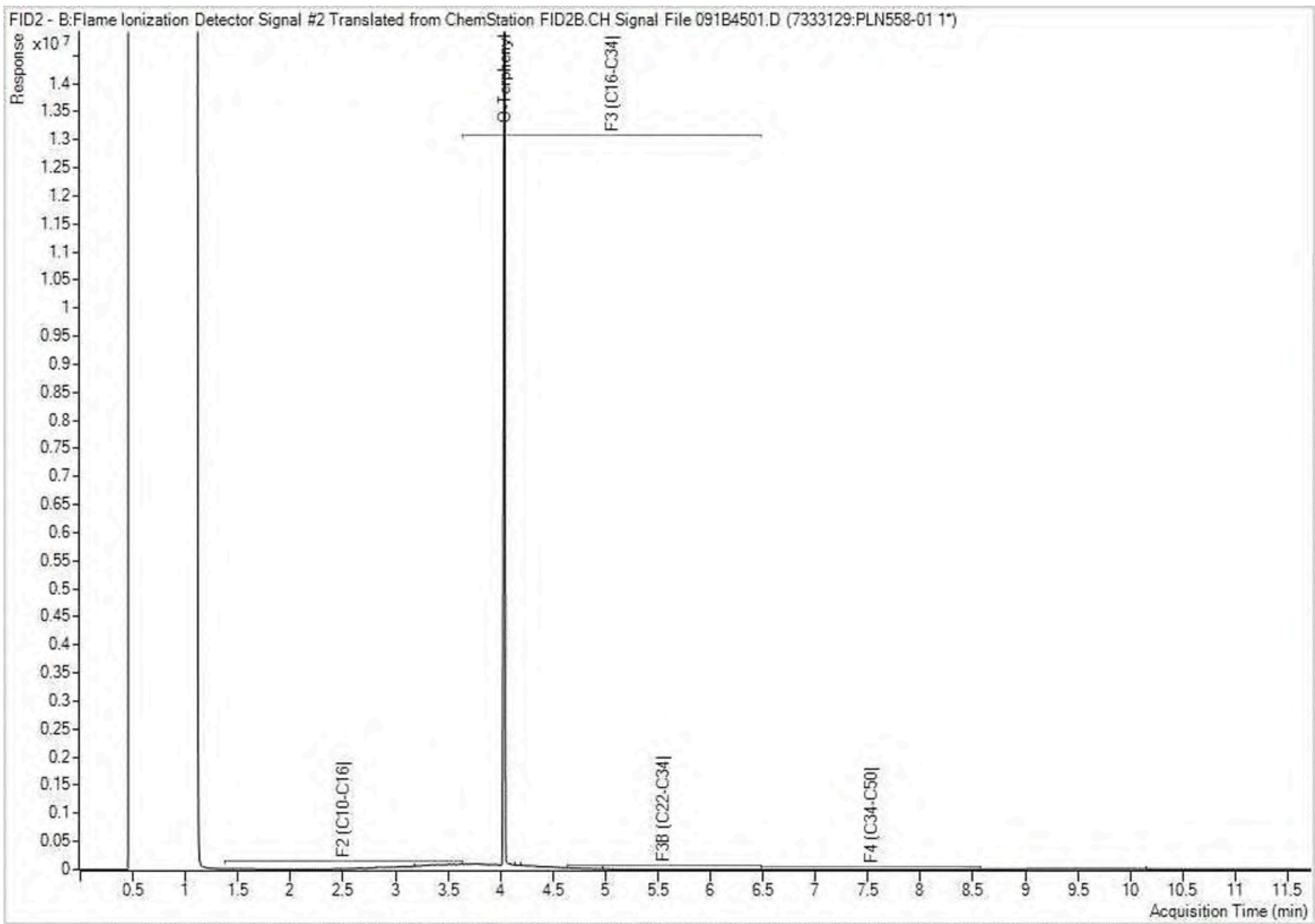


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN558

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH104 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

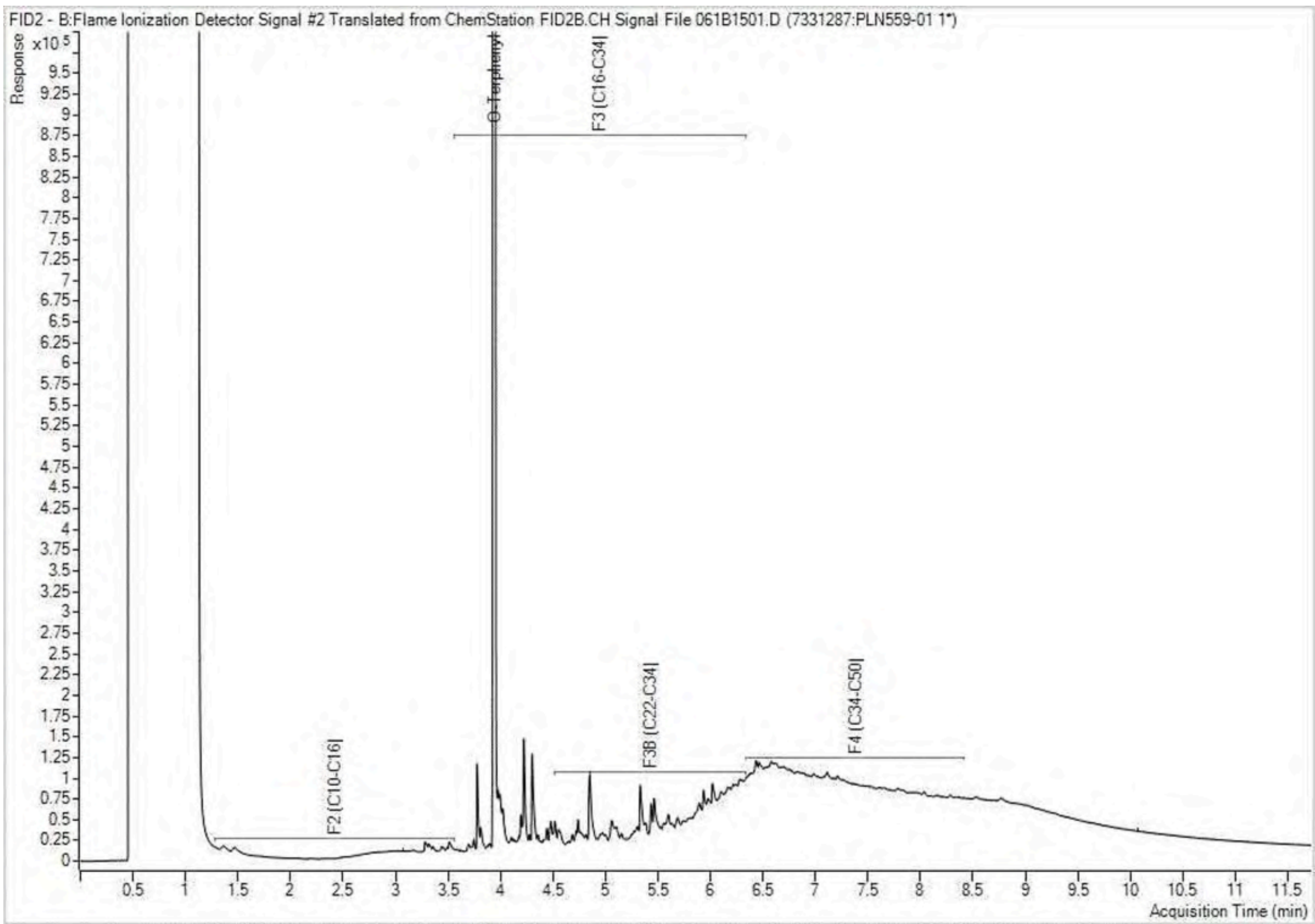


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN559

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH105 SS-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

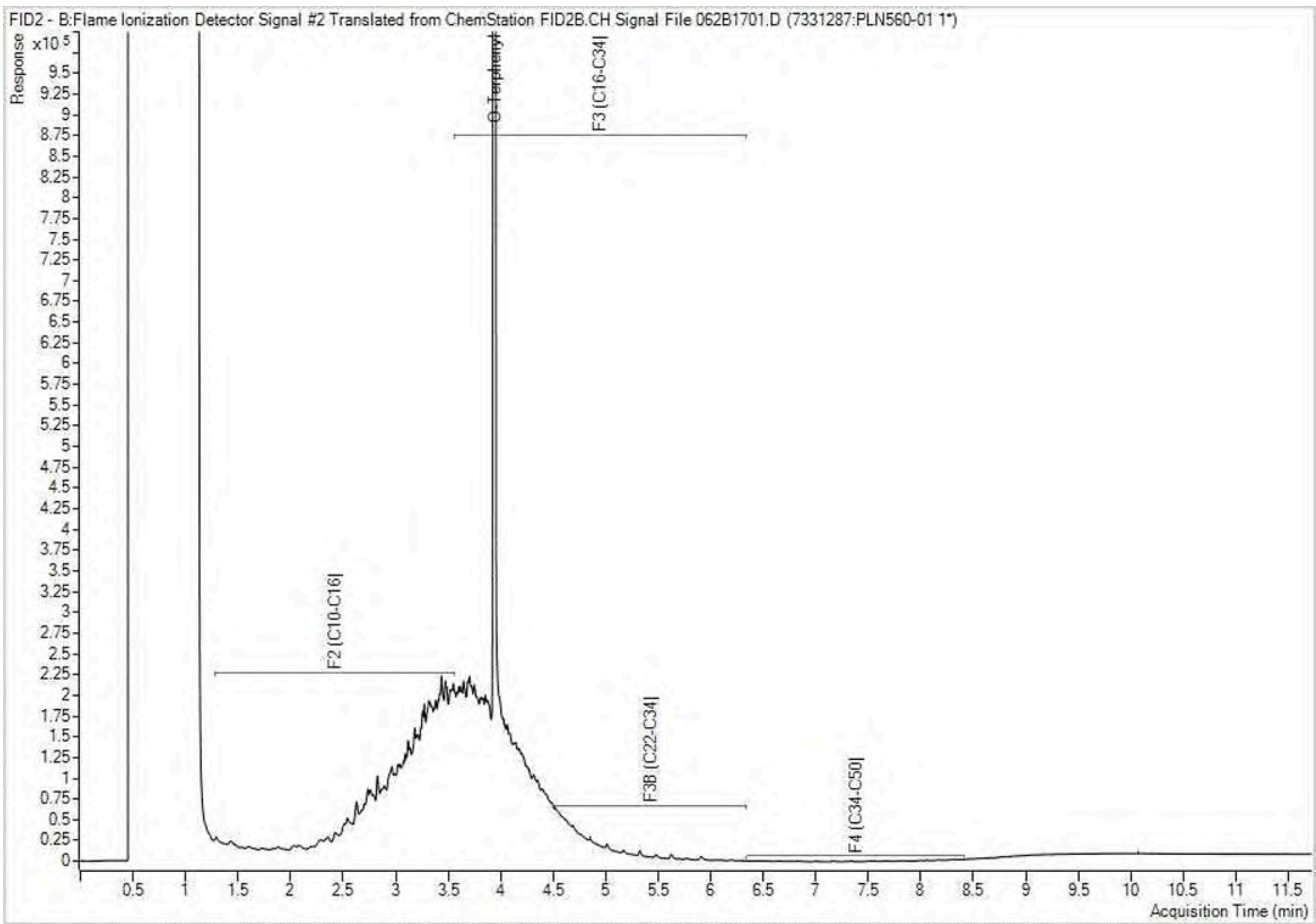


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN560

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH105 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

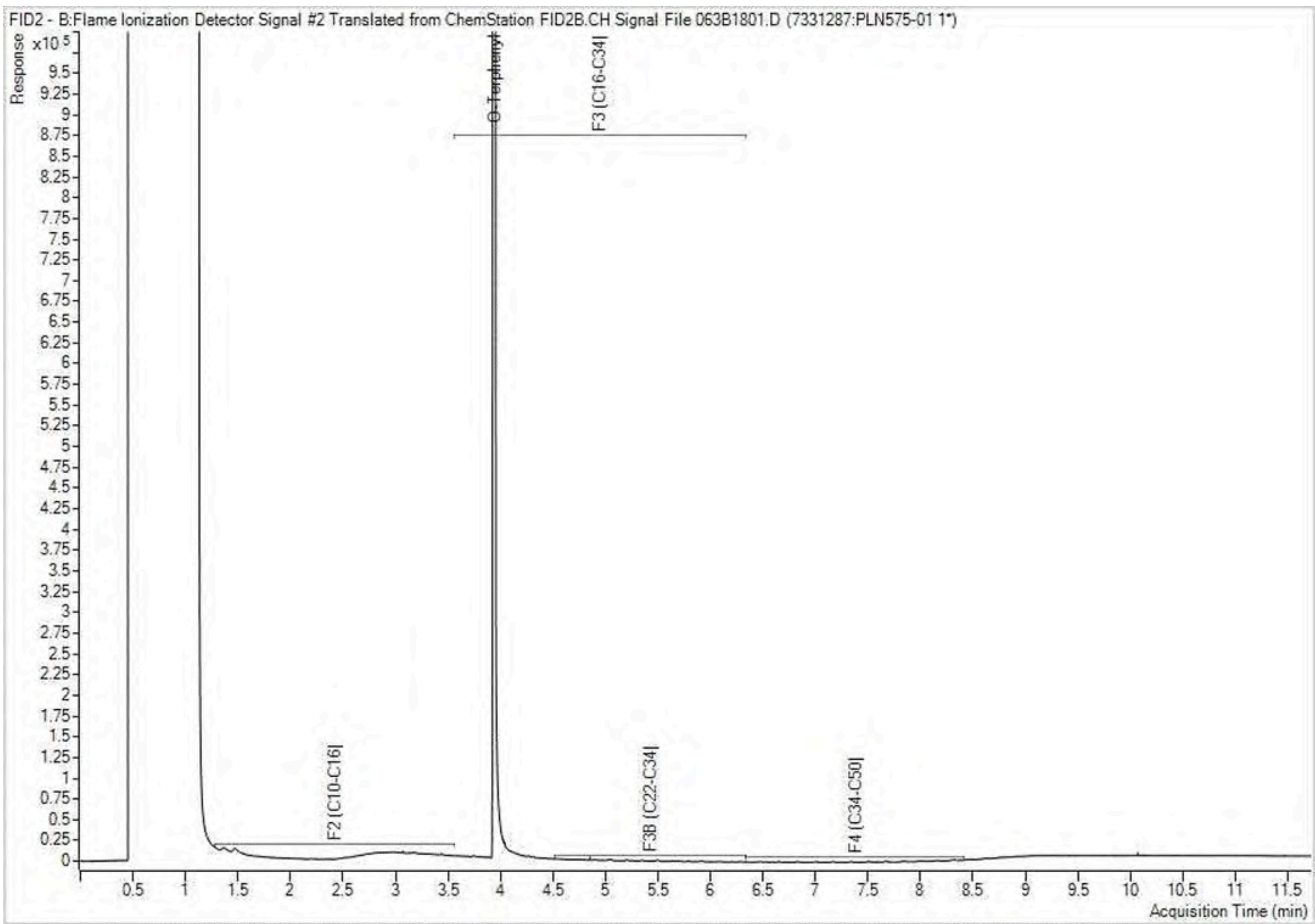


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN575

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH106 SS-4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

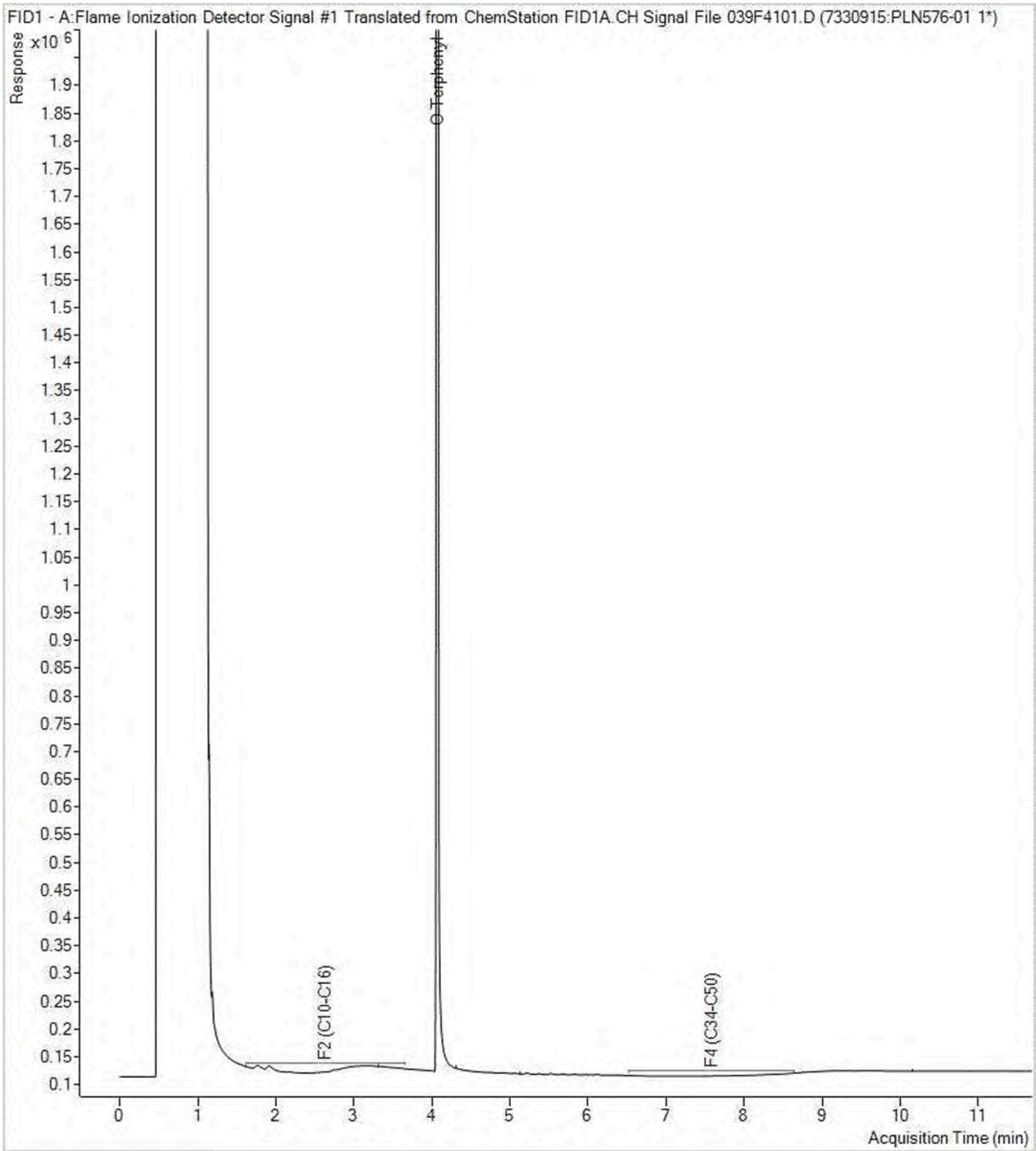


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN576

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH106 SS-8

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

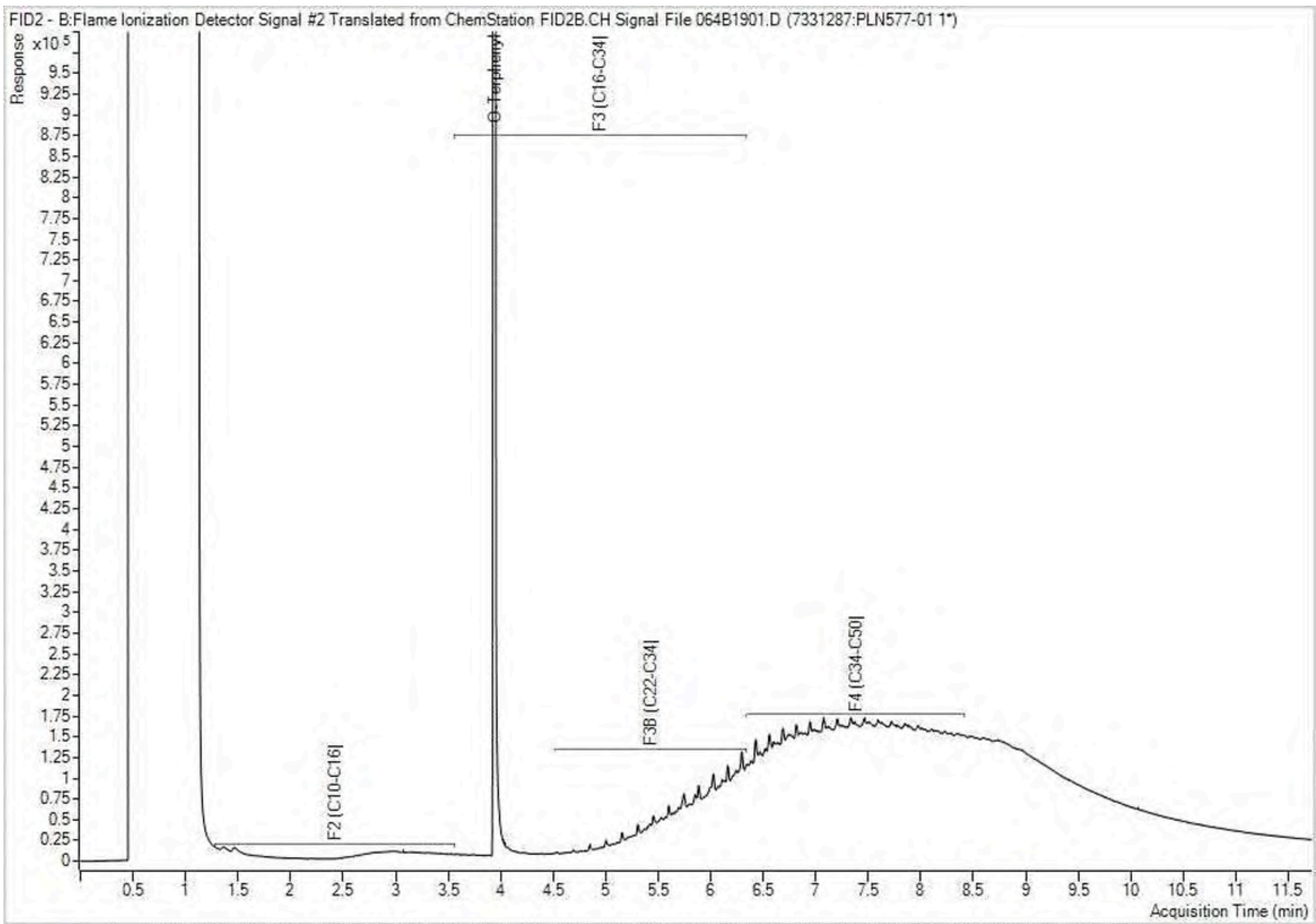


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN577

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH107 SS-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

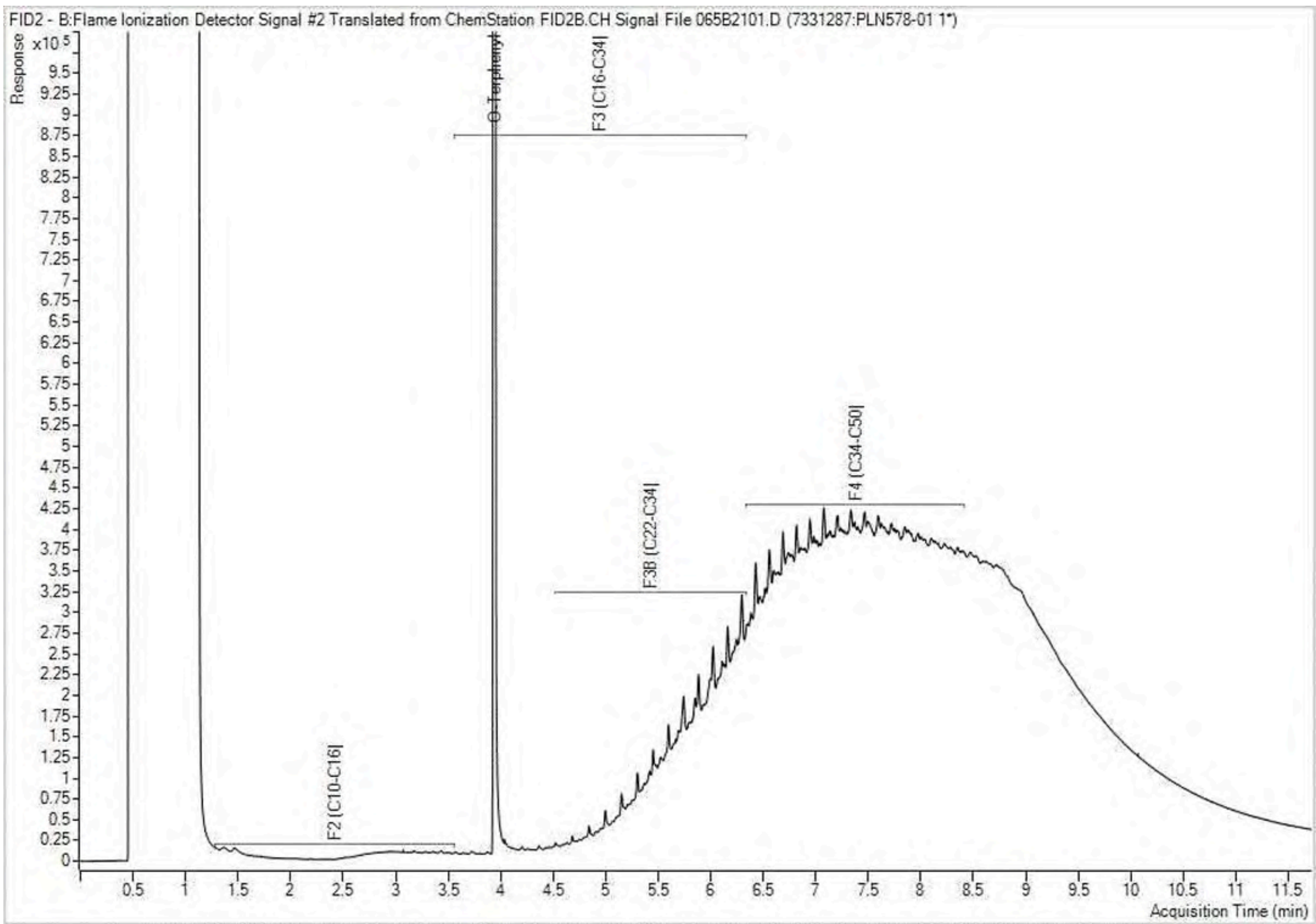


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN578

Pinchin Ltd
Client Project #: 285722.003
Client ID: DUP-1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

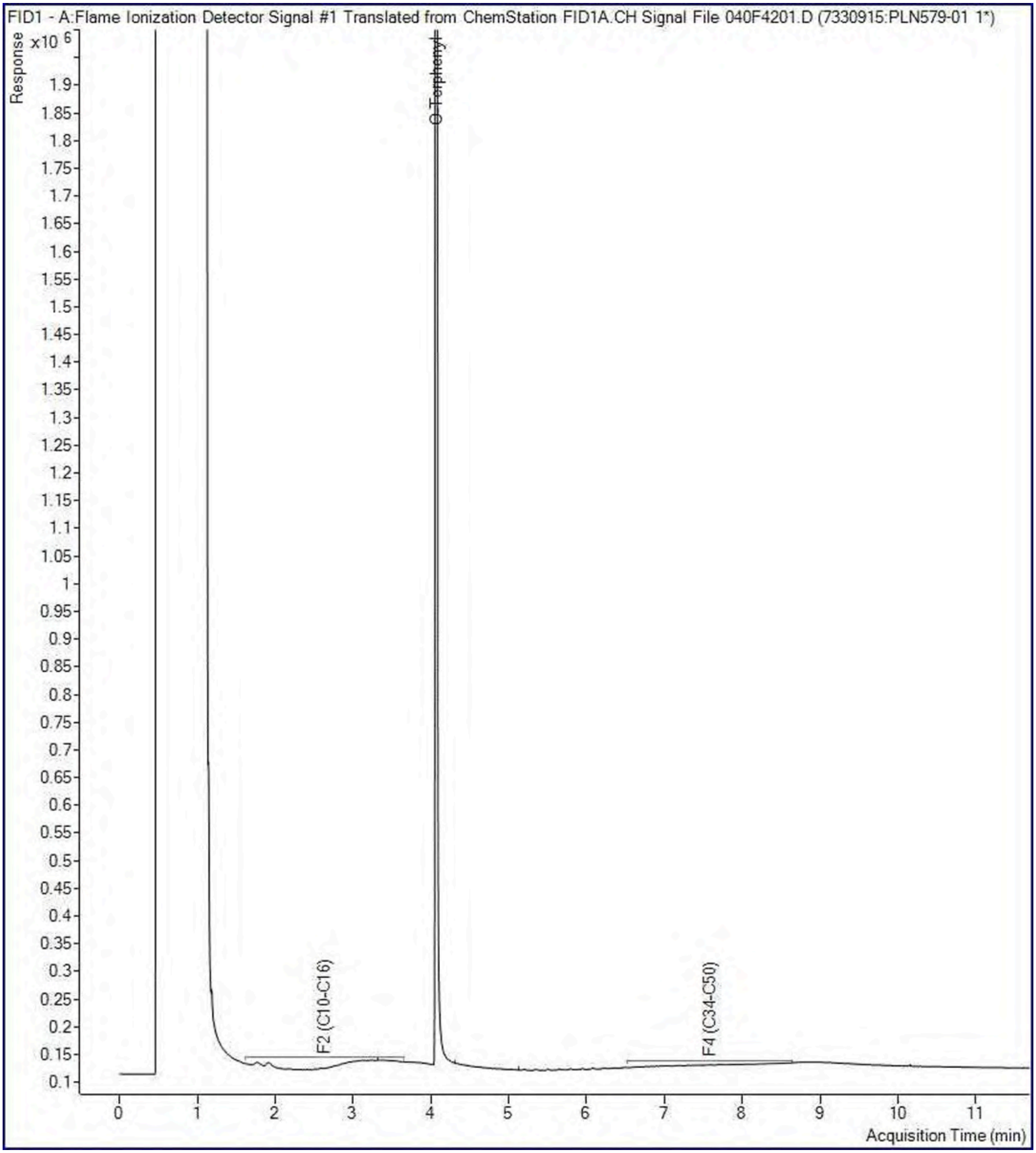


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN579

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH107 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

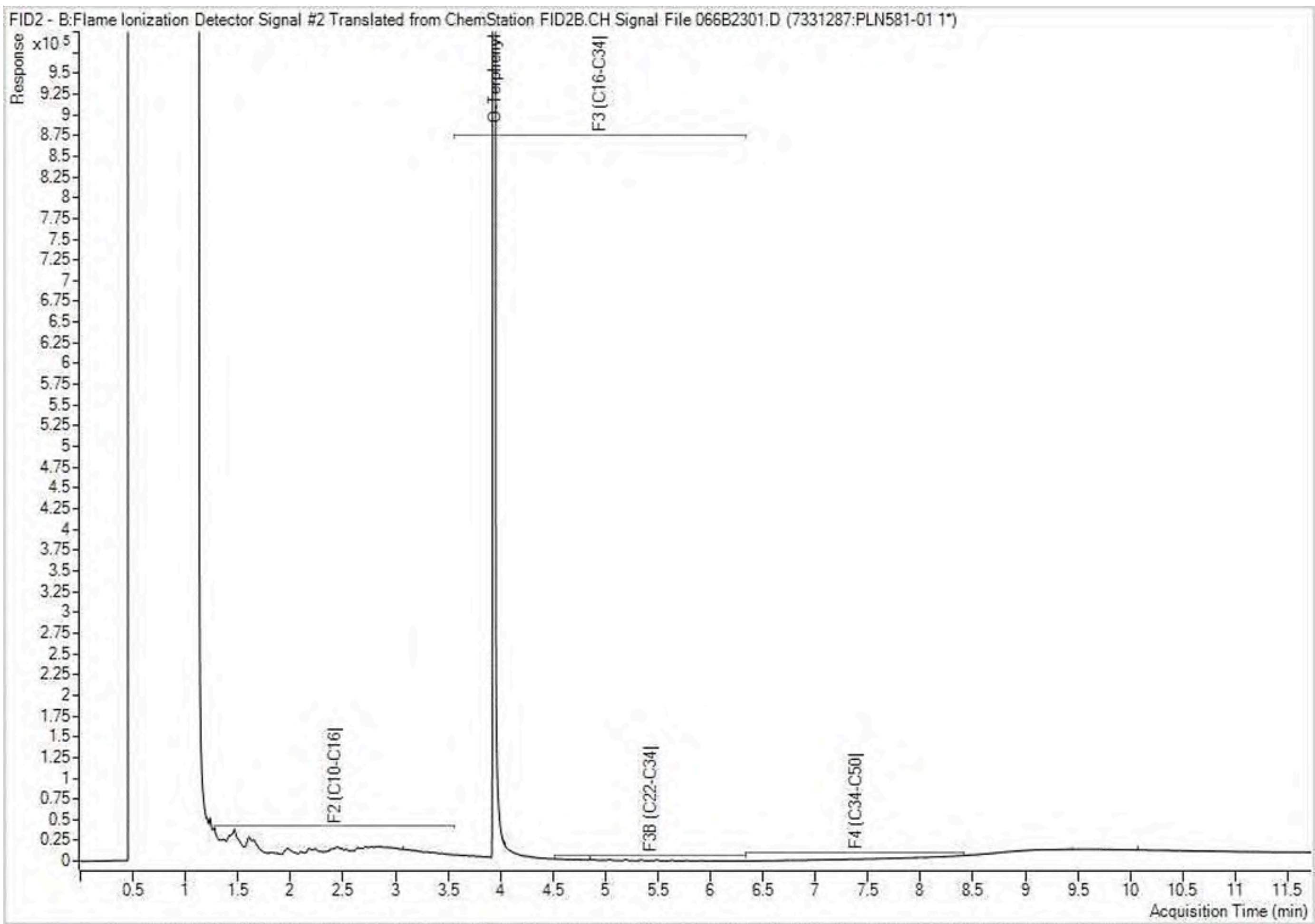


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN581

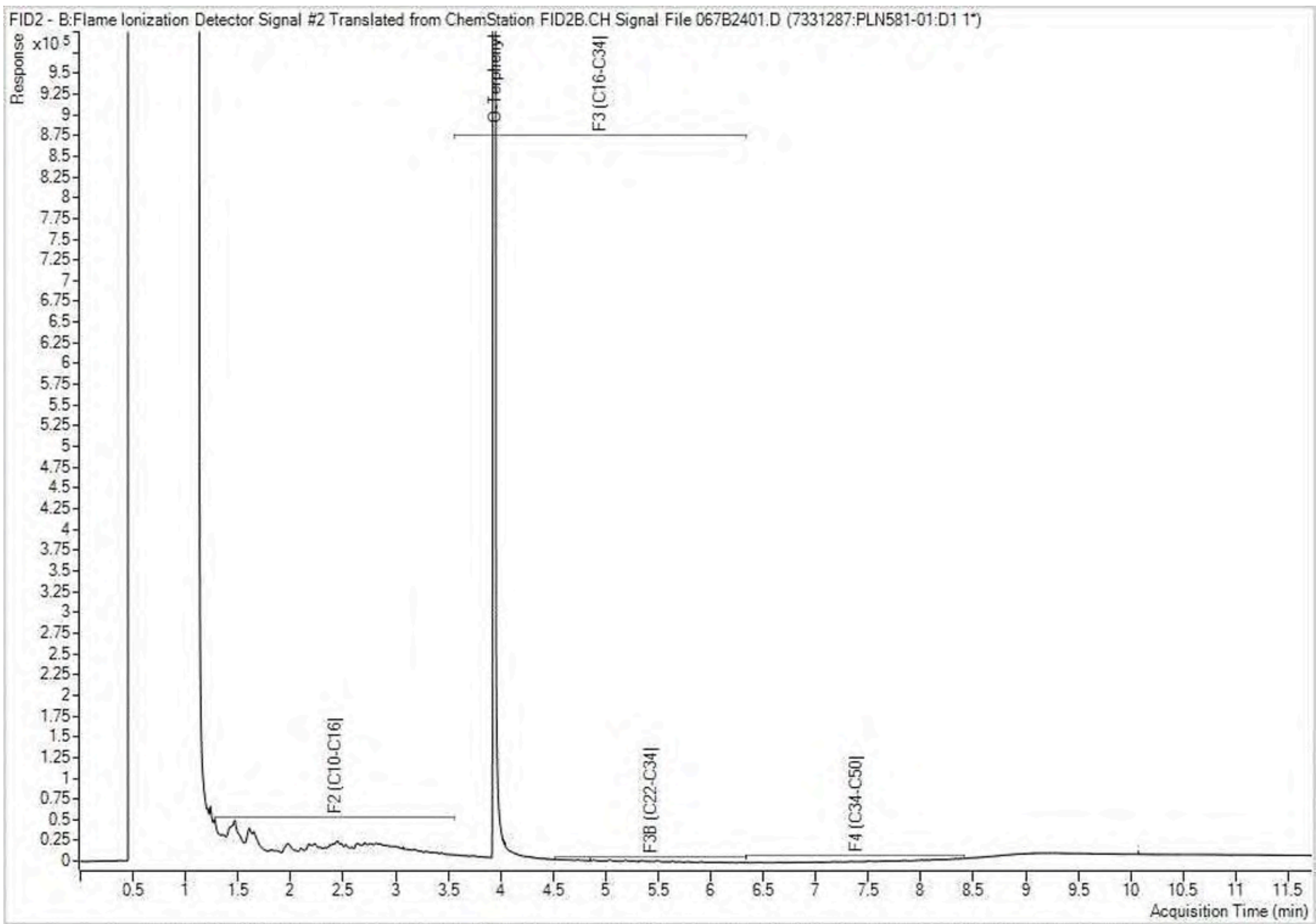
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW108 SS-8

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

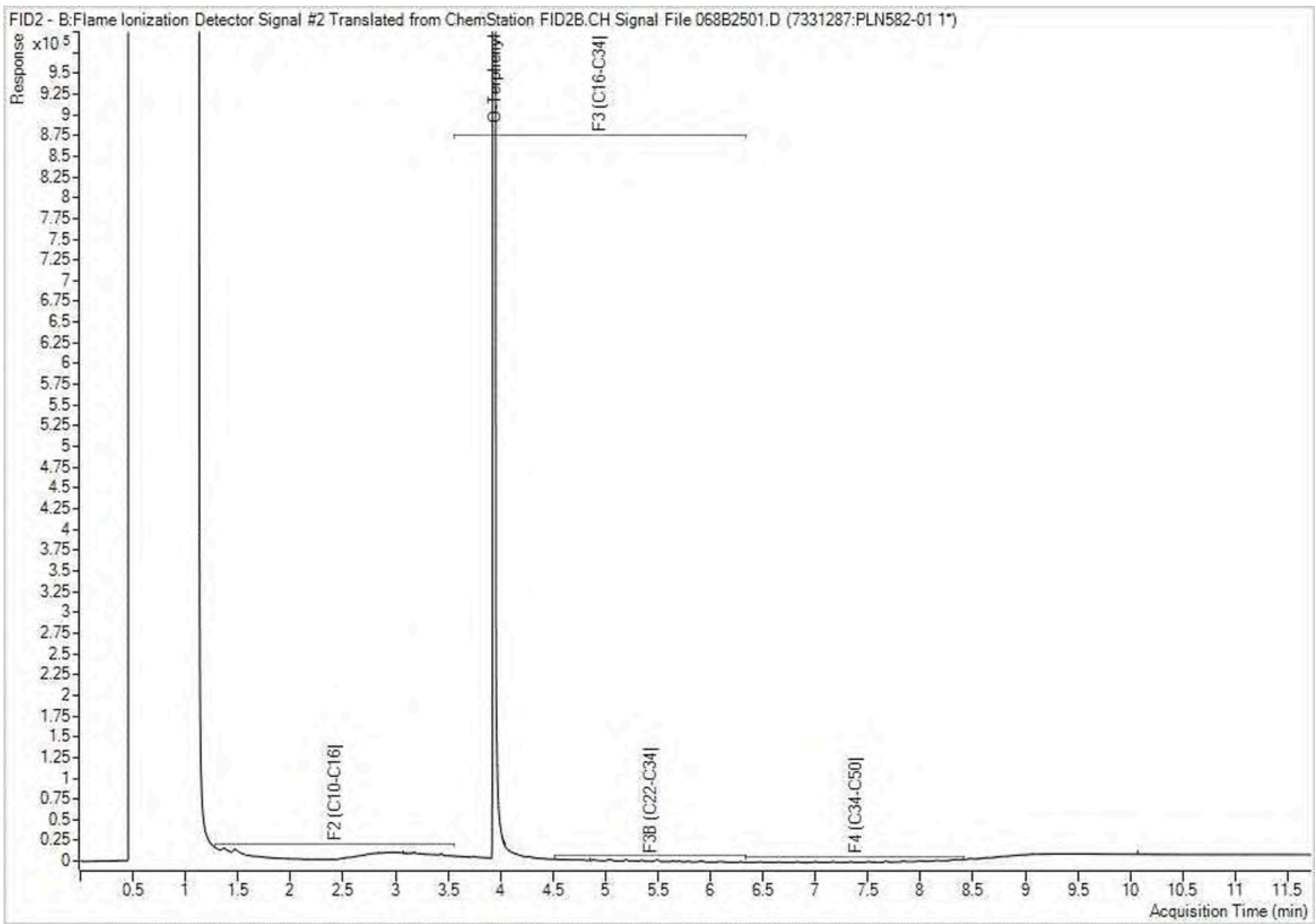


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN582

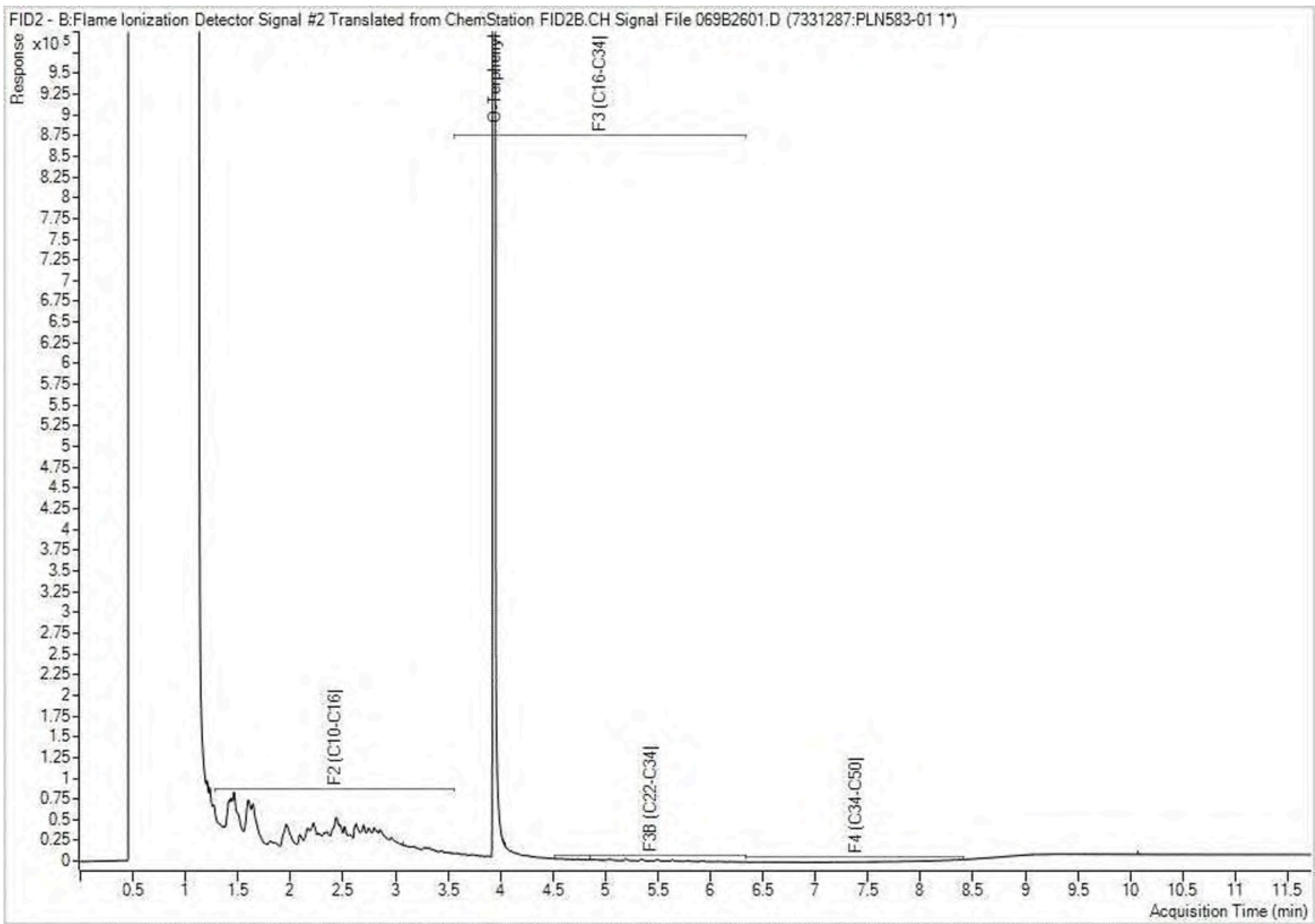
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW109 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

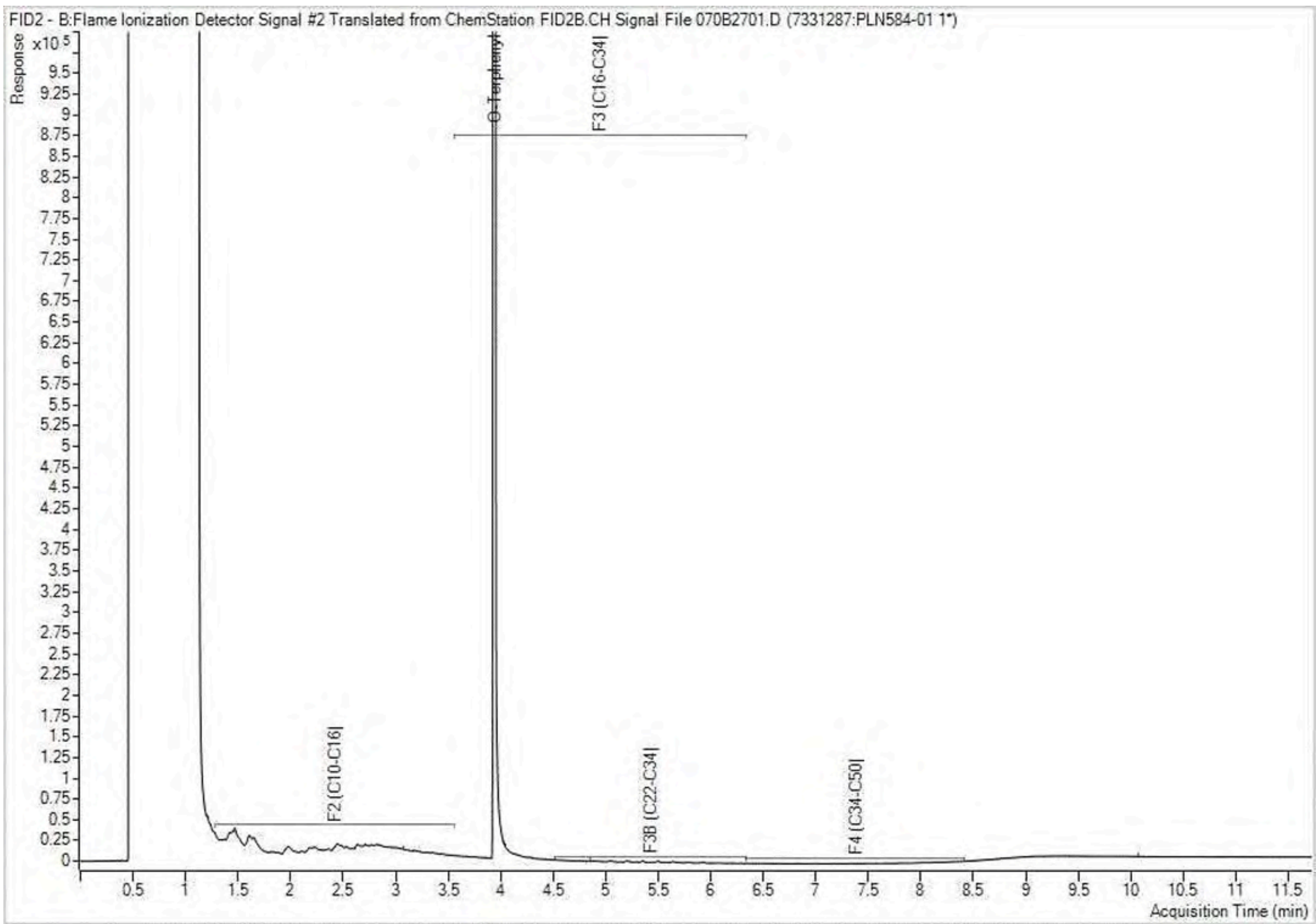


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN584

Pinchin Ltd
Client Project #: 285722.003
Client ID: DUP-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

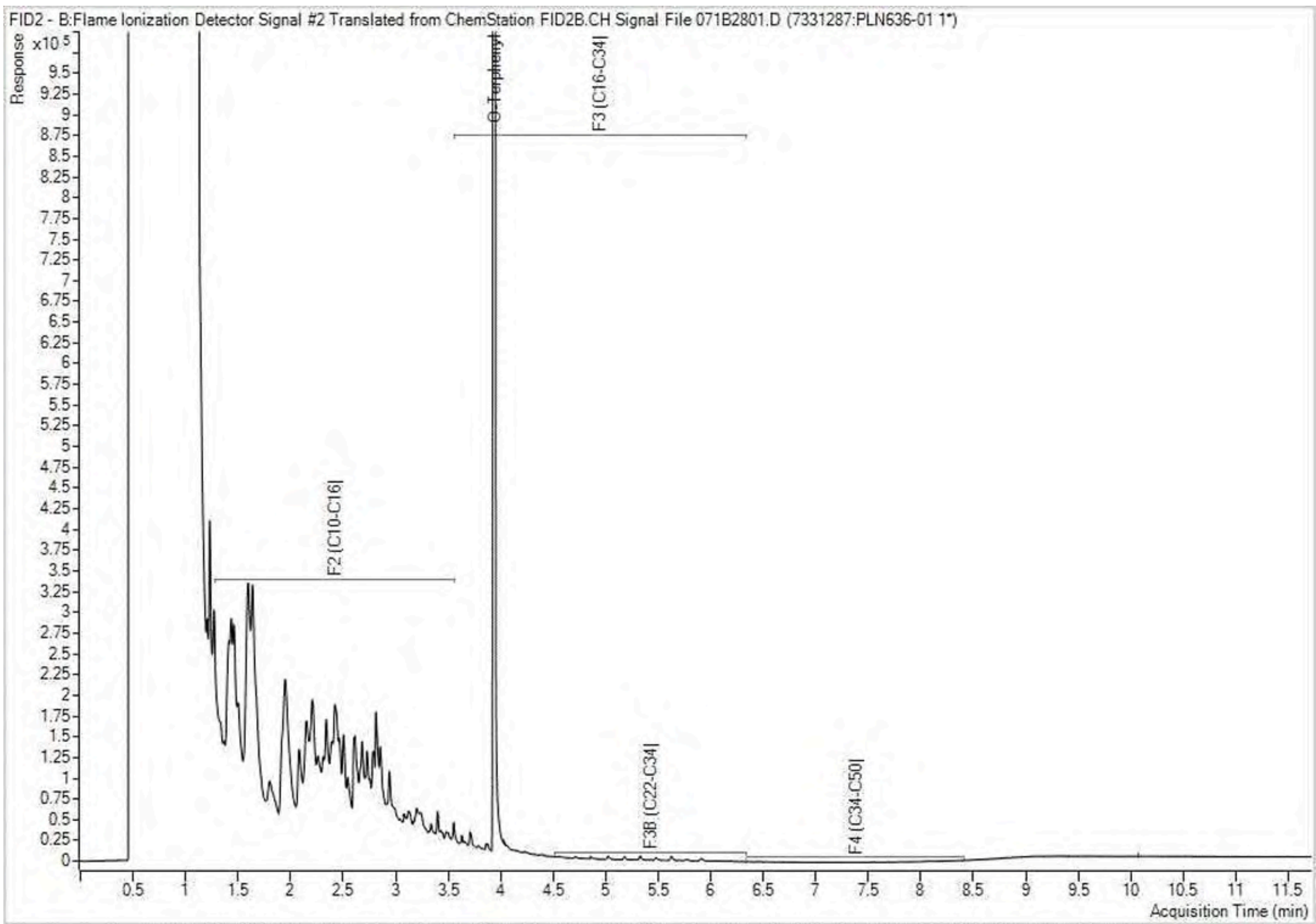


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN636

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW111 SS-6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

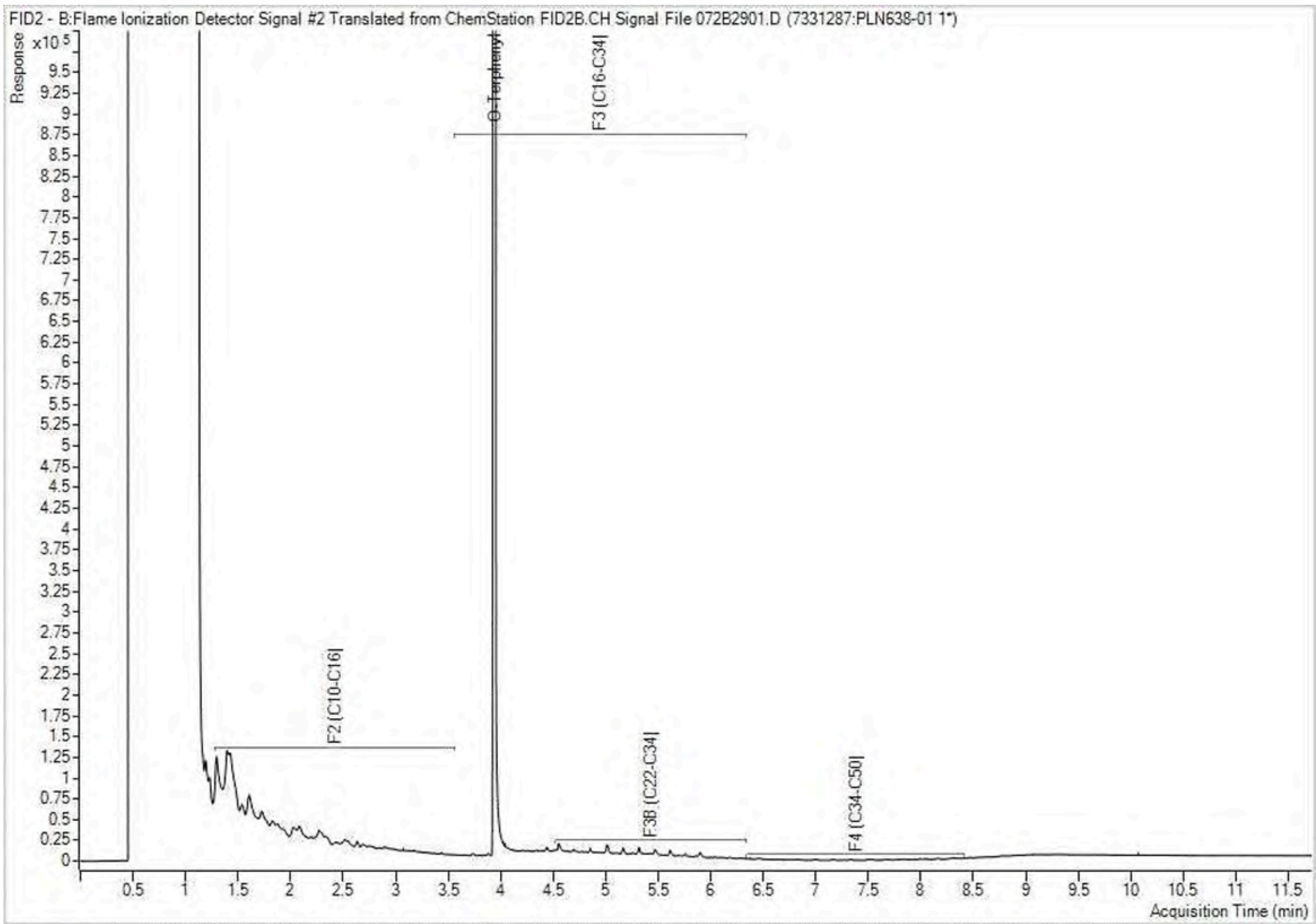


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN638

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW12 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

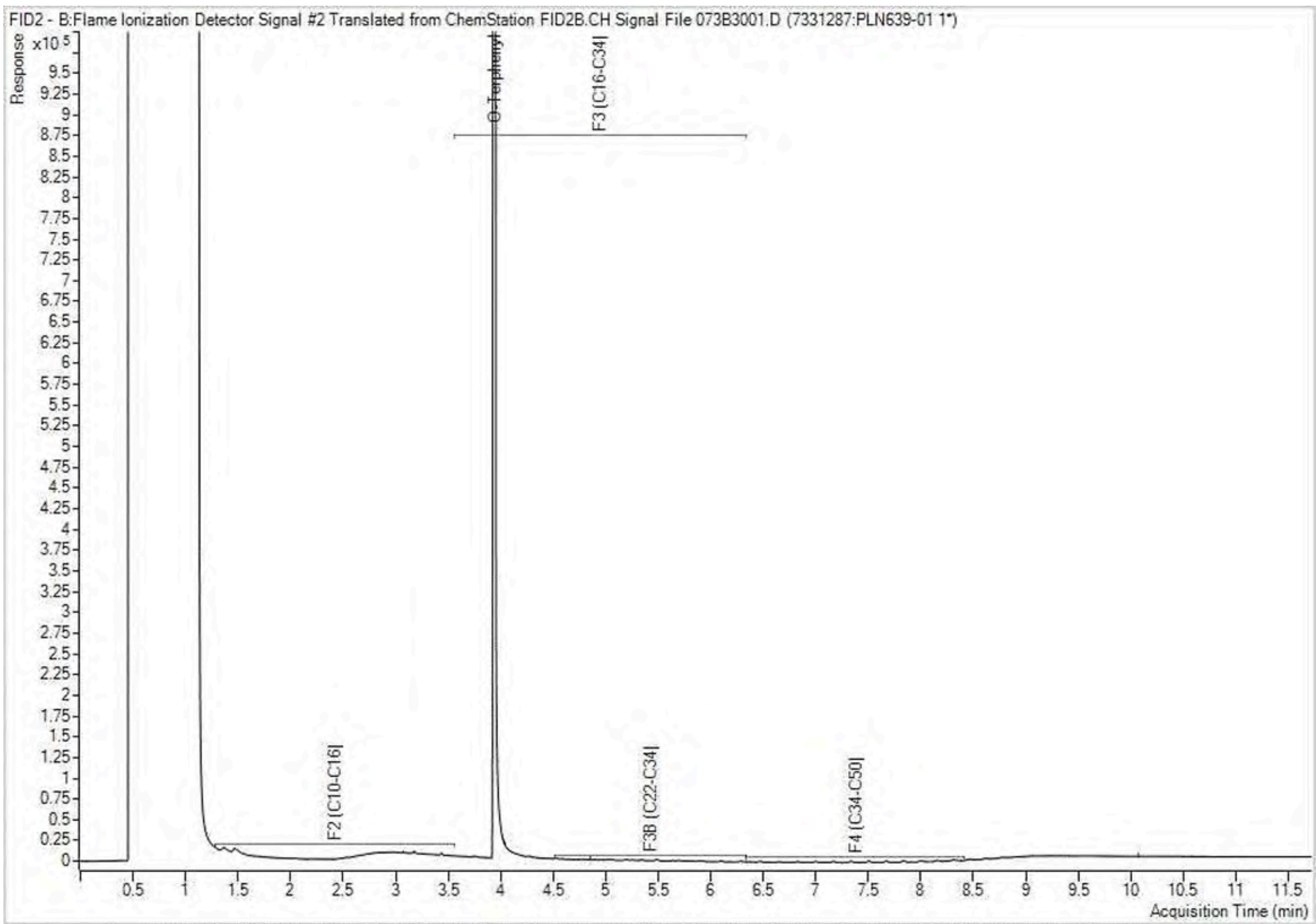


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN639

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH113 SS-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

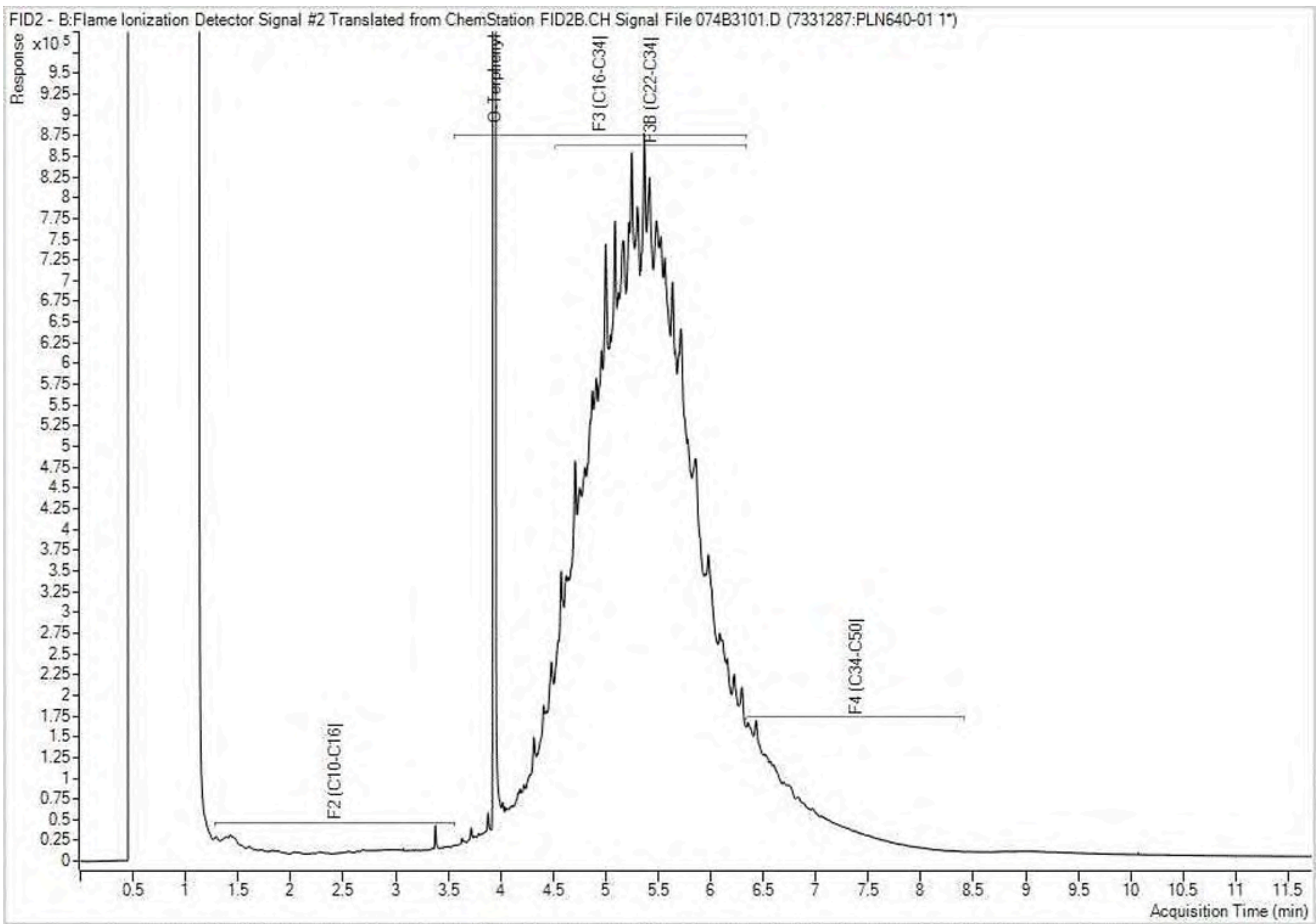


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN640

Pinchin Ltd
Client Project #: 285722.003
Client ID: BH113 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

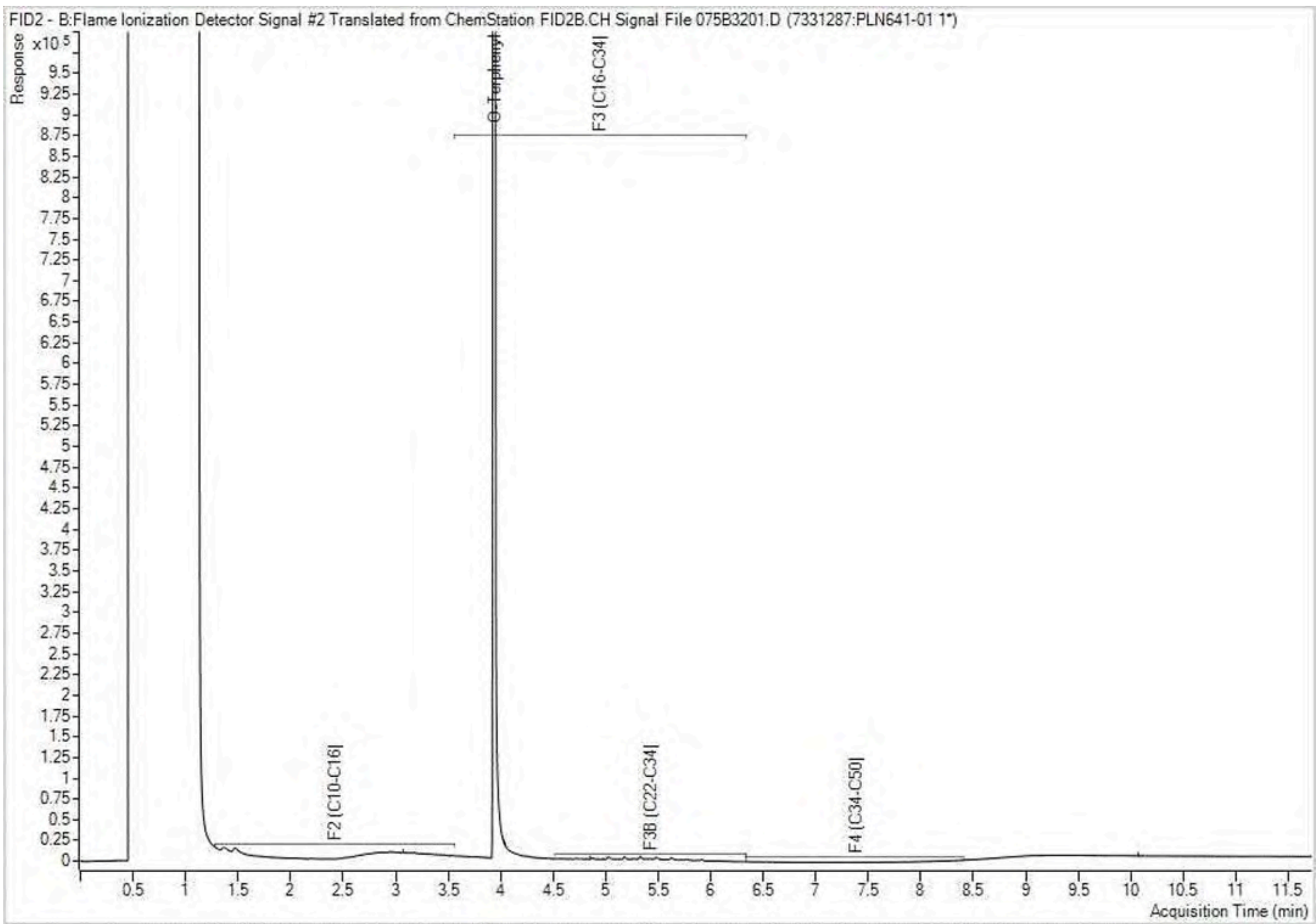


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN641

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW115 SS-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

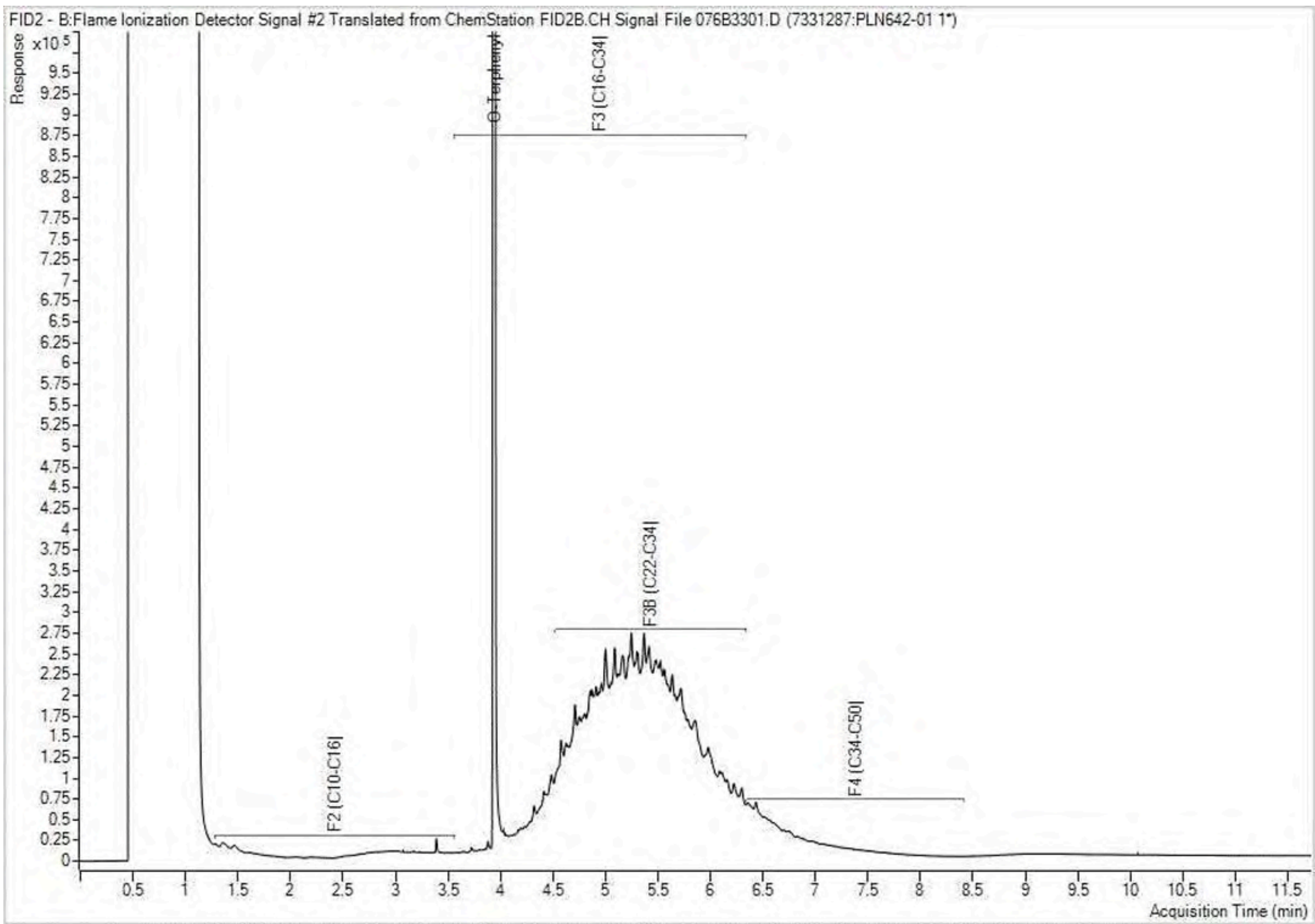


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B6083
Report Date: 2021/05/06
BV Labs Sample: PLN642

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW115 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003
Your C.O.C. #: 796018-26-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/05/10
Report #: R6628520
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1B8527
Received: 2021/05/03, 14:45

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	4	N/A	2021/05/07	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	5	N/A	2021/05/10		EPA 8260C m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	2	N/A	2021/05/07	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	7	2021/05/06	2021/05/06	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	1	2021/05/10	2021/05/10	CAM SOP-00316	CCME PHC-CWS m
Acid Extractable Metals by ICPMS (1)	5	2021/05/06	2021/05/06	CAM SOP-00447	EPA 6020B m
Moisture (1)	7	N/A	2021/05/05	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	4	2021/05/06	2021/05/07	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	5	N/A	2021/05/08	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga

Your Project #: 285722.003
Your C.O.C. #: 796018-26-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/05/10
Report #: R6628520
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1B8527
Received: 2021/05/03, 14:45

(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		PMA917	PMA919	PMA920	PMA921	PMA922		
Sampling Date		2021/04/29	2021/04/30	2021/04/30	2021/04/30	2021/04/30		
COC Number		796018-26-01	796018-26-01	796018-26-01	796018-26-01	796018-26-01		
	UNITS	**BHMW114 SS-9**	**BHMW116 SS-7**	**BHMW117 SS-3**	**BHMW118 SS-2**	**DUP-3**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	1.4	0.28	<0.20	0.20	7337564
Acid Extractable Arsenic (As)	ug/g	<1.0	<1.0	4.5	3.1	1.9	1.0	7337564
Acid Extractable Barium (Ba)	ug/g	38	41	220	320	240	0.50	7337564
Acid Extractable Beryllium (Be)	ug/g	<0.20	<0.20	0.55	0.66	0.24	0.20	7337564
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	6.3	7.0	7.2	5.0	7337564
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	0.13	0.18	<0.10	0.10	7337564
Acid Extractable Chromium (Cr)	ug/g	9.4	9.7	49	72	10	1.0	7337564
Acid Extractable Cobalt (Co)	ug/g	3.5	3.6	12	16	3.9	0.10	7337564
Acid Extractable Copper (Cu)	ug/g	7.1	8.1	31	40	9.2	0.50	7337564
Acid Extractable Lead (Pb)	ug/g	2.0	2.4	21	90	21	1.0	7337564
Acid Extractable Molybdenum (Mo)	ug/g	0.54	<0.50	0.50	0.88	1.2	0.50	7337564
Acid Extractable Nickel (Ni)	ug/g	6.4	7.0	33	44	11	0.50	7337564
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7337564
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7337564
Acid Extractable Thallium (Tl)	ug/g	0.055	0.062	0.25	0.38	0.14	0.050	7337564
Acid Extractable Uranium (U)	ug/g	0.64	0.66	0.55	0.64	0.40	0.050	7337564
Acid Extractable Vanadium (V)	ug/g	18	19	56	70	15	5.0	7337564
Acid Extractable Zinc (Zn)	ug/g	12	13	84	120	22	5.0	7337564
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	0.054	0.26	<0.050	0.050	7337564

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1B8527
Report Date: 2021/05/10

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (SOIL)

BV Labs ID		PMA918	PMA920	PMA921		PMA922		
Sampling Date		2021/04/30	2021/04/30	2021/04/30		2021/04/30		
COC Number		796018-26-01	796018-26-01	796018-26-01		796018-26-01		
	UNITS	BHMW116 SS-4	BHMW117 SS-3	BHMW118 SS-2	RDL	DUP-3	RDL	QC Batch
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	0.042	0.0071	<0.071	0.071	7332757
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	<0.0050	0.0070	0.018	0.0050	<0.050	0.050	7338111
Acenaphthylene	ug/g	<0.0050	0.0061	0.019	0.0050	<0.050	0.050	7338111
Anthracene	ug/g	<0.0050	0.028	0.079	0.0050	<0.050	0.050	7338111
Benzo(a)anthracene	ug/g	<0.0050	0.094	0.23	0.0050	<0.050	0.050	7338111
Benzo(a)pyrene	ug/g	<0.0050	0.092	0.21	0.0050	<0.050	0.050	7338111
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.12	0.25	0.0050	<0.050	0.050	7338111
Benzo(g,h,i)perylene	ug/g	<0.0050	0.055	0.13	0.0050	<0.050	0.050	7338111
Benzo(k)fluoranthene	ug/g	<0.0050	0.047	0.091	0.0050	<0.050	0.050	7338111
Chrysene	ug/g	<0.0050	0.083	0.21	0.0050	<0.050	0.050	7338111
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.014	0.037	0.0050	<0.050	0.050	7338111
Fluoranthene	ug/g	<0.0050	0.21	0.42	0.0050	0.059	0.050	7338111
Fluorene	ug/g	<0.0050	0.0080	0.053	0.0050	<0.050	0.050	7338111
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.056	0.13	0.0050	<0.050	0.050	7338111
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.026	0.0050	<0.050	0.050	7338111
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.016	0.0050	<0.050	0.050	7338111
Naphthalene	ug/g	<0.0050	<0.0050	0.0053	0.0050	<0.050	0.050	7338111
Phenanthrene	ug/g	<0.0050	0.099	0.36	0.0050	<0.050	0.050	7338111
Pyrene	ug/g	<0.0050	0.17	0.56	0.0050	0.075	0.050	7338111
Surrogate Recovery (%)								
D10-Anthracene	%	94	94	90		108		7338111
D14-Terphenyl (FS)	%	101	99	105		88		7338111
D8-Acenaphthylene	%	84	84	83		77		7338111

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		PMA917		PMA919			PMA919		
Sampling Date		2021/04/29		2021/04/30			2021/04/30		
COC Number		796018-26-01		796018-26-01			796018-26-01		
	UNITS	BHMW114 SS-9	QC Batch	BHMW116 SS-7	RDL	QC Batch	BHMW116 SS-7 Lab-Dup	RDL	QC Batch
Inorganics									
Moisture	%	17	7336355	10	1.0	7336467	11	1.0	7336467
BTEX & F1 Hydrocarbons									
Benzene	ug/g	0.097	7338926	<0.020	0.020	7338926			
Toluene	ug/g	<0.020	7338926	<0.020	0.020	7338926			
Ethylbenzene	ug/g	<0.020	7338926	<0.020	0.020	7338926			
o-Xylene	ug/g	<0.020	7338926	<0.020	0.020	7338926			
p+m-Xylene	ug/g	<0.040	7338926	<0.040	0.040	7338926			
Total Xylenes	ug/g	<0.040	7338926	<0.040	0.040	7338926			
F1 (C6-C10)	ug/g	<10	7338926	<10	10	7338926			
F1 (C6-C10) - BTEX	ug/g	<10	7338926	<10	10	7338926			
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	7336885	<10	10	7336885			
F3 (C16-C34 Hydrocarbons)	ug/g	<50	7336885	<50	50	7336885			
F4 (C34-C50 Hydrocarbons)	ug/g	<50	7336885	<50	50	7336885			
Reached Baseline at C50	ug/g	Yes	7336885	Yes		7336885			
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	95	7338926	95		7338926			
4-Bromofluorobenzene	%	99	7338926	97		7338926			
D10-o-Xylene	%	86	7338926	89		7338926			
D4-1,2-Dichloroethane	%	103	7338926	103		7338926			
o-Terphenyl	%	89	7336885	86		7336885			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1B8527
Report Date: 2021/05/10

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PMA916		PMA918		PMA920		
Sampling Date		2021/04/29		2021/04/30		2021/04/30		
COC Number		796018-26-01		796018-26-01		796018-26-01		
	UNITS	BHMW114 SS-3	QC Batch	BHMW116 SS-4	QC Batch	BHMW117 SS-3	RDL	QC Batch
Inorganics								
Moisture	%	8.7	7336467	28	7336355	19	1.0	7336467
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	7332586	<0.050	7332586	<0.050	0.050	7332586
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	7335245	<0.50	7335245	<0.50	0.50	7335245
Benzene	ug/g	<0.020	7335245	<0.020	7335245	<0.020	0.020	7335245
Bromodichloromethane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Bromoform	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Bromomethane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Carbon Tetrachloride	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Chlorobenzene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Chloroform	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Dibromochloromethane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,2-Dichlorobenzene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,3-Dichlorobenzene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,4-Dichlorobenzene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,1-Dichloroethane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,2-Dichloroethane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,1-Dichloroethylene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
cis-1,2-Dichloroethylene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
trans-1,2-Dichloroethylene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,2-Dichloropropane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
cis-1,3-Dichloropropene	ug/g	<0.030	7335245	<0.030	7335245	<0.030	0.030	7335245
trans-1,3-Dichloropropene	ug/g	<0.040	7335245	<0.040	7335245	<0.040	0.040	7335245
Ethylbenzene	ug/g	<0.020	7335245	<0.020	7335245	<0.020	0.020	7335245
Ethylene Dibromide	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Hexane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Methylene Chloride(Dichloromethane)	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	7335245	<0.50	7335245	<0.50	0.50	7335245
Methyl Isobutyl Ketone	ug/g	<0.50	7335245	<0.50	7335245	<0.50	0.50	7335245
Methyl t-butyl ether (MTBE)	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Styrene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,1,1,2-Tetrachloroethane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,1,2,2-Tetrachloroethane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Tetrachloroethylene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1B8527
Report Date: 2021/05/10

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PMA916		PMA918		PMA920		
Sampling Date		2021/04/29		2021/04/30		2021/04/30		
COC Number		796018-26-01		796018-26-01		796018-26-01		
	UNITS	**BHMW114 SS-3**	**QC Batch**	**BHMW116 SS-4**	**QC Batch**	**BHMW117 SS-3**	**RDL**	**QC Batch**
Toluene	ug/g	<0.020	7335245	<0.020	7335245	<0.020	0.020	7335245
1,1,1-Trichloroethane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
1,1,2-Trichloroethane	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Trichloroethylene	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	7335245	<0.050	7335245	<0.050	0.050	7335245
Vinyl Chloride	ug/g	<0.020	7335245	<0.020	7335245	<0.020	0.020	7335245
p+m-Xylene	ug/g	<0.020	7335245	<0.020	7335245	<0.020	0.020	7335245
o-Xylene	ug/g	<0.020	7335245	<0.020	7335245	<0.020	0.020	7335245
Total Xylenes	ug/g	<0.020	7335245	<0.020	7335245	<0.020	0.020	7335245
F1 (C6-C10)	ug/g	<10	7335245	<10	7335245	<10	10	7335245
F1 (C6-C10) - BTEX	ug/g	<10	7335245	<10	7335245	<10	10	7335245
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	7336885	10	7336885	<10	10	7336885
F3 (C16-C34 Hydrocarbons)	ug/g	260	7336885	61	7336885	<50	50	7336885
F4 (C34-C50 Hydrocarbons)	ug/g	<50	7336885	<50	7336885	<50	50	7336885
Reached Baseline at C50	ug/g	Yes	7336885	Yes	7336885	Yes		7336885
Surrogate Recovery (%)								
o-Terphenyl	%	88	7336885	91	7336885	89		7336885
4-Bromofluorobenzene	%	84	7335245	89	7335245	84		7335245
D10-o-Xylene	%	89	7335245	91	7335245	91		7335245
D4-1,2-Dichloroethane	%	101	7335245	101	7335245	101		7335245
D8-Toluene	%	100	7335245	98	7335245	101		7335245

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PMA921		PMA922		
Sampling Date		2021/04/30		2021/04/30		
COC Number		796018-26-01		796018-26-01		
	UNITS	BHMW118 SS-2	QC Batch	DUP-3	RDL	QC Batch
Inorganics						
Moisture	%	18	7336467	4.8	1.0	7336467
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	7332586	<0.050	0.050	7333084
Volatile Organics						
Acetone (2-Propanone)	ug/g	<0.50	7335245	<0.50	0.50	7335245
Benzene	ug/g	<0.020	7335245	<0.020	0.020	7335245
Bromodichloromethane	ug/g	<0.050	7335245	<0.050	0.050	7335245
Bromoform	ug/g	<0.050	7335245	<0.050	0.050	7335245
Bromomethane	ug/g	<0.050	7335245	<0.050	0.050	7335245
Carbon Tetrachloride	ug/g	<0.050	7335245	<0.050	0.050	7335245
Chlorobenzene	ug/g	<0.050	7335245	<0.050	0.050	7335245
Chloroform	ug/g	<0.050	7335245	<0.050	0.050	7335245
Dibromochloromethane	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,2-Dichlorobenzene	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,3-Dichlorobenzene	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,4-Dichlorobenzene	ug/g	<0.050	7335245	<0.050	0.050	7335245
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,1-Dichloroethane	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,2-Dichloroethane	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,1-Dichloroethylene	ug/g	<0.050	7335245	<0.050	0.050	7335245
cis-1,2-Dichloroethylene	ug/g	<0.050	7335245	<0.050	0.050	7335245
trans-1,2-Dichloroethylene	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,2-Dichloropropane	ug/g	<0.050	7335245	<0.050	0.050	7335245
cis-1,3-Dichloropropene	ug/g	<0.030	7335245	<0.030	0.030	7335245
trans-1,3-Dichloropropene	ug/g	<0.040	7335245	<0.040	0.040	7335245
Ethylbenzene	ug/g	<0.020	7335245	<0.020	0.020	7335245
Ethylene Dibromide	ug/g	<0.050	7335245	<0.050	0.050	7335245
Hexane	ug/g	<0.050	7335245	<0.050	0.050	7335245
Methylene Chloride(Dichloromethane)	ug/g	<0.050	7335245	<0.050	0.050	7335245
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	7335245	<0.50	0.50	7335245
Methyl Isobutyl Ketone	ug/g	<0.50	7335245	<0.50	0.50	7335245
Methyl t-butyl ether (MTBE)	ug/g	<0.050	7335245	<0.050	0.050	7335245
Styrene	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,1,1,2-Tetrachloroethane	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,1,2,2-Tetrachloroethane	ug/g	<0.050	7335245	<0.050	0.050	7335245
Tetrachloroethylene	ug/g	<0.050	7335245	<0.050	0.050	7335245

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PMA921		PMA922		
Sampling Date		2021/04/30		2021/04/30		
COC Number		796018-26-01		796018-26-01		
	UNITS	**BHMW118 SS-2**	**QC Batch**	**DUP-3**	**RDL**	**QC Batch**
Toluene	ug/g	<0.020	7335245	<0.020	0.020	7335245
1,1,1-Trichloroethane	ug/g	<0.050	7335245	<0.050	0.050	7335245
1,1,2-Trichloroethane	ug/g	<0.050	7335245	<0.050	0.050	7335245
Trichloroethylene	ug/g	<0.050	7335245	<0.050	0.050	7335245
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	7335245	<0.050	0.050	7335245
Vinyl Chloride	ug/g	<0.020	7335245	<0.020	0.020	7335245
p+m-Xylene	ug/g	<0.020	7335245	<0.020	0.020	7335245
o-Xylene	ug/g	<0.020	7335245	<0.020	0.020	7335245
Total Xylenes	ug/g	<0.020	7335245	<0.020	0.020	7335245
F1 (C6-C10)	ug/g	<10	7335245	<10	10	7335245
F1 (C6-C10) - BTEX	ug/g	<10	7335245	<10	10	7335245
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	<10	7336885	<10	10	7336885
F3 (C16-C34 Hydrocarbons)	ug/g	<50	7336885	<50	50	7336885
F4 (C34-C50 Hydrocarbons)	ug/g	<50	7336885	250	50	7336885
Reached Baseline at C50	ug/g	Yes	7336885	No		7336885
Surrogate Recovery (%)						
o-Terphenyl	%	89	7336885	90		7336885
4-Bromofluorobenzene	%	84	7335245	83		7335245
D10-o-Xylene	%	83	7335245	81		7335245
D4-1,2-Dichloroethane	%	102	7335245	103		7335245
D8-Toluene	%	99	7335245	100		7335245

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		PMA922		
Sampling Date		2021/04/30		
COC Number		796018-26-01		
	UNITS	**DUP-3**	**RDL**	**QC Batch**
F2-F4 Hydrocarbons				
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	1000	100	7342457

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1B8527
Report Date: 2021/05/10

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

BV Labs ID: PMA916
Sample ID: BHMW114 SS-3
Matrix: Soil

Collected: 2021/04/29
Shipped:
Received: 2021/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7332586	N/A	2021/05/10	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7336885	2021/05/06	2021/05/06	Ksenia Trofimova
Moisture	BAL	7336467	N/A	2021/05/05	Kruti Jitesh Patel
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7335245	N/A	2021/05/08	Rebecca McClean

BV Labs ID: PMA917
Sample ID: BHMW114 SS-9
Matrix: Soil

Collected: 2021/04/29
Shipped:
Received: 2021/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7338926	N/A	2021/05/07	Lincoln Ramdahin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7336885	2021/05/06	2021/05/06	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7337564	2021/05/06	2021/05/06	Daniel Teclu
Moisture	BAL	7336355	N/A	2021/05/05	Kruti Jitesh Patel

BV Labs ID: PMA918
Sample ID: BHMW116 SS-4
Matrix: Soil

Collected: 2021/04/30
Shipped:
Received: 2021/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7332757	N/A	2021/05/07	Automated Statchk
1,3-Dichloropropene Sum	CALC	7332586	N/A	2021/05/10	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7336885	2021/05/06	2021/05/06	Ksenia Trofimova
Moisture	BAL	7336355	N/A	2021/05/05	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7338111	2021/05/06	2021/05/07	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7335245	N/A	2021/05/08	Rebecca McClean

BV Labs ID: PMA919
Sample ID: BHMW116 SS-7
Matrix: Soil

Collected: 2021/04/30
Shipped:
Received: 2021/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7338926	N/A	2021/05/07	Lincoln Ramdahin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7336885	2021/05/06	2021/05/06	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7337564	2021/05/06	2021/05/06	Daniel Teclu
Moisture	BAL	7336467	N/A	2021/05/05	Kruti Jitesh Patel

BV Labs ID: PMA919 Dup
Sample ID: BHMW116 SS-7
Matrix: Soil

Collected: 2021/04/30
Shipped:
Received: 2021/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	7336467	N/A	2021/05/05	Kruti Jitesh Patel

BV Labs Job #: C1B8527
Report Date: 2021/05/10

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

BV Labs ID: PMA920
Sample ID: BHMW117 SS-3
Matrix: Soil

Collected: 2021/04/30
Shipped:
Received: 2021/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7332757	N/A	2021/05/07	Automated Statchk
1,3-Dichloropropene Sum	CALC	7332586	N/A	2021/05/10	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7336885	2021/05/06	2021/05/06	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7337564	2021/05/06	2021/05/06	Daniel Teclu
Moisture	BAL	7336467	N/A	2021/05/05	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7338111	2021/05/06	2021/05/07	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7335245	N/A	2021/05/08	Rebecca McClean

BV Labs ID: PMA921
Sample ID: BHMW118 SS-2
Matrix: Soil

Collected: 2021/04/30
Shipped:
Received: 2021/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7332757	N/A	2021/05/07	Automated Statchk
1,3-Dichloropropene Sum	CALC	7332586	N/A	2021/05/10	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7336885	2021/05/06	2021/05/06	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	7337564	2021/05/06	2021/05/06	Daniel Teclu
Moisture	BAL	7336467	N/A	2021/05/05	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7338111	2021/05/06	2021/05/07	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7335245	N/A	2021/05/08	Rebecca McClean

BV Labs ID: PMA922
Sample ID: DUP-3
Matrix: Soil

Collected: 2021/04/30
Shipped:
Received: 2021/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7332757	N/A	2021/05/07	Automated Statchk
1,3-Dichloropropene Sum	CALC	7333084	N/A	2021/05/10	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7336885	2021/05/06	2021/05/06	Ksenia Trofimova
F4G (CCME Hydrocarbons Gravimetric)	BAL	7342457	2021/05/10	2021/05/10	Rashmi Dubey
Acid Extractable Metals by ICPMS	ICP/MS	7337564	2021/05/06	2021/05/06	Daniel Teclu
Moisture	BAL	7336467	N/A	2021/05/05	Kruti Jitesh Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7338111	2021/05/06	2021/05/07	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7335245	N/A	2021/05/08	Rebecca McClean

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.7°C

Cooler custody seal was present and intact.F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Sample PMA922 [DUP-3] : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

BV Labs Job #: C1B8527
Report Date: 2021/05/10

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7335245	RSC	Matrix Spike	4-Bromofluorobenzene	2021/05/08		92	%	60 - 140
			D10-o-Xylene	2021/05/08		92	%	60 - 130
			D4-1,2-Dichloroethane	2021/05/08		96	%	60 - 140
			D8-Toluene	2021/05/08		111	%	60 - 140
			Acetone (2-Propanone)	2021/05/08		89	%	60 - 140
			Benzene	2021/05/08		90	%	60 - 140
			Bromodichloromethane	2021/05/08		88	%	60 - 140
			Bromoform	2021/05/08		73	%	60 - 140
			Bromomethane	2021/05/08		100	%	60 - 140
			Carbon Tetrachloride	2021/05/08		95	%	60 - 140
			Chlorobenzene	2021/05/08		90	%	60 - 140
			Chloroform	2021/05/08		89	%	60 - 140
			Dibromochloromethane	2021/05/08		81	%	60 - 140
			1,2-Dichlorobenzene	2021/05/08		91	%	60 - 140
			1,3-Dichlorobenzene	2021/05/08		96	%	60 - 140
			1,4-Dichlorobenzene	2021/05/08		114	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2021/05/08		89	%	60 - 140
			1,1-Dichloroethane	2021/05/08		93	%	60 - 140
			1,2-Dichloroethane	2021/05/08		86	%	60 - 140
			1,1-Dichloroethylene	2021/05/08		105	%	60 - 140
			cis-1,2-Dichloroethylene	2021/05/08		91	%	60 - 140
			trans-1,2-Dichloroethylene	2021/05/08		98	%	60 - 140
			1,2-Dichloropropane	2021/05/08		90	%	60 - 140
			cis-1,3-Dichloropropene	2021/05/08		81	%	60 - 140
			trans-1,3-Dichloropropene	2021/05/08		90	%	60 - 140
			Ethylbenzene	2021/05/08		89	%	60 - 140
			Ethylene Dibromide	2021/05/08		82	%	60 - 140
			Hexane	2021/05/08		109	%	60 - 140
			Methylene Chloride(Dichloromethane)	2021/05/08		110	%	60 - 140
			Methyl Ethyl Ketone (2-Butanone)	2021/05/08		84	%	60 - 140
			Methyl Isobutyl Ketone	2021/05/08		76	%	60 - 140
			Methyl t-butyl ether (MTBE)	2021/05/08		85	%	60 - 140
			Styrene	2021/05/08		64	%	60 - 140
			1,1,1,2-Tetrachloroethane	2021/05/08		89	%	60 - 140
			1,1,2,2-Tetrachloroethane	2021/05/08		78	%	60 - 140
			Tetrachloroethylene	2021/05/08		94	%	60 - 140
			Toluene	2021/05/08		96	%	60 - 140
			1,1,1-Trichloroethane	2021/05/08		100	%	60 - 140
			1,1,2-Trichloroethane	2021/05/08		91	%	60 - 140
			Trichloroethylene	2021/05/08		95	%	60 - 140
			Trichlorofluoromethane (FREON 11)	2021/05/08		99	%	60 - 140
			Vinyl Chloride	2021/05/08		95	%	60 - 140
			p+m-Xylene	2021/05/08		93	%	60 - 140
			o-Xylene	2021/05/08		86	%	60 - 140
			F1 (C6-C10)	2021/05/08		101	%	60 - 140
7335245	RSC	Spiked Blank	4-Bromofluorobenzene	2021/05/08		93	%	60 - 140
			D10-o-Xylene	2021/05/08		95	%	60 - 130
			D4-1,2-Dichloroethane	2021/05/08		97	%	60 - 140
			D8-Toluene	2021/05/08		111	%	60 - 140
			Acetone (2-Propanone)	2021/05/08		95	%	60 - 140
			Benzene	2021/05/08		91	%	60 - 130
			Bromodichloromethane	2021/05/08		88	%	60 - 130
			Bromoform	2021/05/08		76	%	60 - 130
			Bromomethane	2021/05/08		98	%	60 - 140

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Carbon Tetrachloride	2021/05/08		96	%	60 - 130
			Chlorobenzene	2021/05/08		92	%	60 - 130
			Chloroform	2021/05/08		90	%	60 - 130
			Dibromochloromethane	2021/05/08		83	%	60 - 130
			1,2-Dichlorobenzene	2021/05/08		94	%	60 - 130
			1,3-Dichlorobenzene	2021/05/08		97	%	60 - 130
			1,4-Dichlorobenzene	2021/05/08		116	%	60 - 130
			Dichlorodifluoromethane (FREON 12)	2021/05/08		87	%	60 - 140
			1,1-Dichloroethane	2021/05/08		92	%	60 - 130
			1,2-Dichloroethane	2021/05/08		87	%	60 - 130
			1,1-Dichloroethylene	2021/05/08		109	%	60 - 130
			cis-1,2-Dichloroethylene	2021/05/08		92	%	60 - 130
			trans-1,2-Dichloroethylene	2021/05/08		97	%	60 - 130
			1,2-Dichloropropane	2021/05/08		90	%	60 - 130
			cis-1,3-Dichloropropene	2021/05/08		80	%	60 - 130
			trans-1,3-Dichloropropene	2021/05/08		93	%	60 - 130
			Ethylbenzene	2021/05/08		89	%	60 - 130
			Ethylene Dibromide	2021/05/08		84	%	60 - 130
			Hexane	2021/05/08		108	%	60 - 130
			Methylene Chloride(Dichloromethane)	2021/05/08		109	%	60 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/05/08		88	%	60 - 140
			Methyl Isobutyl Ketone	2021/05/08		79	%	60 - 130
			Methyl t-butyl ether (MTBE)	2021/05/08		85	%	60 - 130
			Styrene	2021/05/08		66	%	60 - 130
			1,1,1,2-Tetrachloroethane	2021/05/08		91	%	60 - 130
			1,1,2,2-Tetrachloroethane	2021/05/08		80	%	60 - 130
			Tetrachloroethylene	2021/05/08		95	%	60 - 130
			Toluene	2021/05/08		97	%	60 - 130
			1,1,1-Trichloroethane	2021/05/08		100	%	60 - 130
			1,1,2-Trichloroethane	2021/05/08		93	%	60 - 130
			Trichloroethylene	2021/05/08		95	%	60 - 130
			Trichlorofluoromethane (FREON 11)	2021/05/08		102	%	60 - 130
			Vinyl Chloride	2021/05/08		94	%	60 - 130
			p+m-Xylene	2021/05/08		94	%	60 - 130
			o-Xylene	2021/05/08		88	%	60 - 130
			F1 (C6-C10)	2021/05/08		90	%	80 - 120
7335245	RSC	Method Blank	4-Bromofluorobenzene	2021/05/08		84	%	60 - 140
			D10-o-Xylene	2021/05/08		90	%	60 - 130
			D4-1,2-Dichloroethane	2021/05/08		99	%	60 - 140
			D8-Toluene	2021/05/08		101	%	60 - 140
			Acetone (2-Propanone)	2021/05/08	<0.50		ug/g	
			Benzene	2021/05/08	<0.020		ug/g	
			Bromodichloromethane	2021/05/08	<0.050		ug/g	
			Bromoform	2021/05/08	<0.050		ug/g	
			Bromomethane	2021/05/08	<0.050		ug/g	
			Carbon Tetrachloride	2021/05/08	<0.050		ug/g	
			Chlorobenzene	2021/05/08	<0.050		ug/g	
			Chloroform	2021/05/08	<0.050		ug/g	
			Dibromochloromethane	2021/05/08	<0.050		ug/g	
			1,2-Dichlorobenzene	2021/05/08	<0.050		ug/g	
			1,3-Dichlorobenzene	2021/05/08	<0.050		ug/g	
			1,4-Dichlorobenzene	2021/05/08	<0.050		ug/g	
			Dichlorodifluoromethane (FREON 12)	2021/05/08	<0.050		ug/g	
			1,1-Dichloroethane	2021/05/08	<0.050		ug/g	

BV Labs Job #: C1B8527
Report Date: 2021/05/10

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-Dichloroethane	2021/05/08	<0.050		ug/g	
			1,1-Dichloroethylene	2021/05/08	<0.050		ug/g	
			cis-1,2-Dichloroethylene	2021/05/08	<0.050		ug/g	
			trans-1,2-Dichloroethylene	2021/05/08	<0.050		ug/g	
			1,2-Dichloropropane	2021/05/08	<0.050		ug/g	
			cis-1,3-Dichloropropene	2021/05/08	<0.030		ug/g	
			trans-1,3-Dichloropropene	2021/05/08	<0.040		ug/g	
			Ethylbenzene	2021/05/08	<0.020		ug/g	
			Ethylene Dibromide	2021/05/08	<0.050		ug/g	
			Hexane	2021/05/08	<0.050		ug/g	
			Methylene Chloride(Dichloromethane)	2021/05/08	<0.050		ug/g	
			Methyl Ethyl Ketone (2-Butanone)	2021/05/08	<0.50		ug/g	
			Methyl Isobutyl Ketone	2021/05/08	<0.50		ug/g	
			Methyl t-butyl ether (MTBE)	2021/05/08	<0.050		ug/g	
			Styrene	2021/05/08	<0.050		ug/g	
			1,1,1,2-Tetrachloroethane	2021/05/08	<0.050		ug/g	
			1,1,2,2-Tetrachloroethane	2021/05/08	<0.050		ug/g	
			Tetrachloroethylene	2021/05/08	<0.050		ug/g	
			Toluene	2021/05/08	<0.020		ug/g	
			1,1,1-Trichloroethane	2021/05/08	<0.050		ug/g	
			1,1,2-Trichloroethane	2021/05/08	<0.050		ug/g	
			Trichloroethylene	2021/05/08	<0.050		ug/g	
			Trichlorofluoromethane (FREON 11)	2021/05/08	<0.050		ug/g	
			Vinyl Chloride	2021/05/08	<0.020		ug/g	
			p+m-Xylene	2021/05/08	<0.020		ug/g	
			o-Xylene	2021/05/08	<0.020		ug/g	
			Total Xylenes	2021/05/08	<0.020		ug/g	
			F1 (C6-C10)	2021/05/08	<10		ug/g	
			F1 (C6-C10) - BTEX	2021/05/08	<10		ug/g	
7335245	RSC	RPD	Acetone (2-Propanone)	2021/05/08	NC		%	50
			Benzene	2021/05/08	NC		%	50
			Bromodichloromethane	2021/05/08	NC		%	50
			Bromoform	2021/05/08	NC		%	50
			Bromomethane	2021/05/08	NC		%	50
			Carbon Tetrachloride	2021/05/08	NC		%	50
			Chlorobenzene	2021/05/08	NC		%	50
			Chloroform	2021/05/08	NC		%	50
			Dibromochloromethane	2021/05/08	NC		%	50
			1,2-Dichlorobenzene	2021/05/08	NC		%	50
			1,3-Dichlorobenzene	2021/05/08	NC		%	50
			1,4-Dichlorobenzene	2021/05/08	NC		%	50
			Dichlorodifluoromethane (FREON 12)	2021/05/08	NC		%	50
			1,1-Dichloroethane	2021/05/08	NC		%	50
			1,2-Dichloroethane	2021/05/08	NC		%	50
			1,1-Dichloroethylene	2021/05/08	NC		%	50
			cis-1,2-Dichloroethylene	2021/05/08	NC		%	50
			trans-1,2-Dichloroethylene	2021/05/08	NC		%	50
			1,2-Dichloropropane	2021/05/08	NC		%	50
			cis-1,3-Dichloropropene	2021/05/08	NC		%	50
			trans-1,3-Dichloropropene	2021/05/08	NC		%	50
			Ethylbenzene	2021/05/08	NC		%	50
			Ethylene Dibromide	2021/05/08	NC		%	50
			Hexane	2021/05/08	NC		%	50
			Methylene Chloride(Dichloromethane)	2021/05/08	NC		%	50

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Methyl Ethyl Ketone (2-Butanone)	2021/05/08	NC		%	50
			Methyl Isobutyl Ketone	2021/05/08	NC		%	50
			Methyl t-butyl ether (MTBE)	2021/05/08	NC		%	50
			Styrene	2021/05/08	NC		%	50
			1,1,1,2-Tetrachloroethane	2021/05/08	NC		%	50
			1,1,2,2-Tetrachloroethane	2021/05/08	NC		%	50
			Tetrachloroethylene	2021/05/08	NC		%	50
			Toluene	2021/05/08	NC		%	50
			1,1,1-Trichloroethane	2021/05/08	NC		%	50
			1,1,2-Trichloroethane	2021/05/08	NC		%	50
			Trichloroethylene	2021/05/08	NC		%	50
			Trichlorofluoromethane (FREON 11)	2021/05/08	NC		%	50
			Vinyl Chloride	2021/05/08	NC		%	50
			p+m-Xylene	2021/05/08	NC		%	50
			o-Xylene	2021/05/08	NC		%	50
			Total Xylenes	2021/05/08	NC		%	50
			F1 (C6-C10)	2021/05/08	NC		%	30
			F1 (C6-C10) - BTEX	2021/05/08	NC		%	30
7336355	GYA	RPD	Moisture	2021/05/05	2.8		%	20
7336467	GYA	RPD [PMA919-01]	Moisture	2021/05/05	6.5		%	20
7336885	KTR	Matrix Spike	o-Terphenyl	2021/05/06		88	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/06		96	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2021/05/06		95	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2021/05/06		97	%	50 - 130
7336885	KTR	Spiked Blank	o-Terphenyl	2021/05/06		86	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/06		94	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2021/05/06		95	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2021/05/06		95	%	80 - 120
7336885	KTR	Method Blank	o-Terphenyl	2021/05/06		86	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/05/06	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2021/05/06	<50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2021/05/06	<50		ug/g	
7336885	KTR	RPD	F2 (C10-C16 Hydrocarbons)	2021/05/07	5.5		%	30
			F3 (C16-C34 Hydrocarbons)	2021/05/07	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/05/07	NC		%	30
7337564	DT1	Matrix Spike	Acid Extractable Antimony (Sb)	2021/05/06		86	%	75 - 125
			Acid Extractable Arsenic (As)	2021/05/06		94	%	75 - 125
			Acid Extractable Barium (Ba)	2021/05/06		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2021/05/06		97	%	75 - 125
			Acid Extractable Boron (B)	2021/05/06		85	%	75 - 125
			Acid Extractable Cadmium (Cd)	2021/05/06		95	%	75 - 125
			Acid Extractable Chromium (Cr)	2021/05/06		94	%	75 - 125
			Acid Extractable Cobalt (Co)	2021/05/06		94	%	75 - 125
			Acid Extractable Copper (Cu)	2021/05/06		92	%	75 - 125
			Acid Extractable Lead (Pb)	2021/05/06		88	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2021/05/06		90	%	75 - 125
			Acid Extractable Nickel (Ni)	2021/05/06		99	%	75 - 125
			Acid Extractable Selenium (Se)	2021/05/06		92	%	75 - 125
			Acid Extractable Silver (Ag)	2021/05/06		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2021/05/06		87	%	75 - 125
			Acid Extractable Uranium (U)	2021/05/06		93	%	75 - 125
			Acid Extractable Vanadium (V)	2021/05/06		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2021/05/06		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2021/05/06		83	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7337564	DT1	Spiked Blank	Acid Extractable Antimony (Sb)	2021/05/06		101	%	80 - 120
			Acid Extractable Arsenic (As)	2021/05/06		97	%	80 - 120
			Acid Extractable Barium (Ba)	2021/05/06		99	%	80 - 120
			Acid Extractable Beryllium (Be)	2021/05/06		96	%	80 - 120
			Acid Extractable Boron (B)	2021/05/06		95	%	80 - 120
			Acid Extractable Cadmium (Cd)	2021/05/06		98	%	80 - 120
			Acid Extractable Chromium (Cr)	2021/05/06		97	%	80 - 120
			Acid Extractable Cobalt (Co)	2021/05/06		96	%	80 - 120
			Acid Extractable Copper (Cu)	2021/05/06		97	%	80 - 120
			Acid Extractable Lead (Pb)	2021/05/06		92	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2021/05/06		96	%	80 - 120
			Acid Extractable Nickel (Ni)	2021/05/06		101	%	80 - 120
			Acid Extractable Selenium (Se)	2021/05/06		95	%	80 - 120
			Acid Extractable Silver (Ag)	2021/05/06		100	%	80 - 120
			Acid Extractable Thallium (Tl)	2021/05/06		94	%	80 - 120
			Acid Extractable Uranium (U)	2021/05/06		96	%	80 - 120
			Acid Extractable Vanadium (V)	2021/05/06		97	%	80 - 120
			Acid Extractable Zinc (Zn)	2021/05/06		99	%	80 - 120
			Acid Extractable Mercury (Hg)	2021/05/06		88	%	80 - 120
7337564	DT1	Method Blank	Acid Extractable Antimony (Sb)	2021/05/06	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2021/05/06	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2021/05/06	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2021/05/06	<0.20		ug/g	
			Acid Extractable Boron (B)	2021/05/06	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2021/05/06	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2021/05/06	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2021/05/06	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2021/05/06	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2021/05/06	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2021/05/06	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2021/05/06	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2021/05/06	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2021/05/06	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2021/05/06	<0.050		ug/g	
			Acid Extractable Uranium (U)	2021/05/06	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2021/05/06	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2021/05/06	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2021/05/06	<0.050		ug/g	
7337564	DT1	RPD	Acid Extractable Antimony (Sb)	2021/05/06	NC		%	30
			Acid Extractable Arsenic (As)	2021/05/06	0.25		%	30
			Acid Extractable Barium (Ba)	2021/05/06	3.6		%	30
			Acid Extractable Beryllium (Be)	2021/05/06	3.0		%	30
			Acid Extractable Boron (B)	2021/05/06	3.9		%	30
			Acid Extractable Cadmium (Cd)	2021/05/06	1.1		%	30
			Acid Extractable Chromium (Cr)	2021/05/06	1.6		%	30
			Acid Extractable Cobalt (Co)	2021/05/06	2.0		%	30
			Acid Extractable Copper (Cu)	2021/05/06	4.5		%	30
			Acid Extractable Lead (Pb)	2021/05/06	3.7		%	30
			Acid Extractable Molybdenum (Mo)	2021/05/06	NC		%	30
			Acid Extractable Nickel (Ni)	2021/05/06	4.9		%	30
			Acid Extractable Selenium (Se)	2021/05/06	NC		%	30
			Acid Extractable Silver (Ag)	2021/05/06	NC		%	30
			Acid Extractable Thallium (Tl)	2021/05/06	3.3		%	30
			Acid Extractable Uranium (U)	2021/05/06	0.45		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Vanadium (V)	2021/05/06	1.0		%	30
			Acid Extractable Zinc (Zn)	2021/05/06	3.1		%	30
			Acid Extractable Mercury (Hg)	2021/05/06	NC		%	30
7338111	RAJ	Matrix Spike	D10-Anthracene	2021/05/07		93	%	50 - 130
			D14-Terphenyl (FS)	2021/05/07		89	%	50 - 130
			D8-Acenaphthylene	2021/05/07		84	%	50 - 130
			Acenaphthene	2021/05/07		90	%	50 - 130
			Acenaphthylene	2021/05/07		81	%	50 - 130
			Anthracene	2021/05/07		89	%	50 - 130
			Benzo(a)anthracene	2021/05/07		92	%	50 - 130
			Benzo(a)pyrene	2021/05/07		80	%	50 - 130
			Benzo(b/j)fluoranthene	2021/05/07		91	%	50 - 130
			Benzo(g,h,i)perylene	2021/05/07		89	%	50 - 130
			Benzo(k)fluoranthene	2021/05/07		94	%	50 - 130
			Chrysene	2021/05/07		99	%	50 - 130
			Dibenzo(a,h)anthracene	2021/05/07		91	%	50 - 130
			Fluoranthene	2021/05/07		87	%	50 - 130
			Fluorene	2021/05/07		92	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/05/07		90	%	50 - 130
			1-Methylnaphthalene	2021/05/07		105	%	50 - 130
			2-Methylnaphthalene	2021/05/07		102	%	50 - 130
			Naphthalene	2021/05/07		89	%	50 - 130
			Phenanthrene	2021/05/07		92	%	50 - 130
			Pyrene	2021/05/07		91	%	50 - 130
7338111	RAJ	Spiked Blank	D10-Anthracene	2021/05/06		96	%	50 - 130
			D14-Terphenyl (FS)	2021/05/06		103	%	50 - 130
			D8-Acenaphthylene	2021/05/06		86	%	50 - 130
			Acenaphthene	2021/05/06		89	%	50 - 130
			Acenaphthylene	2021/05/06		81	%	50 - 130
			Anthracene	2021/05/06		88	%	50 - 130
			Benzo(a)anthracene	2021/05/06		89	%	50 - 130
			Benzo(a)pyrene	2021/05/06		80	%	50 - 130
			Benzo(b/j)fluoranthene	2021/05/06		93	%	50 - 130
			Benzo(g,h,i)perylene	2021/05/06		87	%	50 - 130
			Benzo(k)fluoranthene	2021/05/06		95	%	50 - 130
			Chrysene	2021/05/06		93	%	50 - 130
			Dibenzo(a,h)anthracene	2021/05/06		83	%	50 - 130
			Fluoranthene	2021/05/06		100	%	50 - 130
			Fluorene	2021/05/06		88	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/05/06		89	%	50 - 130
			1-Methylnaphthalene	2021/05/06		103	%	50 - 130
			2-Methylnaphthalene	2021/05/06		101	%	50 - 130
			Naphthalene	2021/05/06		89	%	50 - 130
			Phenanthrene	2021/05/06		90	%	50 - 130
			Pyrene	2021/05/06		100	%	50 - 130
7338111	RAJ	Method Blank	D10-Anthracene	2021/05/06		94	%	50 - 130
			D14-Terphenyl (FS)	2021/05/06		97	%	50 - 130
			D8-Acenaphthylene	2021/05/06		84	%	50 - 130
			Acenaphthene	2021/05/06	<0.0050		ug/g	
			Acenaphthylene	2021/05/06	<0.0050		ug/g	
			Anthracene	2021/05/06	<0.0050		ug/g	
			Benzo(a)anthracene	2021/05/06	<0.0050		ug/g	
			Benzo(a)pyrene	2021/05/06	<0.0050		ug/g	
			Benzo(b/j)fluoranthene	2021/05/06	<0.0050		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(g,h,i)perylene	2021/05/06	<0.0050		ug/g	
			Benzo(k)fluoranthene	2021/05/06	<0.0050		ug/g	
			Chrysene	2021/05/06	<0.0050		ug/g	
			Dibenzo(a,h)anthracene	2021/05/06	<0.0050		ug/g	
			Fluoranthene	2021/05/06	<0.0050		ug/g	
			Fluorene	2021/05/06	<0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2021/05/06	<0.0050		ug/g	
			1-Methylnaphthalene	2021/05/06	<0.0050		ug/g	
			2-Methylnaphthalene	2021/05/06	<0.0050		ug/g	
			Naphthalene	2021/05/06	<0.0050		ug/g	
			Phenanthrene	2021/05/06	<0.0050		ug/g	
			Pyrene	2021/05/06	<0.0050		ug/g	
7338111	RAJ	RPD	Acenaphthene	2021/05/07	NC		%	40
			Acenaphthylene	2021/05/07	NC		%	40
			Anthracene	2021/05/07	NC		%	40
			Benzo(a)anthracene	2021/05/07	NC		%	40
			Benzo(a)pyrene	2021/05/07	NC		%	40
			Benzo(b/j)fluoranthene	2021/05/07	NC		%	40
			Benzo(g,h,i)perylene	2021/05/07	NC		%	40
			Benzo(k)fluoranthene	2021/05/07	NC		%	40
			Chrysene	2021/05/07	5.6		%	40
			Dibenzo(a,h)anthracene	2021/05/07	NC		%	40
			Fluoranthene	2021/05/07	NC		%	40
			Fluorene	2021/05/07	NC		%	40
			Indeno(1,2,3-cd)pyrene	2021/05/07	NC		%	40
			1-Methylnaphthalene	2021/05/07	NC		%	40
			2-Methylnaphthalene	2021/05/07	NC		%	40
			Naphthalene	2021/05/07	NC		%	40
			Phenanthrene	2021/05/07	NC		%	40
			Pyrene	2021/05/07	NC		%	40
7338926	LRA	Matrix Spike	1,4-Difluorobenzene	2021/05/07		93	%	60 - 140
			4-Bromofluorobenzene	2021/05/07		100	%	60 - 140
			D10-o-Xylene	2021/05/07		91	%	60 - 140
			D4-1,2-Dichloroethane	2021/05/07		98	%	60 - 140
			Benzene	2021/05/07		95	%	50 - 140
			Toluene	2021/05/07		95	%	50 - 140
			Ethylbenzene	2021/05/07		105	%	50 - 140
			o-Xylene	2021/05/07		105	%	50 - 140
			p+m-Xylene	2021/05/07		96	%	50 - 140
			F1 (C6-C10)	2021/05/07		94	%	60 - 140
7338926	LRA	Spiked Blank	1,4-Difluorobenzene	2021/05/07		95	%	60 - 140
			4-Bromofluorobenzene	2021/05/07		100	%	60 - 140
			D10-o-Xylene	2021/05/07		89	%	60 - 140
			D4-1,2-Dichloroethane	2021/05/07		99	%	60 - 140
			Benzene	2021/05/07		94	%	50 - 140
			Toluene	2021/05/07		91	%	50 - 140
			Ethylbenzene	2021/05/07		101	%	50 - 140
			o-Xylene	2021/05/07		99	%	50 - 140
			p+m-Xylene	2021/05/07		91	%	50 - 140
			F1 (C6-C10)	2021/05/07		85	%	80 - 120
7338926	LRA	Method Blank	1,4-Difluorobenzene	2021/05/07		95	%	60 - 140
			4-Bromofluorobenzene	2021/05/07		97	%	60 - 140
			D10-o-Xylene	2021/05/07		82	%	60 - 140
			D4-1,2-Dichloroethane	2021/05/07		102	%	60 - 140

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzene	2021/05/07	<0.020		ug/g	
			Toluene	2021/05/07	<0.020		ug/g	
			Ethylbenzene	2021/05/07	<0.020		ug/g	
			o-Xylene	2021/05/07	<0.020		ug/g	
			p+m-Xylene	2021/05/07	<0.040		ug/g	
			Total Xylenes	2021/05/07	<0.040		ug/g	
			F1 (C6-C10)	2021/05/07	<10		ug/g	
			F1 (C6-C10) - BTEX	2021/05/07	<10		ug/g	
7338926	LRA	RPD	Benzene	2021/05/07	NC		%	50
			Toluene	2021/05/07	NC		%	50
			Ethylbenzene	2021/05/07	NC		%	50
			o-Xylene	2021/05/07	NC		%	50
			p+m-Xylene	2021/05/07	NC		%	50
			Total Xylenes	2021/05/07	NC		%	50
			F1 (C6-C10)	2021/05/07	NC		%	30
			F1 (C6-C10) - BTEX	2021/05/07	NC		%	30
7342457	RDU	Matrix Spike	F4G-sg (Grav. Heavy Hydrocarbons)	2021/05/10		89	%	65 - 135
7342457	RDU	Spiked Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2021/05/10		102	%	65 - 135
7342457	RDU	Method Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2021/05/10	<100		ug/g	
7342457	RDU	RPD	F4G-sg (Grav. Heavy Hydrocarbons)	2021/05/10	8.3		%	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#982 Pinchin Ltd	Company Name:		Quotation #:	A70927
Attention:	Accounts Payable	Attention:	Matt, Ryan, Mike	P.O. #:	
Address:	1 Hines Road Suite 200	Address:		Project:	285722003
	Kanata ON K2K 3C7			Project Name:	
Tel:	(613) 592-3387 Fax: (613) 592-5897	Tel:	Fax:	Site #:	
Email:	ap@pinchin.com	Email:	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By:	M. Kosiw

Laboratory Use Only:	
BV Labs Job #:	Bottle Order #: 796018
COC #: C#796018-26-01	Project Manager: Antonella Brasil

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- [ ] Table 1
- [ ] Table 2
- [x] Table 3
- [ ] Table ___
- [x] Res/Park
- [ ] Ind/Comm
- [ ] Agri/Other
- [x] Medium/Fine
- [ ] Coarse
- [x] For RSC

Other Regulations
- [ ] CCME
- [ ] Reg 558
- [ ] MISA
- [ ] PWQO
- [ ] Other ______
- [ ] Sanitary Sewer Bylaw
- [ ] Storm Sewer Bylaw
- Municipality ______
- [ ] Reg 406 Table ______

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ______

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______ [ ]
Rush Confirmation Number: ______ *(call lab for #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	~~O.Reg 153~~ ICPMS Metals (Soil)	O.Reg 153 PHCs, BTEX/F1-F4 (Soil)	O.Reg 153 VOCs by HS (Soil)	O.Reg 153 PAHs (Soil)	pH CaCl2 EXTRACT	Sieve, 75um					# of Bottles	Comments
1		BHMW114SS-3	April 29 2021	PM	SOIL			X	X								2	
2		BHMW114SS-9					X	X										
3		BHMW116SS-4	April 30	PM				X	X	X								
4		BHMW116SS-7					X	X										
5		BHMW117SS-3					X	X	X	X								03-May-21 14:45
6		BHMW118SS-2					X	X	X	X								Antonella Brasil
7		Dup-3					X	X	X	X								C1B8527
8																		RECEIVED IN OTTAWA VBV ENV-1372
9																		ON Ice Packs
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mike Kosiw	May 3, 2021	2:00 PM	Jenny Tyler	2021/05/03 21/05/04	14:45 08:20	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	7, 7, 6	Present		
		Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

7/3/5

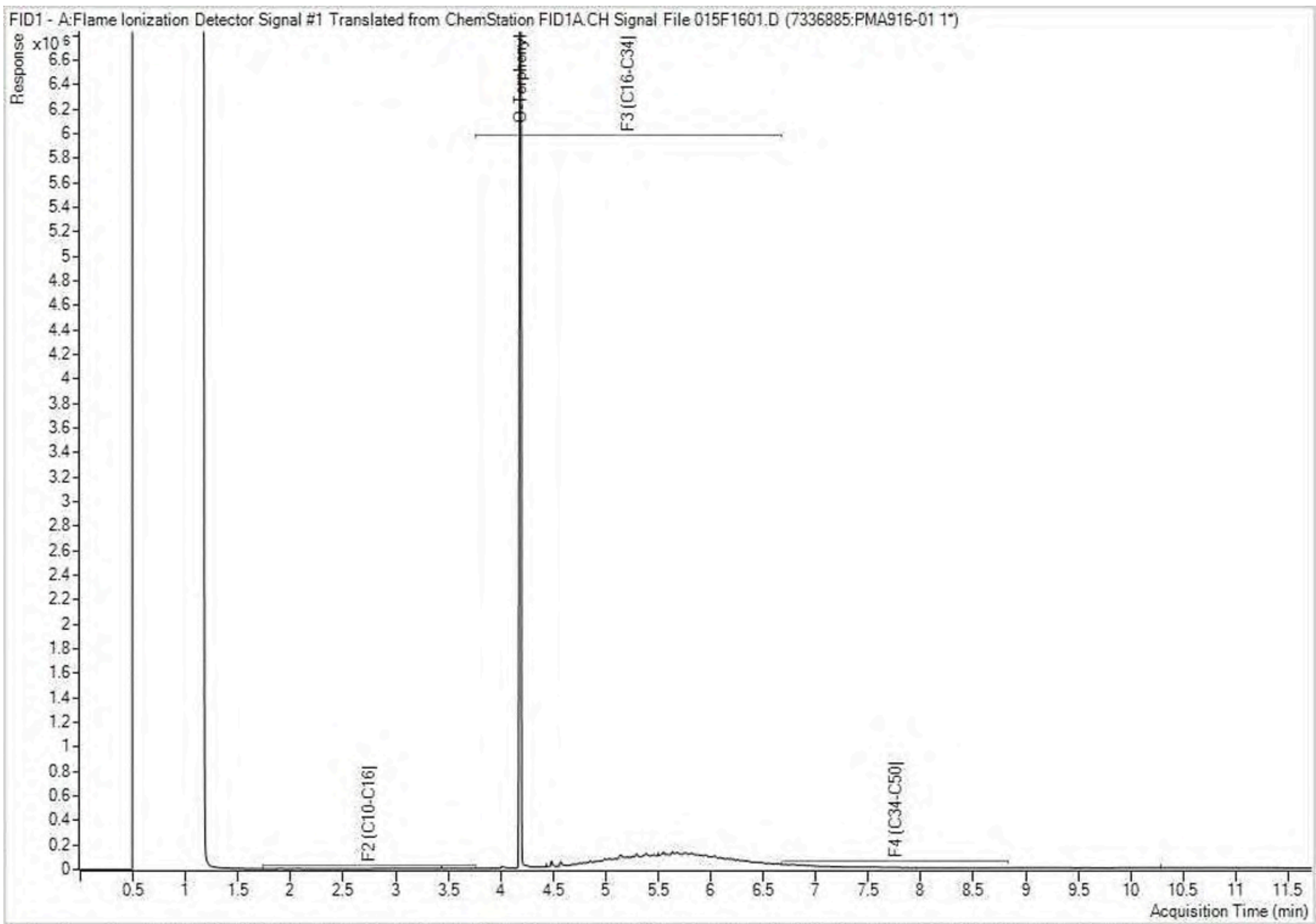
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

BV Labs Job #: C1B8527
Report Date: 2021/05/10
BV Labs Sample: PMA916

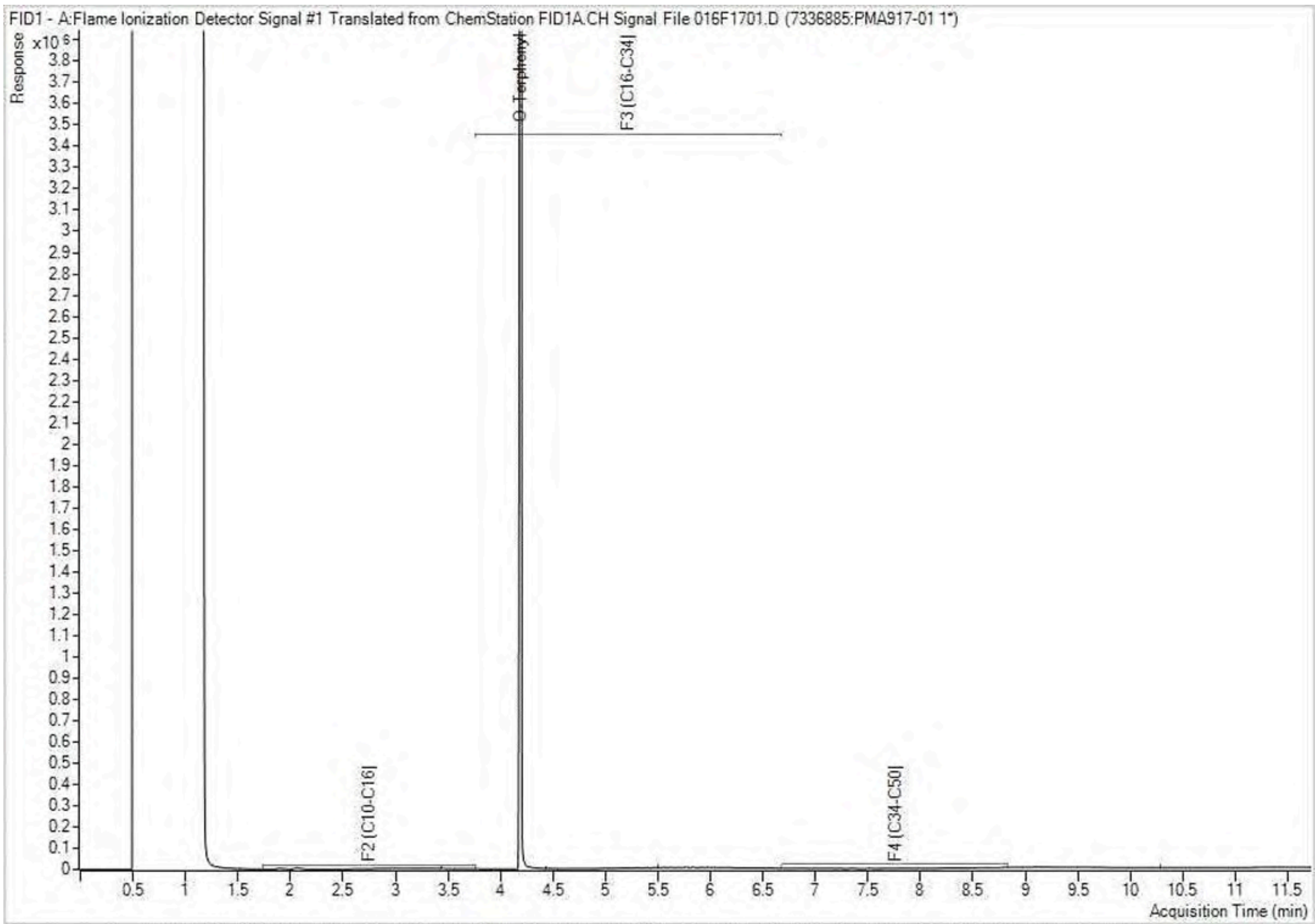
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW114 SS-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

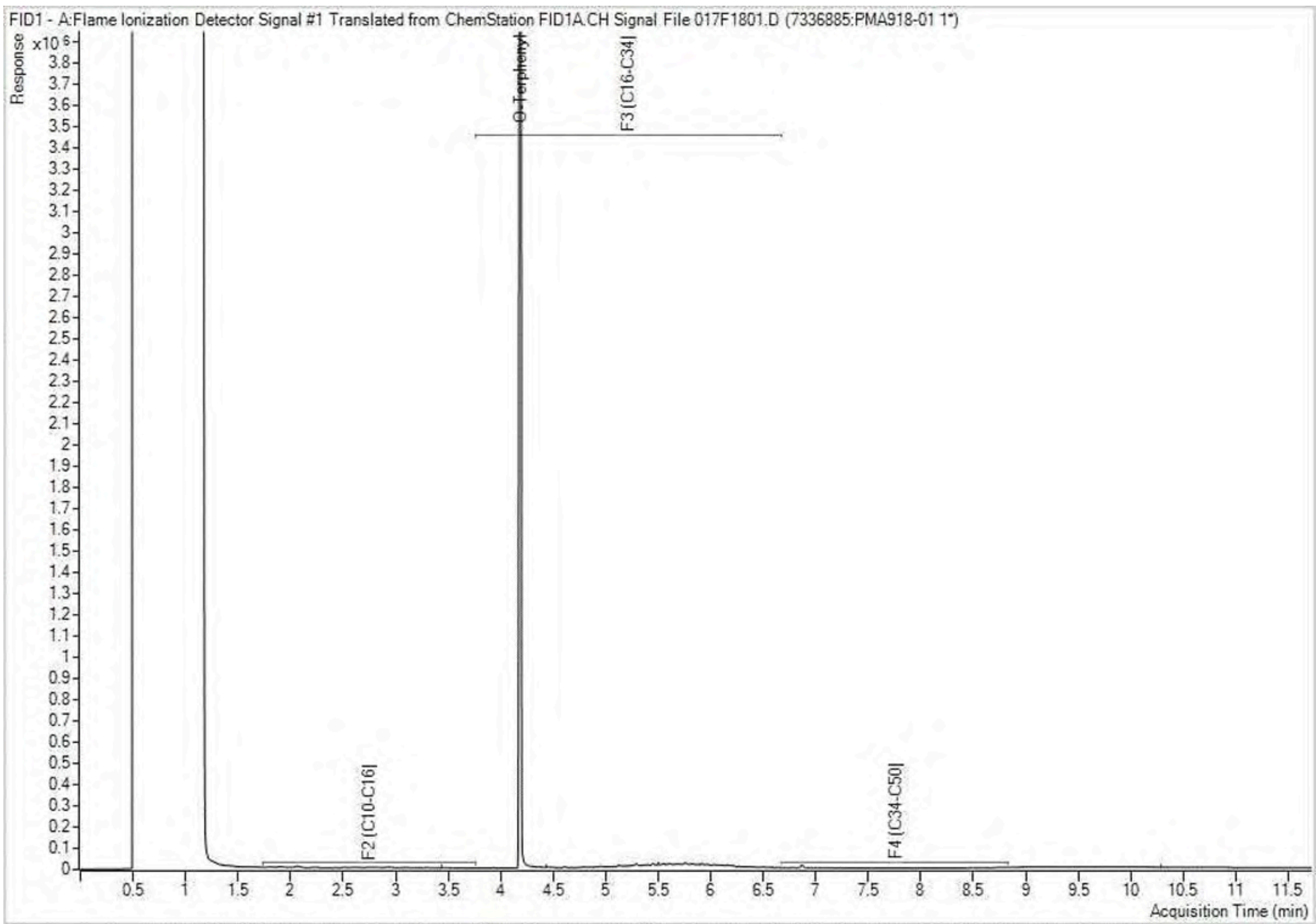


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B8527
Report Date: 2021/05/10
BV Labs Sample: PMA918

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW116 SS-4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

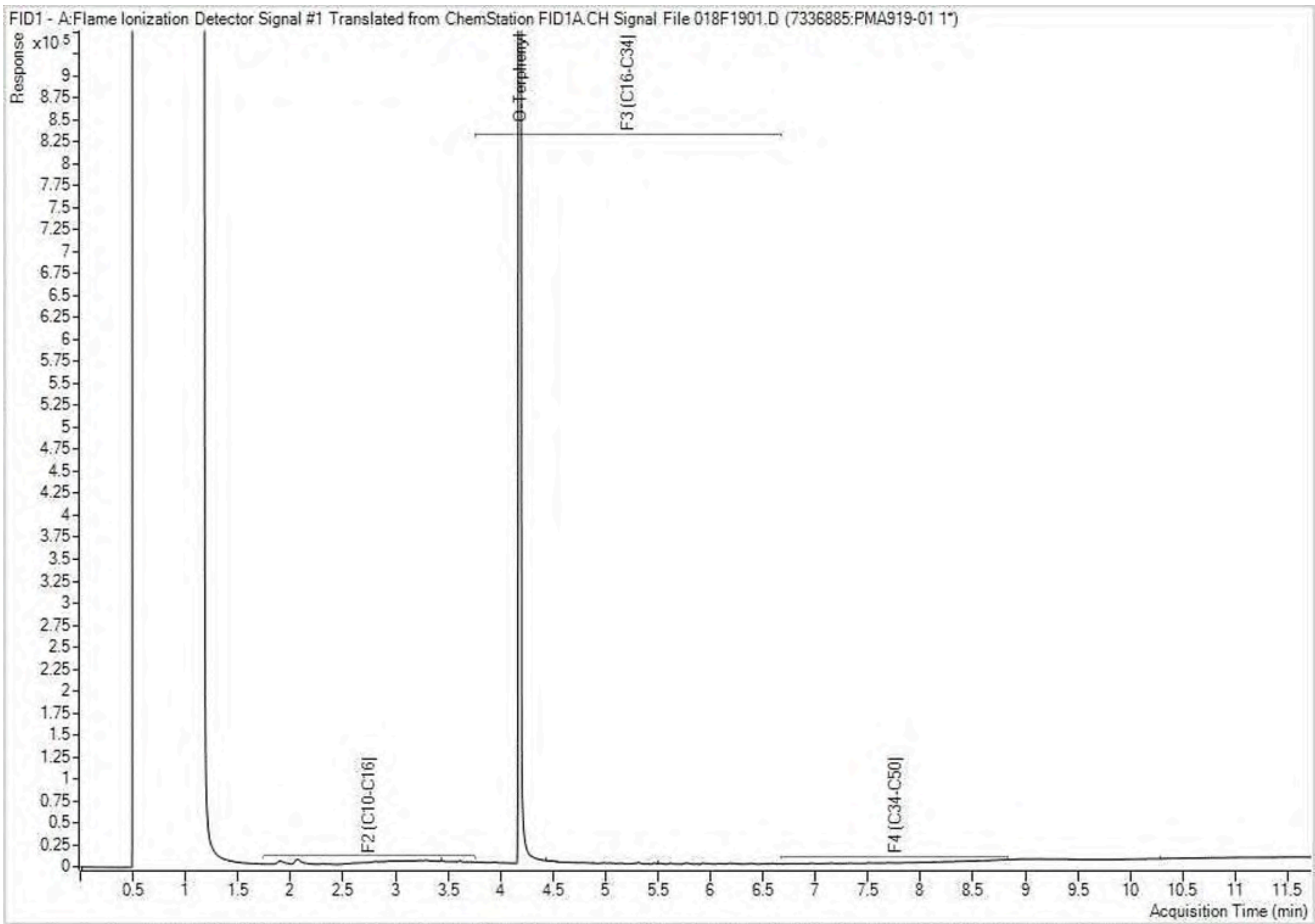


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B8527
Report Date: 2021/05/10
BV Labs Sample: PMA919

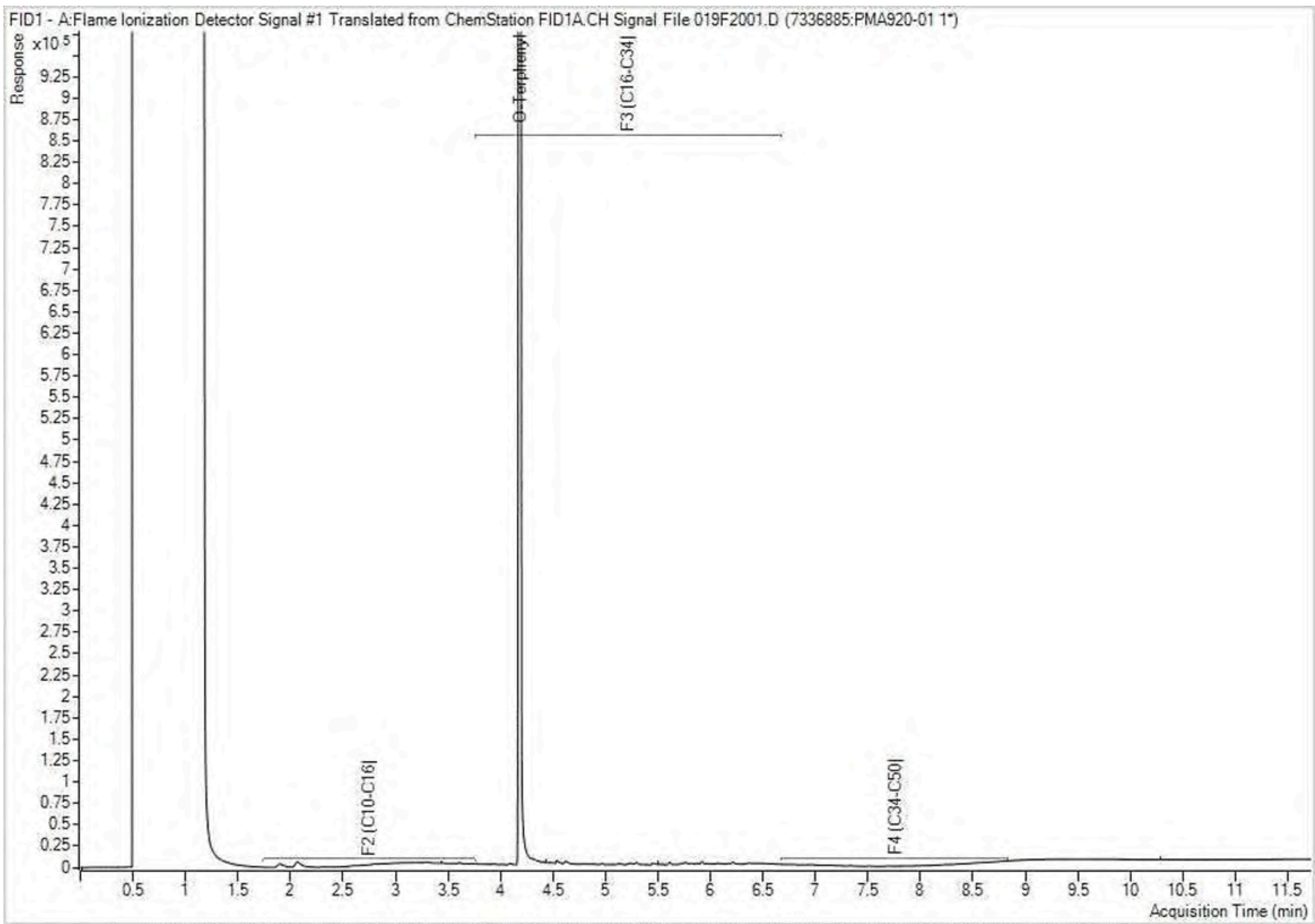
Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW116 SS-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

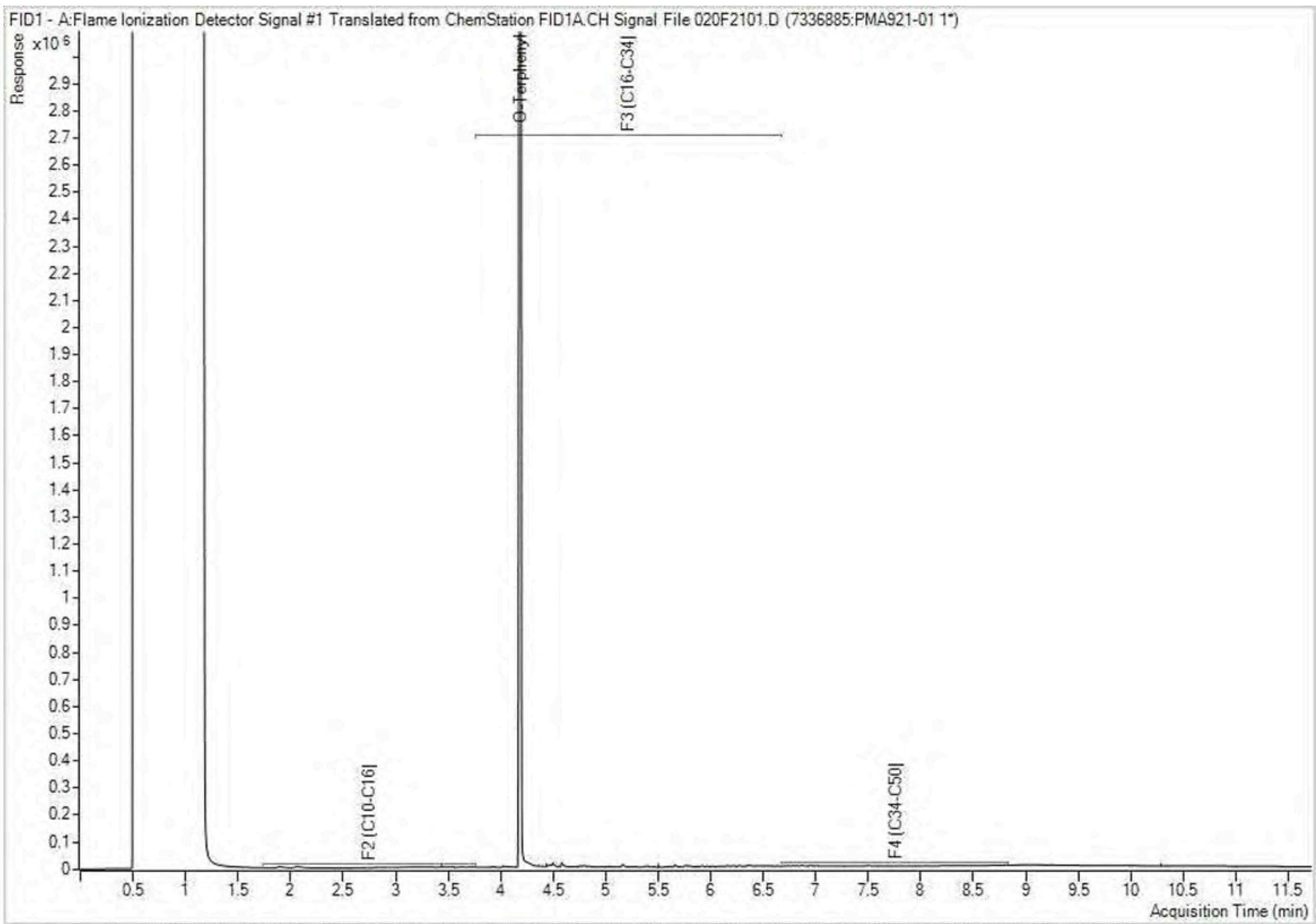


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B8527
Report Date: 2021/05/10
BV Labs Sample: PMA921

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW118 SS-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

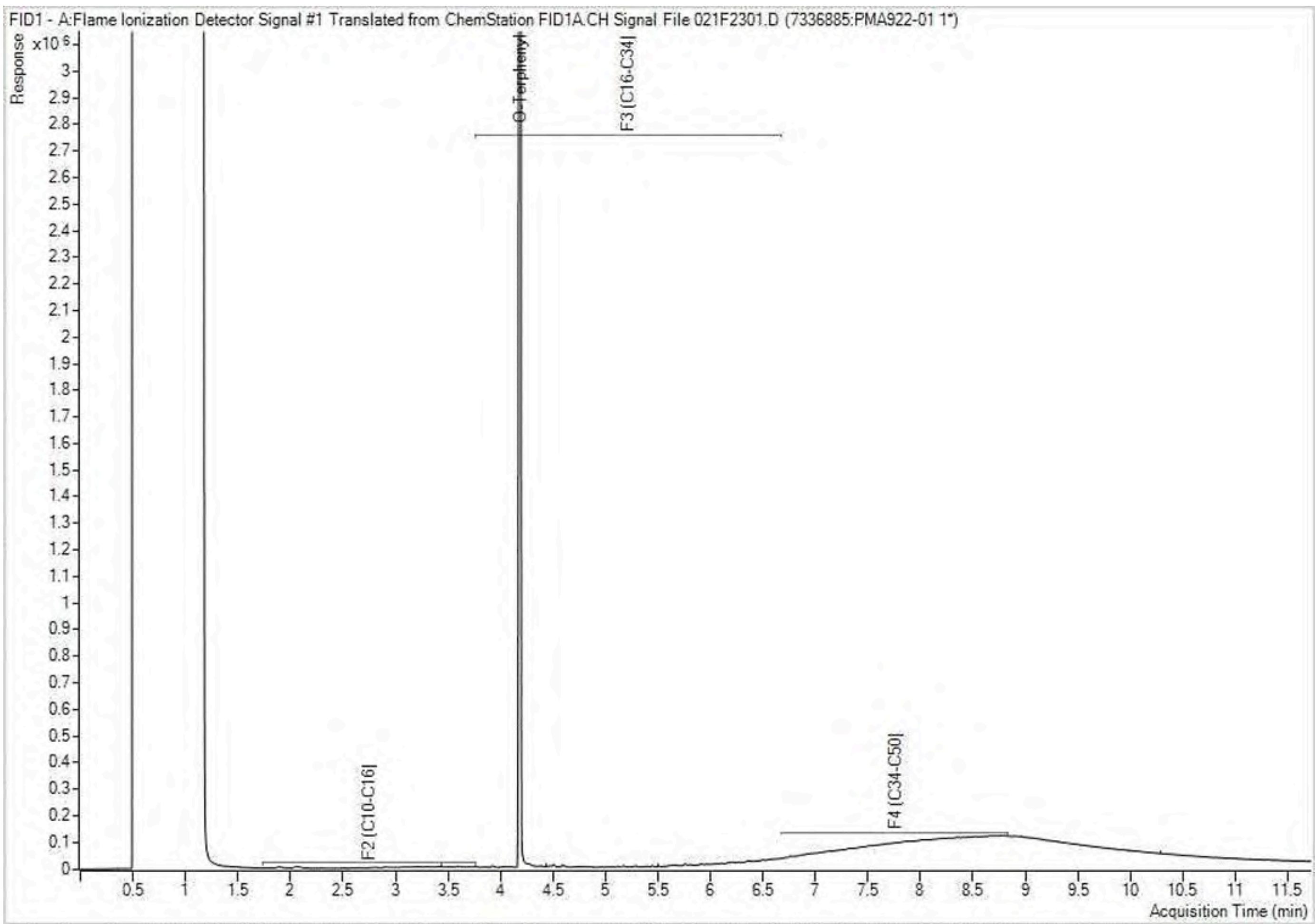


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1B8527
Report Date: 2021/05/10
BV Labs Sample: PMA922

Pinchin Ltd
Client Project #: 285722.003
Client ID: DUP-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003
Your C.O.C. #: 770951-30-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/06/08
Report #: R6667623
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1E5924
Received: 2021/05/28, 12:45

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	7	N/A	2021/06/04	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	4	N/A	2021/06/02		EPA 8260C m
1,3-Dichloropropene Sum (1)	1	N/A	2021/06/08		EPA 8260C m
Conductivity (1)	3	2021/06/03	2021/06/03	CAM SOP-00414	OMOE E3530 v1 m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	2	N/A	2021/06/02	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	7	2021/06/02	2021/06/02	CAM SOP-00316	CCME CWS m
Acid Extractable Metals by ICPMS (1)	5	2021/06/02	2021/06/02	CAM SOP-00447	EPA 6020B m
Moisture (1)	7	N/A	2021/05/31	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	1	N/A	2021/06/07	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	7	2021/06/02	2021/06/03	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Soil (1)	2	2021/06/02	2021/06/03	CAM SOP-00309	EPA 8082A m
Sodium Adsorption Ratio (SAR) (1)	3	N/A	2021/06/03	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds and F1 PHCs (1)	4	N/A	2021/06/01	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds and F1 PHCs (1)	1	N/A	2021/06/08	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope

Your Project #: 285722.003
Your C.O.C. #: 770951-30-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/06/08
Report #: R6667623
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1E5924
Received: 2021/05/28, 12:45

dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga
(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
==
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		PRS146	PRS147	PRS148	PRS149	PRS150		
Sampling Date		2021/05/25	2021/05/25	2021/05/25	2021/05/25	2021/05/25		
COC Number		770951-30-01	770951-30-01	770951-30-01	770951-30-01	770951-30-01		
	UNITS	BHMW122SS-6	BHMW122SS-8	BHMW123SS-5	BHMW124SS-1	BHMW124SS-8	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	0.68	<0.20	0.20	7383983
Acid Extractable Arsenic (As)	ug/g	<1.0	<1.0	<1.0	3.3	<1.0	1.0	7383983
Acid Extractable Barium (Ba)	ug/g	290	54	51	85	380	0.50	7383983
Acid Extractable Beryllium (Be)	ug/g	0.80	<0.20	0.21	0.37	0.80	0.20	7383983
Acid Extractable Boron (B)	ug/g	7.9	<5.0	<5.0	7.4	10	5.0	7383983
Acid Extractable Cadmium (Cd)	ug/g	0.11	<0.10	<0.10	0.61	0.18	0.10	7383983
Acid Extractable Chromium (Cr)	ug/g	57	11	21	21	70	1.0	7383983
Acid Extractable Cobalt (Co)	ug/g	16	4.3	6.6	7.2	18	0.10	7383983
Acid Extractable Copper (Cu)	ug/g	33	9.2	13	23	38	0.50	7383983
Acid Extractable Lead (Pb)	ug/g	6.5	2.7	2.7	80	7.2	1.0	7383983
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	0.86	0.79	0.50	7383983
Acid Extractable Nickel (Ni)	ug/g	34	7.2	15	18	40	0.50	7383983
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7383983
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7383983
Acid Extractable Thallium (Tl)	ug/g	0.35	0.064	0.15	0.20	0.45	0.050	7383983
Acid Extractable Uranium (U)	ug/g	0.63	0.77	0.61	0.54	0.97	0.050	7383983
Acid Extractable Vanadium (V)	ug/g	81	21	57	37	91	5.0	7383983
Acid Extractable Zinc (Zn)	ug/g	93	13	40	130	110	5.0	7383983
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	0.066	<0.050	0.050	7383983

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PAHS (SOIL)

BV Labs ID		PRS144		PRS145			PRS145		
Sampling Date		2021/05/25		2021/05/25			2021/05/25		
COC Number		770951-30-01		770951-30-01			770951-30-01		
	UNITS	BH121SS-1	QC Batch	DUP101	RDL	QC Batch	DUP101 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	7379608	<0.0071	0.0071	7379976			
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	7386229	<0.0050	0.0050	7386229	<0.0050	0.0050	7386229
Acenaphthylene	ug/g	<0.0050	7386229	<0.0050	0.0050	7386229	<0.0050	0.0050	7386229
Anthracene	ug/g	0.0051	7386229	<0.0050	0.0050	7386229	0.0082	0.0050	7386229
Benzo(a)anthracene	ug/g	0.029	7386229	0.019	0.0050	7386229	0.054 (1)	0.0050	7386229
Benzo(a)pyrene	ug/g	0.029	7386229	0.021	0.0050	7386229	0.053 (1)	0.0050	7386229
Benzo(b/j)fluoranthene	ug/g	0.038	7386229	0.026	0.0050	7386229	0.065 (1)	0.0050	7386229
Benzo(g,h,i)perylene	ug/g	0.017	7386229	0.013	0.0050	7386229	0.035 (1)	0.0050	7386229
Benzo(k)fluoranthene	ug/g	0.013	7386229	0.0091	0.0050	7386229	0.022 (1)	0.0050	7386229
Chrysene	ug/g	0.026	7386229	0.017	0.0050	7386229	0.044 (1)	0.0050	7386229
Dibenzo(a,h)anthracene	ug/g	<0.0050	7386229	<0.0050	0.0050	7386229	0.0074	0.0050	7386229
Fluoranthene	ug/g	0.058	7386229	0.036	0.0050	7386229	0.10 (1)	0.0050	7386229
Fluorene	ug/g	<0.0050	7386229	<0.0050	0.0050	7386229	<0.0050	0.0050	7386229
Indeno(1,2,3-cd)pyrene	ug/g	0.020	7386229	0.014	0.0050	7386229	0.039 (1)	0.0050	7386229
1-Methylnaphthalene	ug/g	<0.0050	7386229	<0.0050	0.0050	7386229	<0.0050	0.0050	7386229
2-Methylnaphthalene	ug/g	<0.0050	7386229	<0.0050	0.0050	7386229	<0.0050	0.0050	7386229
Naphthalene	ug/g	<0.0050	7386229	<0.0050	0.0050	7386229	<0.0050	0.0050	7386229
Phenanthrene	ug/g	0.024	7386229	0.015	0.0050	7386229	0.031 (1)	0.0050	7386229
Pyrene	ug/g	0.049	7386229	0.035	0.0050	7386229	0.087 (1)	0.0050	7386229
Surrogate Recovery (%)									
D10-Anthracene	%	92	7386229	83		7386229	93		7386229
D14-Terphenyl (FS)	%	85	7386229	80		7386229	80		7386229
D8-Acenaphthylene	%	80	7386229	76		7386229	82		7386229

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

O.REG 153 PAHS (SOIL)

BV Labs ID		PRS146		PRS147	PRS148	PRS149	PRS150		
Sampling Date		2021/05/25		2021/05/25	2021/05/25	2021/05/25	2021/05/25		
COC Number		770951-30-01		770951-30-01	770951-30-01	770951-30-01	770951-30-01		
	UNITS	BHMW122SS-6	RDL	BHMW122SS-8	BHMW123SS-5	BHMW124SS-1	BHMW124SS-8	RDL	QC Batch
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	<0.0071	<0.0071	0.073	<0.0071	0.0071	7379608
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	0.085	0.0050	<0.0050	<0.0050	0.042	<0.0050	0.0050	7386229
Acenaphthylene	ug/g	<0.010 (1)	0.010	<0.0050	<0.0050	0.034	<0.0050	0.0050	7386229
Anthracene	ug/g	0.032	0.0050	<0.0050	<0.0050	0.13	<0.0050	0.0050	7386229
Benzo(a)anthracene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.45	<0.0050	0.0050	7386229
Benzo(a)pyrene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.42	<0.0050	0.0050	7386229
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.56	<0.0050	0.0050	7386229
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.29	<0.0050	0.0050	7386229
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.20	<0.0050	0.0050	7386229
Chrysene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.39	<0.0050	0.0050	7386229
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.071	<0.0050	0.0050	7386229
Fluoranthene	ug/g	0.014	0.0050	<0.0050	<0.0050	0.84	<0.0050	0.0050	7386229
Fluorene	ug/g	<0.030 (1)	0.030	<0.0050	<0.0050	0.048	<0.0050	0.0050	7386229
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.32	<0.0050	0.0050	7386229
1-Methylnaphthalene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.033	<0.0050	0.0050	7386229
2-Methylnaphthalene	ug/g	<0.0050	0.0050	<0.0050	<0.0050	0.040	<0.0050	0.0050	7386229
Naphthalene	ug/g	<0.030 (1)	0.030	<0.0050	<0.0050	0.041	<0.0050	0.0050	7386229
Phenanthrene	ug/g	0.038	0.0050	<0.0050	<0.0050	0.53	<0.0050	0.0050	7386229
Pyrene	ug/g	0.018	0.0050	<0.0050	<0.0050	0.72	<0.0050	0.0050	7386229
Surrogate Recovery (%)									
D10-Anthracene	%	90		99	94	88	93		7386229
D14-Terphenyl (FS)	%	92		95	91	82	89		7386229
D8-Acenaphthylene	%	79		89	76	73	85		7386229

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

O.REG 153 PCBS (SOIL)

BV Labs ID		PRS144	PRS145		
Sampling Date		2021/05/25	2021/05/25		
COC Number		770951-30-01	770951-30-01		
	UNITS	BH121SS-1	DUP101	RDL	QC Batch
PCBs					
Aroclor 1242	ug/g	<0.010	<0.010	0.010	7385541
Aroclor 1248	ug/g	<0.010	<0.010	0.010	7385541
Aroclor 1254	ug/g	<0.010	<0.010	0.010	7385541
Aroclor 1260	ug/g	<0.010	<0.010	0.010	7385541
Total PCB	ug/g	<0.010	<0.010	0.010	7385541
Surrogate Recovery (%)					
Decachlorobiphenyl	%	93	91		7385541

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		PRS144	PRS145		
Sampling Date		2021/05/25	2021/05/25		
COC Number		770951-30-01	770951-30-01		
	UNITS	BH121SS-1	DUP101	RDL	QC Batch
Inorganics					
Moisture	%	16	19	1.0	7380588
BTEX & F1 Hydrocarbons					
Benzene	ug/g	<0.020	<0.020	0.020	7385266
Toluene	ug/g	<0.020	<0.020	0.020	7385266
Ethylbenzene	ug/g	<0.020	<0.020	0.020	7385266
o-Xylene	ug/g	<0.020	<0.020	0.020	7385266
p+m-Xylene	ug/g	<0.040	<0.040	0.040	7385266
Total Xylenes	ug/g	<0.040	<0.040	0.040	7385266
F1 (C6-C10)	ug/g	<10	<10	10	7385266
F1 (C6-C10) - BTEX	ug/g	<10	<10	10	7385266
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	10	7385429
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	7385429
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	7385429
Reached Baseline at C50	ug/g	Yes	Yes		7385429
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	99	98		7385266
4-Bromofluorobenzene	%	99	96		7385266
D10-o-Xylene	%	108	110		7385266
D4-1,2-Dichloroethane	%	105	105		7385266
o-Terphenyl	%	87	87		7385429

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PRS146	PRS147	PRS148			PRS149		
Sampling Date		2021/05/25	2021/05/25	2021/05/25			2021/05/25		
COC Number		770951-30-01	770951-30-01	770951-30-01			770951-30-01		
	UNITS	BHMW122SS-6	BHMW122SS-8	BHMW123SS-5	RDL	QC Batch	BHMW124SS-1	RDL	QC Batch
Inorganics									
Moisture	%	28	10	4.7	1.0	7380588	9.2	1.0	7380588
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	0.050	7379671			
Volatile Organics									
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	0.50	7380399			
Benzene	ug/g	<0.020	<0.020	<0.020	0.020	7380399			
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Bromoform	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Bromomethane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Chloroform	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	0.030	7380399			
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	0.040	7380399			
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	0.020	7380399			
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Hexane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	0.50	7380399			
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	0.50	7380399			
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Styrene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PRS146	PRS147	PRS148			PRS149		
Sampling Date		2021/05/25	2021/05/25	2021/05/25			2021/05/25		
COC Number		770951-30-01	770951-30-01	770951-30-01			770951-30-01		
	UNITS	BHMW122SS-6	BHMW122SS-8	BHMW123SS-5	RDL	QC Batch	BHMW124SS-1	RDL	QC Batch
Toluene	ug/g	<0.020	<0.020	<0.020	0.020	7380399			
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	0.050	7380399			
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	0.020	7380399			
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	0.020	7380399			
o-Xylene	ug/g	<0.020	<0.020	<0.020	0.020	7380399			
Total Xylenes	ug/g	<0.020	<0.020	<0.020	0.020	7380399			
F1 (C6-C10)	ug/g	<10	<10	<10	10	7380399			
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	10	7380399			
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	180	<10	<10	10	7385429	<10	10	7385429
F3 (C16-C34 Hydrocarbons)	ug/g	220	<50	59	50	7385429	150	50	7385429
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	50	7385429	100	50	7385429
Reached Baseline at C50	ug/g	Yes	Yes	Yes		7385429	Yes		7385429
Surrogate Recovery (%)									
o-Terphenyl	%	90	87	88		7385429	84		7385429
4-Bromofluorobenzene	%	98	98	97		7380399			
D10-o-Xylene	%	84	86	80		7380399			
D4-1,2-Dichloroethane	%	100	99	99		7380399			
D8-Toluene	%	102	102	102		7380399			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PRS150			PRS150		
Sampling Date		2021/05/25			2021/05/25		
COC Number		770951-30-01			770951-30-01		
	UNITS	BHMW124SS-8	RDL	QC Batch	BHMW124SS-8 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	36	1.0	7380588	37	1.0	7380588
Calculated Parameters							
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	7379671			
Volatile Organics							
Acetone (2-Propanone)	ug/g	<0.50	0.50	7380399			
Benzene	ug/g	<0.020	0.020	7380399			
Bromodichloromethane	ug/g	<0.050	0.050	7380399			
Bromoform	ug/g	<0.050	0.050	7380399			
Bromomethane	ug/g	<0.050	0.050	7380399			
Carbon Tetrachloride	ug/g	<0.050	0.050	7380399			
Chlorobenzene	ug/g	<0.050	0.050	7380399			
Chloroform	ug/g	<0.050	0.050	7380399			
Dibromochloromethane	ug/g	<0.050	0.050	7380399			
1,2-Dichlorobenzene	ug/g	<0.050	0.050	7380399			
1,3-Dichlorobenzene	ug/g	<0.050	0.050	7380399			
1,4-Dichlorobenzene	ug/g	<0.050	0.050	7380399			
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	7380399			
1,1-Dichloroethane	ug/g	<0.050	0.050	7380399			
1,2-Dichloroethane	ug/g	<0.050	0.050	7380399			
1,1-Dichloroethylene	ug/g	<0.050	0.050	7380399			
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	7380399			
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	7380399			
1,2-Dichloropropane	ug/g	<0.050	0.050	7380399			
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	7380399			
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	7380399			
Ethylbenzene	ug/g	<0.020	0.020	7380399			
Ethylene Dibromide	ug/g	<0.050	0.050	7380399			
Hexane	ug/g	<0.050	0.050	7380399			
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	7380399			
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	7380399			
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	7380399			
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	7380399			
Styrene	ug/g	<0.050	0.050	7380399			
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	7380399			
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	7380399			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PRS150			PRS150		
Sampling Date		2021/05/25			2021/05/25		
COC Number		770951-30-01			770951-30-01		
	UNITS	**BHMW124SS-8**	**RDL**	**QC Batch**	**BHMW124SS-8 Lab-Dup**	**RDL**	**QC Batch**
Tetrachloroethylene	ug/g	<0.050	0.050	7380399			
Toluene	ug/g	<0.020	0.020	7380399			
1,1,1-Trichloroethane	ug/g	<0.050	0.050	7380399			
1,1,2-Trichloroethane	ug/g	<0.050	0.050	7380399			
Trichloroethylene	ug/g	<0.050	0.050	7380399			
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	7380399			
Vinyl Chloride	ug/g	<0.020	0.020	7380399			
p+m-Xylene	ug/g	<0.020	0.020	7380399			
o-Xylene	ug/g	<0.020	0.020	7380399			
Total Xylenes	ug/g	<0.020	0.020	7380399			
F1 (C6-C10)	ug/g	<10	10	7380399			
F1 (C6-C10) - BTEX	ug/g	<10	10	7380399			
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	7385429			
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	7385429			
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	7385429			
Reached Baseline at C50	ug/g	Yes		7385429			
Surrogate Recovery (%)							
o-Terphenyl	%	89		7385429			
4-Bromofluorobenzene	%	97		7380399			
D10-o-Xylene	%	86		7380399			
D4-1,2-Dichloroethane	%	100		7380399			
D8-Toluene	%	102		7380399			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

RESULTS OF ANALYSES OF SOIL

BV Labs ID		PRS149	PRS150	PRS151		PRS151		
Sampling Date		2021/05/25	2021/05/25	2021/05/25		2021/05/25		
COC Number		770951-30-01	770951-30-01	770951-30-01		770951-30-01		
	UNITS	BHMW124SS-1	BHMW124SS-8	DUP102	QC Batch	DUP102 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Sodium Adsorption Ratio	N/A	5.6	3.5	6.3	7379609			
Inorganics								
Conductivity	mS/cm	0.31	2.1	0.35	7386491	0.34	0.002	7386491

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs ID		PTN419		
Sampling Date				
COC Number		770951-30-01		
	UNITS	BHMW124SS-1B	RDL	QC Batch
Inorganics				
Moisture	%	11	1.0	7393385

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (SOIL)

BV Labs ID		PTN419		
Sampling Date				
COC Number		770951-30-01		
	UNITS	BHMW124SS-1B	RDL	QC Batch
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	7392558
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	7392392
Benzene	ug/g	<0.020	0.020	7392392
Bromodichloromethane	ug/g	<0.050	0.050	7392392
Bromoform	ug/g	<0.050	0.050	7392392
Bromomethane	ug/g	<0.050	0.050	7392392
Carbon Tetrachloride	ug/g	<0.050	0.050	7392392
Chlorobenzene	ug/g	<0.050	0.050	7392392
Chloroform	ug/g	<0.050	0.050	7392392
Dibromochloromethane	ug/g	<0.050	0.050	7392392
1,2-Dichlorobenzene	ug/g	<0.050	0.050	7392392
1,3-Dichlorobenzene	ug/g	<0.050	0.050	7392392
1,4-Dichlorobenzene	ug/g	<0.050	0.050	7392392
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	7392392
1,1-Dichloroethane	ug/g	<0.050	0.050	7392392
1,2-Dichloroethane	ug/g	<0.050	0.050	7392392
1,1-Dichloroethylene	ug/g	<0.050	0.050	7392392
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	7392392
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	7392392
1,2-Dichloropropane	ug/g	<0.050	0.050	7392392
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	7392392
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	7392392
Ethylbenzene	ug/g	<0.020	0.020	7392392
Ethylene Dibromide	ug/g	<0.050	0.050	7392392
Hexane	ug/g	<0.050	0.050	7392392
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	7392392
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	7392392
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	7392392
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	7392392
Styrene	ug/g	<0.050	0.050	7392392
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	7392392
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	7392392
Tetrachloroethylene	ug/g	<0.050	0.050	7392392
Toluene	ug/g	0.052	0.020	7392392
1,1,1-Trichloroethane	ug/g	<0.050	0.050	7392392

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (SOIL)

BV Labs ID		PTN419		
Sampling Date				
COC Number		770951-30-01		
	UNITS	BHMW124SS-1B	RDL	QC Batch
1,1,2-Trichloroethane	ug/g	<0.050	0.050	7392392
Trichloroethylene	ug/g	<0.050	0.050	7392392
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	7392392
Vinyl Chloride	ug/g	<0.020	0.020	7392392
p+m-Xylene	ug/g	0.037	0.020	7392392
o-Xylene	ug/g	0.024	0.020	7392392
Total Xylenes	ug/g	0.061	0.020	7392392
F1 (C6-C10)	ug/g	<10	10	7392392
F1 (C6-C10) - BTEX	ug/g	<10	10	7392392
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	96		7392392
D10-o-Xylene	%	78		7392392
D4-1,2-Dichloroethane	%	94		7392392
D8-Toluene	%	102		7392392

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

BV Labs ID: PRS144
Sample ID: BH121SS-1
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7379608	N/A	2021/06/04	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7385266	N/A	2021/06/02	Lincoln Ramdahin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7385429	2021/06/02	2021/06/02	Jeevaraj Jeevaratrnam
Moisture	BAL	7380588	N/A	2021/05/31	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7386229	2021/06/02	2021/06/03	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	7385541	2021/06/02	2021/06/03	Dawn Howard

BV Labs ID: PRS145
Sample ID: DUP101
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7379976	N/A	2021/06/04	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7385266	N/A	2021/06/02	Lincoln Ramdahin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7385429	2021/06/02	2021/06/02	Jeevaraj Jeevaratrnam
Moisture	BAL	7380588	N/A	2021/05/31	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7386229	2021/06/02	2021/06/03	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	7385541	2021/06/02	2021/06/03	Dawn Howard

BV Labs ID: PRS145 Dup
Sample ID: DUP101
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7386229	2021/06/02	2021/06/03	Mitesh Raj

BV Labs ID: PRS146
Sample ID: BHMW122SS-6
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7379608	N/A	2021/06/04	Automated Statchk
1,3-Dichloropropene Sum	CALC	7379671	N/A	2021/06/02	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7385429	2021/06/02	2021/06/02	Jeevaraj Jeevaratrnam
Acid Extractable Metals by ICPMS	ICP/MS	7383983	2021/06/02	2021/06/02	Daniel Teclu
Moisture	BAL	7380588	N/A	2021/05/31	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7386229	2021/06/02	2021/06/03	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7380399	N/A	2021/06/01	Manpreet Sarao

BV Labs ID: PRS147
Sample ID: BHMW122SS-8
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7379608	N/A	2021/06/04	Automated Statchk
1,3-Dichloropropene Sum	CALC	7379671	N/A	2021/06/02	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7385429	2021/06/02	2021/06/02	Jeevaraj Jeevaratrnam
Acid Extractable Metals by ICPMS	ICP/MS	7383983	2021/06/02	2021/06/02	Daniel Teclu

BV Labs Job #: C1E5924
Report Date: 2021/06/08

Pinchin Ltd
Client Project #: 285722.003

TEST SUMMARY

BV Labs ID: PRS147
Sample ID: BHMW122SS-8
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	7380588	N/A	2021/05/31	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7386229	2021/06/02	2021/06/03	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7380399	N/A	2021/06/01	Manpreet Sarao

BV Labs ID: PRS148
Sample ID: BHMW123SS-5
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7379608	N/A	2021/06/04	Automated Statchk
1,3-Dichloropropene Sum	CALC	7379671	N/A	2021/06/02	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7385429	2021/06/02	2021/06/02	Jeevaraj Jeevaratnam
Acid Extractable Metals by ICPMS	ICP/MS	7383983	2021/06/02	2021/06/02	Daniel Teclu
Moisture	BAL	7380588	N/A	2021/05/31	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7386229	2021/06/02	2021/06/03	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7380399	N/A	2021/06/01	Manpreet Sarao

BV Labs ID: PRS149
Sample ID: BHMW124SS-1
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7379608	N/A	2021/06/04	Automated Statchk
Conductivity	AT	7386491	2021/06/03	2021/06/03	Khushbu Vijay kumar Patel
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7385429	2021/06/02	2021/06/02	Jeevaraj Jeevaratnam
Acid Extractable Metals by ICPMS	ICP/MS	7383983	2021/06/02	2021/06/02	Daniel Teclu
Moisture	BAL	7380588	N/A	2021/05/31	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7386229	2021/06/02	2021/06/03	Mitesh Raj
Sodium Adsorption Ratio (SAR)	CALC/MET	7379609	N/A	2021/06/03	Automated Statchk

BV Labs ID: PRS150
Sample ID: BHMW124SS-8
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7379608	N/A	2021/06/04	Automated Statchk
1,3-Dichloropropene Sum	CALC	7379671	N/A	2021/06/02	Automated Statchk
Conductivity	AT	7386491	2021/06/03	2021/06/03	Khushbu Vijay kumar Patel
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7385429	2021/06/02	2021/06/02	Jeevaraj Jeevaratnam
Acid Extractable Metals by ICPMS	ICP/MS	7383983	2021/06/02	2021/06/02	Daniel Teclu
Moisture	BAL	7380588	N/A	2021/05/31	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7386229	2021/06/02	2021/06/03	Mitesh Raj
Sodium Adsorption Ratio (SAR)	CALC/MET	7379609	N/A	2021/06/03	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7380399	N/A	2021/06/01	Manpreet Sarao

TEST SUMMARY

BV Labs ID: PRS150 Dup
Sample ID: BHMW124SS-8
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	7380588	N/A	2021/05/31	Gurpreet Kaur (ONT)

BV Labs ID: PRS151
Sample ID: DUP102
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	7386491	2021/06/03	2021/06/03	Khushbu Vijay kumar Patel
Sodium Adsorption Ratio (SAR)	CALC/MET	7379609	N/A	2021/06/03	Automated Statchk

BV Labs ID: PRS151 Dup
Sample ID: DUP102
Matrix: Soil

Collected: 2021/05/25
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	7386491	2021/06/03	2021/06/03	Khushbu Vijay kumar Patel

BV Labs ID: PTN419
Sample ID: BHMW124SS-1B
Matrix: Soil

Collected:
Shipped:
Received: 2021/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7392558	N/A	2021/06/08	Automated Statchk
Moisture	BAL	7393385	N/A	2021/06/07	Gurpreet Kaur (ONT)
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7392392	N/A	2021/06/08	Manpreet Sarao

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.3°C

Cooler custody seal was present and intact.

Please note that there was gasoline contamination present in the methanol vial for sample BHMW124SS-1 and so VOCF1 was run from the opened jar and data for VOCF1 for sample BHMW124SS-1B is really data for sample BHMW124SS-1.

Sample PRS145 [DUP101] : PAH ANALYSIS: Duplicate results exceeded RPD acceptance criteria due to the sample heterogeneity. The variability in the results for flagged analytes may be more pronounced.

Sample PRS149 [BHMW124SS-1] : VOCF1 Analysis: Data was not reportable due to possible sample contamination.Re-work was intiated.

Sample PTN419 [BHMW124SS-1B] : VOCF1 Analysis: The soil samples were submitted in jars with headspace.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7380399	MS4	Matrix Spike	4-Bromofluorobenzene	2021/06/01		100	%	60 - 140
			D10-o-Xylene	2021/06/01		84	%	60 - 130
			D4-1,2-Dichloroethane	2021/06/01		102	%	60 - 140
			D8-Toluene	2021/06/01		104	%	60 - 140
			Acetone (2-Propanone)	2021/06/01		90	%	60 - 140
			Benzene	2021/06/01		93	%	60 - 140
			Bromodichloromethane	2021/06/01		98	%	60 - 140
			Bromoform	2021/06/01		94	%	60 - 140
			Bromomethane	2021/06/01		92	%	60 - 140
			Carbon Tetrachloride	2021/06/01		99	%	60 - 140
			Chlorobenzene	2021/06/01		97	%	60 - 140
			Chloroform	2021/06/01		97	%	60 - 140
			Dibromochloromethane	2021/06/01		96	%	60 - 140
			1,2-Dichlorobenzene	2021/06/01		98	%	60 - 140
			1,3-Dichlorobenzene	2021/06/01		102	%	60 - 140
			1,4-Dichlorobenzene	2021/06/01		123	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2021/06/01		82	%	60 - 140
			1,1-Dichloroethane	2021/06/01		94	%	60 - 140
			1,2-Dichloroethane	2021/06/01		94	%	60 - 140
			1,1-Dichloroethylene	2021/06/01		96	%	60 - 140
			cis-1,2-Dichloroethylene	2021/06/01		98	%	60 - 140
			trans-1,2-Dichloroethylene	2021/06/01		99	%	60 - 140
			1,2-Dichloropropane	2021/06/01		95	%	60 - 140
			cis-1,3-Dichloropropene	2021/06/01		92	%	60 - 140
			trans-1,3-Dichloropropene	2021/06/01		102	%	60 - 140
			Ethylbenzene	2021/06/01		94	%	60 - 140
			Ethylene Dibromide	2021/06/01		95	%	60 - 140
			Hexane	2021/06/01		94	%	60 - 140
			Methylene Chloride(Dichloromethane)	2021/06/01		95	%	60 - 140
			Methyl Ethyl Ketone (2-Butanone)	2021/06/01		93	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/01		89	%	60 - 140
			Methyl t-butyl ether (MTBE)	2021/06/01		88	%	60 - 140
			Styrene	2021/06/01		101	%	60 - 140
			1,1,1,2-Tetrachloroethane	2021/06/01		100	%	60 - 140
			1,1,2,2-Tetrachloroethane	2021/06/01		92	%	60 - 140
			Tetrachloroethylene	2021/06/01		97	%	60 - 140
			Toluene	2021/06/01		93	%	60 - 140
			1,1,1-Trichloroethane	2021/06/01		103	%	60 - 140
			1,1,2-Trichloroethane	2021/06/01		103	%	60 - 140
			Trichloroethylene	2021/06/01		105	%	60 - 140
			Trichlorofluoromethane (FREON 11)	2021/06/01		97	%	60 - 140
			Vinyl Chloride	2021/06/01		89	%	60 - 140
			p+m-Xylene	2021/06/01		97	%	60 - 140
			o-Xylene	2021/06/01		93	%	60 - 140
			F1 (C6-C10)	2021/06/01		93	%	60 - 140
7380399	MS4	Spiked Blank	4-Bromofluorobenzene	2021/06/01		101	%	60 - 140
			D10-o-Xylene	2021/06/01		87	%	60 - 130
			D4-1,2-Dichloroethane	2021/06/01		105	%	60 - 140
			D8-Toluene	2021/06/01		100	%	60 - 140
			Acetone (2-Propanone)	2021/06/01		93	%	60 - 140
			Benzene	2021/06/01		93	%	60 - 130
			Bromodichloromethane	2021/06/01		101	%	60 - 130
			Bromoform	2021/06/01		99	%	60 - 130
			Bromomethane	2021/06/01		93	%	60 - 140
			Carbon Tetrachloride	2021/06/01		97	%	60 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chlorobenzene	2021/06/01		98	%	60 - 130
			Chloroform	2021/06/01		99	%	60 - 130
			Dibromochloromethane	2021/06/01		99	%	60 - 130
			1,2-Dichlorobenzene	2021/06/01		98	%	60 - 130
			1,3-Dichlorobenzene	2021/06/01		101	%	60 - 130
			1,4-Dichlorobenzene	2021/06/01		122	%	60 - 130
			Dichlorodifluoromethane (FREON 12)	2021/06/01		83	%	60 - 140
			1,1-Dichloroethane	2021/06/01		94	%	60 - 130
			1,2-Dichloroethane	2021/06/01		98	%	60 - 130
			1,1-Dichloroethylene	2021/06/01		94	%	60 - 130
			cis-1,2-Dichloroethylene	2021/06/01		99	%	60 - 130
			trans-1,2-Dichloroethylene	2021/06/01		98	%	60 - 130
			1,2-Dichloropropane	2021/06/01		97	%	60 - 130
			cis-1,3-Dichloropropene	2021/06/01		96	%	60 - 130
			trans-1,3-Dichloropropene	2021/06/01		106	%	60 - 130
			Ethylbenzene	2021/06/01		92	%	60 - 130
			Ethylene Dibromide	2021/06/01		99	%	60 - 130
			Hexane	2021/06/01		92	%	60 - 130
			Methylene Chloride(Dichloromethane)	2021/06/01		96	%	60 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/06/01		101	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/01		99	%	60 - 130
			Methyl t-butyl ether (MTBE)	2021/06/01		92	%	60 - 130
			Styrene	2021/06/01		103	%	60 - 130
			1,1,1,2-Tetrachloroethane	2021/06/01		101	%	60 - 130
			1,1,2,2-Tetrachloroethane	2021/06/01		98	%	60 - 130
			Tetrachloroethylene	2021/06/01		94	%	60 - 130
			Toluene	2021/06/01		92	%	60 - 130
			1,1,1-Trichloroethane	2021/06/01		101	%	60 - 130
			1,1,2-Trichloroethane	2021/06/01		109	%	60 - 130
			Trichloroethylene	2021/06/01		105	%	60 - 130
			Trichlorofluoromethane (FREON 11)	2021/06/01		94	%	60 - 130
			Vinyl Chloride	2021/06/01		88	%	60 - 130
			p+m-Xylene	2021/06/01		95	%	60 - 130
			o-Xylene	2021/06/01		93	%	60 - 130
			F1 (C6-C10)	2021/06/01		99	%	80 - 120
7380399	MS4	Method Blank	4-Bromofluorobenzene	2021/06/01		98	%	60 - 140
			D10-o-Xylene	2021/06/01		88	%	60 - 130
			D4-1,2-Dichloroethane	2021/06/01		104	%	60 - 140
			D8-Toluene	2021/06/01		101	%	60 - 140
			Acetone (2-Propanone)	2021/06/01	<0.50		ug/g	
			Benzene	2021/06/01	<0.020		ug/g	
			Bromodichloromethane	2021/06/01	<0.050		ug/g	
			Bromoform	2021/06/01	<0.050		ug/g	
			Bromomethane	2021/06/01	<0.050		ug/g	
			Carbon Tetrachloride	2021/06/01	<0.050		ug/g	
			Chlorobenzene	2021/06/01	<0.050		ug/g	
			Chloroform	2021/06/01	<0.050		ug/g	
			Dibromochloromethane	2021/06/01	<0.050		ug/g	
			1,2-Dichlorobenzene	2021/06/01	<0.050		ug/g	
			1,3-Dichlorobenzene	2021/06/01	<0.050		ug/g	
			1,4-Dichlorobenzene	2021/06/01	<0.050		ug/g	
			Dichlorodifluoromethane (FREON 12)	2021/06/01	<0.050		ug/g	
			1,1-Dichloroethane	2021/06/01	<0.050		ug/g	
			1,2-Dichloroethane	2021/06/01	<0.050		ug/g	
			1,1-Dichloroethylene	2021/06/01	<0.050		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,2-Dichloroethylene	2021/06/01	<0.050		ug/g	
			trans-1,2-Dichloroethylene	2021/06/01	<0.050		ug/g	
			1,2-Dichloropropane	2021/06/01	<0.050		ug/g	
			cis-1,3-Dichloropropene	2021/06/01	<0.030		ug/g	
			trans-1,3-Dichloropropene	2021/06/01	<0.040		ug/g	
			Ethylbenzene	2021/06/01	<0.020		ug/g	
			Ethylene Dibromide	2021/06/01	<0.050		ug/g	
			Hexane	2021/06/01	<0.050		ug/g	
			Methylene Chloride(Dichloromethane)	2021/06/01	<0.050		ug/g	
			Methyl Ethyl Ketone (2-Butanone)	2021/06/01	<0.50		ug/g	
			Methyl Isobutyl Ketone	2021/06/01	<0.50		ug/g	
			Methyl t-butyl ether (MTBE)	2021/06/01	<0.050		ug/g	
			Styrene	2021/06/01	<0.050		ug/g	
			1,1,1,2-Tetrachloroethane	2021/06/01	<0.050		ug/g	
			1,1,2,2-Tetrachloroethane	2021/06/01	<0.050		ug/g	
			Tetrachloroethylene	2021/06/01	<0.050		ug/g	
			Toluene	2021/06/01	<0.020		ug/g	
			1,1,1-Trichloroethane	2021/06/01	<0.050		ug/g	
			1,1,2-Trichloroethane	2021/06/01	<0.050		ug/g	
			Trichloroethylene	2021/06/01	<0.050		ug/g	
			Trichlorofluoromethane (FREON 11)	2021/06/01	<0.050		ug/g	
			Vinyl Chloride	2021/06/01	<0.020		ug/g	
			p+m-Xylene	2021/06/01	<0.020		ug/g	
			o-Xylene	2021/06/01	<0.020		ug/g	
			Total Xylenes	2021/06/01	<0.020		ug/g	
			F1 (C6-C10)	2021/06/01	<10		ug/g	
			F1 (C6-C10) - BTEX	2021/06/01	<10		ug/g	
7380399	MS4	RPD	Acetone (2-Propanone)	2021/06/01	NC		%	50
			Benzene	2021/06/01	NC		%	50
			Bromodichloromethane	2021/06/01	NC		%	50
			Bromoform	2021/06/01	NC		%	50
			Bromomethane	2021/06/01	NC		%	50
			Carbon Tetrachloride	2021/06/01	NC		%	50
			Chlorobenzene	2021/06/01	NC		%	50
			Chloroform	2021/06/01	NC		%	50
			Dibromochloromethane	2021/06/01	NC		%	50
			1,2-Dichlorobenzene	2021/06/01	NC		%	50
			1,3-Dichlorobenzene	2021/06/01	NC		%	50
			1,4-Dichlorobenzene	2021/06/01	NC		%	50
			Dichlorodifluoromethane (FREON 12)	2021/06/01	NC		%	50
			1,1-Dichloroethane	2021/06/01	NC		%	50
			1,2-Dichloroethane	2021/06/01	NC		%	50
			1,1-Dichloroethylene	2021/06/01	NC		%	50
			cis-1,2-Dichloroethylene	2021/06/01	NC		%	50
			trans-1,2-Dichloroethylene	2021/06/01	NC		%	50
			1,2-Dichloropropane	2021/06/01	NC		%	50
			cis-1,3-Dichloropropene	2021/06/01	NC		%	50
			trans-1,3-Dichloropropene	2021/06/01	NC		%	50
			Ethylbenzene	2021/06/01	NC		%	50
			Ethylene Dibromide	2021/06/01	NC		%	50
			Hexane	2021/06/01	NC		%	50
			Methylene Chloride(Dichloromethane)	2021/06/01	NC		%	50
			Methyl Ethyl Ketone (2-Butanone)	2021/06/01	NC		%	50
			Methyl Isobutyl Ketone	2021/06/01	NC		%	50
			Methyl t-butyl ether (MTBE)	2021/06/01	NC		%	50

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Styrene	2021/06/01	NC		%	50
			1,1,1,2-Tetrachloroethane	2021/06/01	NC		%	50
			1,1,2,2-Tetrachloroethane	2021/06/01	NC		%	50
			Tetrachloroethylene	2021/06/01	NC		%	50
			Toluene	2021/06/01	NC		%	50
			1,1,1-Trichloroethane	2021/06/01	NC		%	50
			1,1,2-Trichloroethane	2021/06/01	NC		%	50
			Trichloroethylene	2021/06/01	NC		%	50
			Trichlorofluoromethane (FREON 11)	2021/06/01	NC		%	50
			Vinyl Chloride	2021/06/01	NC		%	50
			p+m-Xylene	2021/06/01	NC		%	50
			o-Xylene	2021/06/01	NC		%	50
			Total Xylenes	2021/06/01	NC		%	50
			F1 (C6-C10)	2021/06/01	NC		%	30
			F1 (C6-C10) - BTEX	2021/06/01	NC		%	30
7380588	MUC	RPD [PRS150-01]	Moisture	2021/05/31	2.2		%	20
7383983	DT1	Matrix Spike	Acid Extractable Antimony (Sb)	2021/06/02		88	%	75 - 125
			Acid Extractable Arsenic (As)	2021/06/02		96	%	75 - 125
			Acid Extractable Barium (Ba)	2021/06/02		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2021/06/02		100	%	75 - 125
			Acid Extractable Boron (B)	2021/06/02		101	%	75 - 125
			Acid Extractable Cadmium (Cd)	2021/06/02		97	%	75 - 125
			Acid Extractable Chromium (Cr)	2021/06/02		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2021/06/02		92	%	75 - 125
			Acid Extractable Copper (Cu)	2021/06/02		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2021/06/02		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2021/06/02		97	%	75 - 125
			Acid Extractable Nickel (Ni)	2021/06/02		NC	%	75 - 125
			Acid Extractable Selenium (Se)	2021/06/02		99	%	75 - 125
			Acid Extractable Silver (Ag)	2021/06/02		95	%	75 - 125
			Acid Extractable Thallium (Tl)	2021/06/02		91	%	75 - 125
			Acid Extractable Uranium (U)	2021/06/02		100	%	75 - 125
			Acid Extractable Vanadium (V)	2021/06/02		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2021/06/02		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2021/06/02		82	%	75 - 125
7383983	DT1	Spiked Blank	Acid Extractable Antimony (Sb)	2021/06/02		98	%	80 - 120
			Acid Extractable Arsenic (As)	2021/06/02		96	%	80 - 120
			Acid Extractable Barium (Ba)	2021/06/02		97	%	80 - 120
			Acid Extractable Beryllium (Be)	2021/06/02		99	%	80 - 120
			Acid Extractable Boron (B)	2021/06/02		102	%	80 - 120
			Acid Extractable Cadmium (Cd)	2021/06/02		97	%	80 - 120
			Acid Extractable Chromium (Cr)	2021/06/02		97	%	80 - 120
			Acid Extractable Cobalt (Co)	2021/06/02		94	%	80 - 120
			Acid Extractable Copper (Cu)	2021/06/02		95	%	80 - 120
			Acid Extractable Lead (Pb)	2021/06/02		98	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2021/06/02		98	%	80 - 120
			Acid Extractable Nickel (Ni)	2021/06/02		97	%	80 - 120
			Acid Extractable Selenium (Se)	2021/06/02		99	%	80 - 120
			Acid Extractable Silver (Ag)	2021/06/02		96	%	80 - 120
			Acid Extractable Thallium (Tl)	2021/06/02		95	%	80 - 120
			Acid Extractable Uranium (U)	2021/06/02		98	%	80 - 120
			Acid Extractable Vanadium (V)	2021/06/02		99	%	80 - 120
			Acid Extractable Zinc (Zn)	2021/06/02		92	%	80 - 120
			Acid Extractable Mercury (Hg)	2021/06/02		91	%	80 - 120
7383983	DT1	Method Blank	Acid Extractable Antimony (Sb)	2021/06/02	<0.20		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Arsenic (As)	2021/06/02	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2021/06/02	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2021/06/02	<0.20		ug/g	
			Acid Extractable Boron (B)	2021/06/02	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2021/06/02	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2021/06/02	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2021/06/02	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2021/06/02	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2021/06/02	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2021/06/02	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2021/06/02	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2021/06/02	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2021/06/02	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2021/06/02	<0.050		ug/g	
			Acid Extractable Uranium (U)	2021/06/02	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2021/06/02	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2021/06/02	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2021/06/02	<0.050		ug/g	
7383983	DT1	RPD	Acid Extractable Antimony (Sb)	2021/06/02	5.1		%	30
			Acid Extractable Arsenic (As)	2021/06/02	9.7		%	30
			Acid Extractable Barium (Ba)	2021/06/02	0.86		%	30
			Acid Extractable Beryllium (Be)	2021/06/02	3.7		%	30
			Acid Extractable Boron (B)	2021/06/02	6.3		%	30
			Acid Extractable Cadmium (Cd)	2021/06/02	6.1		%	30
			Acid Extractable Chromium (Cr)	2021/06/02	2.8		%	30
			Acid Extractable Cobalt (Co)	2021/06/02	3.0		%	30
			Acid Extractable Copper (Cu)	2021/06/02	2.8		%	30
			Acid Extractable Lead (Pb)	2021/06/02	7.7		%	30
			Acid Extractable Molybdenum (Mo)	2021/06/02	NC		%	30
			Acid Extractable Nickel (Ni)	2021/06/02	3.1		%	30
			Acid Extractable Selenium (Se)	2021/06/02	NC		%	30
			Acid Extractable Silver (Ag)	2021/06/02	NC		%	30
			Acid Extractable Thallium (Tl)	2021/06/02	3.4		%	30
			Acid Extractable Uranium (U)	2021/06/02	0.75		%	30
			Acid Extractable Vanadium (V)	2021/06/02	6.1		%	30
			Acid Extractable Zinc (Zn)	2021/06/02	4.8		%	30
			Acid Extractable Mercury (Hg)	2021/06/02	NC		%	30
7385266	LRA	Matrix Spike	1,4-Difluorobenzene	2021/06/02		94	%	60 - 140
			4-Bromofluorobenzene	2021/06/02		101	%	60 - 140
			D10-o-Xylene	2021/06/02		104	%	60 - 140
			D4-1,2-Dichloroethane	2021/06/02		98	%	60 - 140
			Benzene	2021/06/02		111	%	50 - 140
			Toluene	2021/06/02		111	%	50 - 140
			Ethylbenzene	2021/06/02		124	%	50 - 140
			o-Xylene	2021/06/02		120	%	50 - 140
			p+m-Xylene	2021/06/02		120	%	50 - 140
			F1 (C6-C10)	2021/06/02		107	%	60 - 140
7385266	LRA	Spiked Blank	1,4-Difluorobenzene	2021/06/02		95	%	60 - 140
			4-Bromofluorobenzene	2021/06/02		102	%	60 - 140
			D10-o-Xylene	2021/06/02		100	%	60 - 140
			D4-1,2-Dichloroethane	2021/06/02		98	%	60 - 140
			Benzene	2021/06/02		103	%	50 - 140
			Toluene	2021/06/02		103	%	50 - 140
			Ethylbenzene	2021/06/02		114	%	50 - 140
			o-Xylene	2021/06/02		110	%	50 - 140

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			p+m-Xylene	2021/06/02		112	%	50 - 140
			F1 (C6-C10)	2021/06/02		94	%	80 - 120
7385266	LRA	Method Blank	1,4-Difluorobenzene	2021/06/02		97	%	60 - 140
			4-Bromofluorobenzene	2021/06/02		97	%	60 - 140
			D10-o-Xylene	2021/06/02		105	%	60 - 140
			D4-1,2-Dichloroethane	2021/06/02		104	%	60 - 140
			Benzene	2021/06/02	<0.020		ug/g	
			Toluene	2021/06/02	<0.020		ug/g	
			Ethylbenzene	2021/06/02	<0.020		ug/g	
			o-Xylene	2021/06/02	<0.020		ug/g	
			p+m-Xylene	2021/06/02	<0.040		ug/g	
			Total Xylenes	2021/06/02	<0.040		ug/g	
			F1 (C6-C10)	2021/06/02	<10		ug/g	
			F1 (C6-C10) - BTEX	2021/06/02	<10		ug/g	
7385266	LRA	RPD	Benzene	2021/06/02	NC		%	50
			Toluene	2021/06/02	NC		%	50
			Ethylbenzene	2021/06/02	NC		%	50
			o-Xylene	2021/06/02	NC		%	50
			p+m-Xylene	2021/06/02	NC		%	50
			Total Xylenes	2021/06/02	NC		%	50
			F1 (C6-C10)	2021/06/02	NC		%	30
			F1 (C6-C10) - BTEX	2021/06/02	NC		%	30
7385429	JJE	Matrix Spike	o-Terphenyl	2021/06/02		91	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/02		106	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2021/06/02		105	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2021/06/02		106	%	50 - 130
7385429	JJE	Spiked Blank	o-Terphenyl	2021/06/02		93	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/02		109	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2021/06/02		108	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2021/06/02		108	%	80 - 120
7385429	JJE	Method Blank	o-Terphenyl	2021/06/02		92	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/06/02	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2021/06/02	<50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2021/06/02	<50		ug/g	
7385429	JJE	RPD	F2 (C10-C16 Hydrocarbons)	2021/06/03	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/06/03	2.3		%	30
			F4 (C34-C50 Hydrocarbons)	2021/06/03	NC		%	30
7385541	DH	Matrix Spike	Decachlorobiphenyl	2021/06/02		95	%	60 - 130
			Aroclor 1260	2021/06/02		108	%	30 - 130
			Total PCB	2021/06/02		108	%	30 - 130
7385541	DH	Spiked Blank	Decachlorobiphenyl	2021/06/02		105	%	60 - 130
			Aroclor 1260	2021/06/02		115	%	30 - 130
			Total PCB	2021/06/02		115	%	30 - 130
7385541	DH	Method Blank	Decachlorobiphenyl	2021/06/02		100	%	60 - 130
			Aroclor 1242	2021/06/02	<0.010		ug/g	
			Aroclor 1248	2021/06/02	<0.010		ug/g	
			Aroclor 1254	2021/06/02	<0.010		ug/g	
			Aroclor 1260	2021/06/02	<0.010		ug/g	
			Total PCB	2021/06/02	<0.010		ug/g	
7385541	DH	RPD	Aroclor 1242	2021/06/02	NC		%	50
			Aroclor 1248	2021/06/02	NC		%	50
			Aroclor 1254	2021/06/02	NC		%	50
			Aroclor 1260	2021/06/02	NC		%	50
			Total PCB	2021/06/02	NC		%	50
7386229	RAJ	Matrix Spike [PRS145-01]	D10-Anthracene	2021/06/03		94	%	50 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			D14-Terphenyl (FS)	2021/06/03		87	%	50 - 130
			D8-Acenaphthylene	2021/06/03		74	%	50 - 130
			Acenaphthene	2021/06/03		88	%	50 - 130
			Acenaphthylene	2021/06/03		82	%	50 - 130
			Anthracene	2021/06/03		90	%	50 - 130
			Benzo(a)anthracene	2021/06/03		98	%	50 - 130
			Benzo(a)pyrene	2021/06/03		82	%	50 - 130
			Benzo(b/j)fluoranthene	2021/06/03		88	%	50 - 130
			Benzo(g,h,i)perylene	2021/06/03		84	%	50 - 130
			Benzo(k)fluoranthene	2021/06/03		81	%	50 - 130
			Chrysene	2021/06/03		98	%	50 - 130
			Dibenzo(a,h)anthracene	2021/06/03		84	%	50 - 130
			Fluoranthene	2021/06/03		100	%	50 - 130
			Fluorene	2021/06/03		88	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/06/03		91	%	50 - 130
			1-Methylnaphthalene	2021/06/03		75	%	50 - 130
			2-Methylnaphthalene	2021/06/03		74	%	50 - 130
			Naphthalene	2021/06/03		77	%	50 - 130
			Phenanthrene	2021/06/03		95	%	50 - 130
			Pyrene	2021/06/03		97	%	50 - 130
7386229	RAJ	Spiked Blank	D10-Anthracene	2021/06/03		101	%	50 - 130
			D14-Terphenyl (FS)	2021/06/03		86	%	50 - 130
			D8-Acenaphthylene	2021/06/03		96	%	50 - 130
			Acenaphthene	2021/06/03		91	%	50 - 130
			Acenaphthylene	2021/06/03		87	%	50 - 130
			Anthracene	2021/06/03		93	%	50 - 130
			Benzo(a)anthracene	2021/06/03		94	%	50 - 130
			Benzo(a)pyrene	2021/06/03		80	%	50 - 130
			Benzo(b/j)fluoranthene	2021/06/03		88	%	50 - 130
			Benzo(g,h,i)perylene	2021/06/03		95	%	50 - 130
			Benzo(k)fluoranthene	2021/06/03		85	%	50 - 130
			Chrysene	2021/06/03		98	%	50 - 130
			Dibenzo(a,h)anthracene	2021/06/03		82	%	50 - 130
			Fluoranthene	2021/06/03		91	%	50 - 130
			Fluorene	2021/06/03		91	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/06/03		101	%	50 - 130
			1-Methylnaphthalene	2021/06/03		78	%	50 - 130
			2-Methylnaphthalene	2021/06/03		77	%	50 - 130
			Naphthalene	2021/06/03		83	%	50 - 130
			Phenanthrene	2021/06/03		95	%	50 - 130
			Pyrene	2021/06/03		90	%	50 - 130
7386229	RAJ	Method Blank	D10-Anthracene	2021/06/03		96	%	50 - 130
			D14-Terphenyl (FS)	2021/06/03		84	%	50 - 130
			D8-Acenaphthylene	2021/06/03		90	%	50 - 130
			Acenaphthene	2021/06/03	<0.0050		ug/g	
			Acenaphthylene	2021/06/03	<0.0050		ug/g	
			Anthracene	2021/06/03	<0.0050		ug/g	
			Benzo(a)anthracene	2021/06/03	<0.0050		ug/g	
			Benzo(a)pyrene	2021/06/03	<0.0050		ug/g	
			Benzo(b/j)fluoranthene	2021/06/03	<0.0050		ug/g	
			Benzo(g,h,i)perylene	2021/06/03	<0.0050		ug/g	
			Benzo(k)fluoranthene	2021/06/03	<0.0050		ug/g	
			Chrysene	2021/06/03	<0.0050		ug/g	
			Dibenzo(a,h)anthracene	2021/06/03	<0.0050		ug/g	
			Fluoranthene	2021/06/03	<0.0050		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Fluorene	2021/06/03	<0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2021/06/03	<0.0050		ug/g	
			1-Methylnaphthalene	2021/06/03	<0.0050		ug/g	
			2-Methylnaphthalene	2021/06/03	<0.0050		ug/g	
			Naphthalene	2021/06/03	<0.0050		ug/g	
			Phenanthrene	2021/06/03	<0.0050		ug/g	
			Pyrene	2021/06/03	<0.0050		ug/g	
7386229	RAJ	RPD [PRS145-01]	Acenaphthene	2021/06/03	NC		%	40
			Acenaphthylene	2021/06/03	NC		%	40
			Anthracene	2021/06/03	NC		%	40
			Benzo(a)anthracene	2021/06/03	97 (1)		%	40
			Benzo(a)pyrene	2021/06/03	89 (1)		%	40
			Benzo(b/j)fluoranthene	2021/06/03	86 (1)		%	40
			Benzo(g,h,i)perylene	2021/06/03	90 (1)		%	40
			Benzo(k)fluoranthene	2021/06/03	85 (1)		%	40
			Chrysene	2021/06/03	87 (1)		%	40
			Dibenzo(a,h)anthracene	2021/06/03	39		%	40
			Fluoranthene	2021/06/03	97 (1)		%	40
			Fluorene	2021/06/03	NC		%	40
			Indeno(1,2,3-cd)pyrene	2021/06/03	95 (1)		%	40
			1-Methylnaphthalene	2021/06/03	NC		%	40
			2-Methylnaphthalene	2021/06/03	NC		%	40
			Naphthalene	2021/06/03	NC		%	40
			Phenanthrene	2021/06/03	73 (1)		%	40
			Pyrene	2021/06/03	85 (1)		%	40
7386491	KHP	Spiked Blank	Conductivity	2021/06/03		100	%	90 - 110
7386491	KHP	Method Blank	Conductivity	2021/06/03	<0.002		mS/cm	
7386491	KHP	RPD [PRS151-01]	Conductivity	2021/06/03	2.8		%	10
7392392	MS4	Matrix Spike	4-Bromofluorobenzene	2021/06/08		99	%	60 - 140
			D10-o-Xylene	2021/06/08		82	%	60 - 130
			D4-1,2-Dichloroethane	2021/06/08		94	%	60 - 140
			D8-Toluene	2021/06/08		102	%	60 - 140
			Acetone (2-Propanone)	2021/06/08		88	%	60 - 140
			Benzene	2021/06/08		95	%	60 - 140
			Bromodichloromethane	2021/06/08		93	%	60 - 140
			Bromoform	2021/06/08		94	%	60 - 140
			Bromomethane	2021/06/08		92	%	60 - 140
			Carbon Tetrachloride	2021/06/08		87	%	60 - 140
			Chlorobenzene	2021/06/08		96	%	60 - 140
			Chloroform	2021/06/08		92	%	60 - 140
			Dibromochloromethane	2021/06/08		93	%	60 - 140
			1,2-Dichlorobenzene	2021/06/08		97	%	60 - 140
			1,3-Dichlorobenzene	2021/06/08		100	%	60 - 140
			1,4-Dichlorobenzene	2021/06/08		121	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2021/06/08		83	%	60 - 140
			1,1-Dichloroethane	2021/06/08		94	%	60 - 140
			1,2-Dichloroethane	2021/06/08		87	%	60 - 140
			1,1-Dichloroethylene	2021/06/08		90	%	60 - 140
			cis-1,2-Dichloroethylene	2021/06/08		97	%	60 - 140
			trans-1,2-Dichloroethylene	2021/06/08		98	%	60 - 140
			1,2-Dichloropropane	2021/06/08		99	%	60 - 140
			cis-1,3-Dichloropropene	2021/06/08		94	%	60 - 140
			trans-1,3-Dichloropropene	2021/06/08		101	%	60 - 140
			Ethylbenzene	2021/06/08		90	%	60 - 140
			Ethylene Dibromide	2021/06/08		95	%	60 - 140

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Hexane	2021/06/08		97	%	60 - 140
			Methylene Chloride(Dichloromethane)	2021/06/08		97	%	60 - 140
			Methyl Ethyl Ketone (2-Butanone)	2021/06/08		100	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/08		91	%	60 - 140
			Methyl t-butyl ether (MTBE)	2021/06/08		87	%	60 - 140
			Styrene	2021/06/08		102	%	60 - 140
			1,1,1,2-Tetrachloroethane	2021/06/08		96	%	60 - 140
			1,1,2,2-Tetrachloroethane	2021/06/08		95	%	60 - 140
			Tetrachloroethylene	2021/06/08		93	%	60 - 140
			Toluene	2021/06/08		91	%	60 - 140
			1,1,1-Trichloroethane	2021/06/08		92	%	60 - 140
			1,1,2-Trichloroethane	2021/06/08		93	%	60 - 140
			Trichloroethylene	2021/06/08		102	%	60 - 140
			Trichlorofluoromethane (FREON 11)	2021/06/08		84	%	60 - 140
			Vinyl Chloride	2021/06/08		98	%	60 - 140
			p+m-Xylene	2021/06/08		93	%	60 - 140
			o-Xylene	2021/06/08		90	%	60 - 140
			F1 (C6-C10)	2021/06/08		94	%	60 - 140
7392392	MS4	Spiked Blank	4-Bromofluorobenzene	2021/06/08		99	%	60 - 140
			D10-o-Xylene	2021/06/08		95	%	60 - 130
			D4-1,2-Dichloroethane	2021/06/08		93	%	60 - 140
			D8-Toluene	2021/06/08		102	%	60 - 140
			Acetone (2-Propanone)	2021/06/08		86	%	60 - 140
			Benzene	2021/06/08		95	%	60 - 130
			Bromodichloromethane	2021/06/08		94	%	60 - 130
			Bromoform	2021/06/08		95	%	60 - 130
			Bromomethane	2021/06/08		91	%	60 - 140
			Carbon Tetrachloride	2021/06/08		88	%	60 - 130
			Chlorobenzene	2021/06/08		96	%	60 - 130
			Chloroform	2021/06/08		92	%	60 - 130
			Dibromochloromethane	2021/06/08		93	%	60 - 130
			1,2-Dichlorobenzene	2021/06/08		98	%	60 - 130
			1,3-Dichlorobenzene	2021/06/08		100	%	60 - 130
			1,4-Dichlorobenzene	2021/06/08		121	%	60 - 130
			Dichlorodifluoromethane (FREON 12)	2021/06/08		84	%	60 - 140
			1,1-Dichloroethane	2021/06/08		94	%	60 - 130
			1,2-Dichloroethane	2021/06/08		86	%	60 - 130
			1,1-Dichloroethylene	2021/06/08		90	%	60 - 130
			cis-1,2-Dichloroethylene	2021/06/08		97	%	60 - 130
			trans-1,2-Dichloroethylene	2021/06/08		97	%	60 - 130
			1,2-Dichloropropane	2021/06/08		99	%	60 - 130
			cis-1,3-Dichloropropene	2021/06/08		94	%	60 - 130
			trans-1,3-Dichloropropene	2021/06/08		101	%	60 - 130
			Ethylbenzene	2021/06/08		91	%	60 - 130
			Ethylene Dibromide	2021/06/08		95	%	60 - 130
			Hexane	2021/06/08		97	%	60 - 130
			Methylene Chloride(Dichloromethane)	2021/06/08		96	%	60 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/06/08		99	%	60 - 140
			Methyl Isobutyl Ketone	2021/06/08		93	%	60 - 130
			Methyl t-butyl ether (MTBE)	2021/06/08		88	%	60 - 130
			Styrene	2021/06/08		102	%	60 - 130
			1,1,1,2-Tetrachloroethane	2021/06/08		97	%	60 - 130
			1,1,2,2-Tetrachloroethane	2021/06/08		97	%	60 - 130
			Tetrachloroethylene	2021/06/08		93	%	60 - 130
			Toluene	2021/06/08		91	%	60 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,1-Trichloroethane	2021/06/08		93	%	60 - 130
			1,1,2-Trichloroethane	2021/06/08		93	%	60 - 130
			Trichloroethylene	2021/06/08		102	%	60 - 130
			Trichlorofluoromethane (FREON 11)	2021/06/08		85	%	60 - 130
			Vinyl Chloride	2021/06/08		97	%	60 - 130
			p+m-Xylene	2021/06/08		94	%	60 - 130
			o-Xylene	2021/06/08		91	%	60 - 130
			F1 (C6-C10)	2021/06/08		91	%	80 - 120
7392392	MS4	Method Blank	4-Bromofluorobenzene	2021/06/08		95	%	60 - 140
			D10-o-Xylene	2021/06/08		83	%	60 - 130
			D4-1,2-Dichloroethane	2021/06/08		94	%	60 - 140
			D8-Toluene	2021/06/08		103	%	60 - 140
			Acetone (2-Propanone)	2021/06/08	<0.50		ug/g	
			Benzene	2021/06/08	<0.020		ug/g	
			Bromodichloromethane	2021/06/08	<0.050		ug/g	
			Bromoform	2021/06/08	<0.050		ug/g	
			Bromomethane	2021/06/08	<0.050		ug/g	
			Carbon Tetrachloride	2021/06/08	<0.050		ug/g	
			Chlorobenzene	2021/06/08	<0.050		ug/g	
			Chloroform	2021/06/08	<0.050		ug/g	
			Dibromochloromethane	2021/06/08	<0.050		ug/g	
			1,2-Dichlorobenzene	2021/06/08	<0.050		ug/g	
			1,3-Dichlorobenzene	2021/06/08	<0.050		ug/g	
			1,4-Dichlorobenzene	2021/06/08	<0.050		ug/g	
			Dichlorodifluoromethane (FREON 12)	2021/06/08	<0.050		ug/g	
			1,1-Dichloroethane	2021/06/08	<0.050		ug/g	
			1,2-Dichloroethane	2021/06/08	<0.050		ug/g	
			1,1-Dichloroethylene	2021/06/08	<0.050		ug/g	
			cis-1,2-Dichloroethylene	2021/06/08	<0.050		ug/g	
			trans-1,2-Dichloroethylene	2021/06/08	<0.050		ug/g	
			1,2-Dichloropropane	2021/06/08	<0.050		ug/g	
			cis-1,3-Dichloropropene	2021/06/08	<0.030		ug/g	
			trans-1,3-Dichloropropene	2021/06/08	<0.040		ug/g	
			Ethylbenzene	2021/06/08	<0.020		ug/g	
			Ethylene Dibromide	2021/06/08	<0.050		ug/g	
			Hexane	2021/06/08	<0.050		ug/g	
			Methylene Chloride(Dichloromethane)	2021/06/08	<0.050		ug/g	
			Methyl Ethyl Ketone (2-Butanone)	2021/06/08	<0.50		ug/g	
			Methyl Isobutyl Ketone	2021/06/08	<0.50		ug/g	
			Methyl t-butyl ether (MTBE)	2021/06/08	<0.050		ug/g	
			Styrene	2021/06/08	<0.050		ug/g	
			1,1,1,2-Tetrachloroethane	2021/06/08	<0.050		ug/g	
			1,1,2,2-Tetrachloroethane	2021/06/08	<0.050		ug/g	
			Tetrachloroethylene	2021/06/08	<0.050		ug/g	
			Toluene	2021/06/08	<0.020		ug/g	
			1,1,1-Trichloroethane	2021/06/08	<0.050		ug/g	
			1,1,2-Trichloroethane	2021/06/08	<0.050		ug/g	
			Trichloroethylene	2021/06/08	<0.050		ug/g	
			Trichlorofluoromethane (FREON 11)	2021/06/08	<0.050		ug/g	
			Vinyl Chloride	2021/06/08	<0.020		ug/g	
			p+m-Xylene	2021/06/08	<0.020		ug/g	
			o-Xylene	2021/06/08	<0.020		ug/g	
			Total Xylenes	2021/06/08	<0.020		ug/g	
			F1 (C6-C10)	2021/06/08	<10		ug/g	
			F1 (C6-C10) - BTEX	2021/06/08	<10		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7392392	MS4	RPD	Acetone (2-Propanone)	2021/06/08	NC		%	50
			Benzene	2021/06/08	NC		%	50
			Bromodichloromethane	2021/06/08	NC		%	50
			Bromoform	2021/06/08	NC		%	50
			Bromomethane	2021/06/08	NC		%	50
			Carbon Tetrachloride	2021/06/08	NC		%	50
			Chlorobenzene	2021/06/08	NC		%	50
			Chloroform	2021/06/08	NC		%	50
			Dibromochloromethane	2021/06/08	NC		%	50
			1,2-Dichlorobenzene	2021/06/08	NC		%	50
			1,3-Dichlorobenzene	2021/06/08	NC		%	50
			1,4-Dichlorobenzene	2021/06/08	NC		%	50
			Dichlorodifluoromethane (FREON 12)	2021/06/08	NC		%	50
			1,1-Dichloroethane	2021/06/08	NC		%	50
			1,2-Dichloroethane	2021/06/08	NC		%	50
			1,1-Dichloroethylene	2021/06/08	NC		%	50
			cis-1,2-Dichloroethylene	2021/06/08	NC		%	50
			trans-1,2-Dichloroethylene	2021/06/08	NC		%	50
			1,2-Dichloropropane	2021/06/08	NC		%	50
			cis-1,3-Dichloropropene	2021/06/08	NC		%	50
			trans-1,3-Dichloropropene	2021/06/08	NC		%	50
			Ethylbenzene	2021/06/08	NC		%	50
			Ethylene Dibromide	2021/06/08	NC		%	50
			Hexane	2021/06/08	NC		%	50
			Methylene Chloride(Dichloromethane)	2021/06/08	NC		%	50
			Methyl Ethyl Ketone (2-Butanone)	2021/06/08	NC		%	50
			Methyl Isobutyl Ketone	2021/06/08	NC		%	50
			Methyl t-butyl ether (MTBE)	2021/06/08	NC		%	50
			Styrene	2021/06/08	NC		%	50
			1,1,1,2-Tetrachloroethane	2021/06/08	NC		%	50
			1,1,2,2-Tetrachloroethane	2021/06/08	NC		%	50
			Tetrachloroethylene	2021/06/08	NC		%	50
			Toluene	2021/06/08	NC		%	50
			1,1,1-Trichloroethane	2021/06/08	NC		%	50
			1,1,2-Trichloroethane	2021/06/08	NC		%	50
			Trichloroethylene	2021/06/08	NC		%	50
			Trichlorofluoromethane (FREON 11)	2021/06/08	NC		%	50
			Vinyl Chloride	2021/06/08	NC		%	50
			p+m-Xylene	2021/06/08	NC		%	50
			o-Xylene	2021/06/08	NC		%	50
			Total Xylenes	2021/06/08	NC		%	50
			F1 (C6-C10)	2021/06/08	NC		%	30
			F1 (C6-C10) - BTEX	2021/06/08	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7393385	MUC	RPD	Moisture	2021/06/07	1.7		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#982 Pinchin Ltd	Company Name:		Quotation #:	A70927	BV Labs Job #:	Bottle Order #: 770951
Attention:	Accounts Payable	Attention:	Matt, Ryan, Mike	P.O. #:			
Address:	1 Hines Road Suite 200 Kanata ON K2K 3C7	Address:		Project:	285722.003	COC #: C#770951-30-01	Project Manager: Antonella Brasil
Tel:	(613) 592-3387 Fax: (613) 592-5897	Tel:	Fax:	Project Name:			
Email:	ap@pinchin.com	Email:	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Site #: / Sampled By:	M. Kosiw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, [X] Res/Park, [X] Medium/Fine, Table 2, Ind/Comm, Coarse, [X] Table 3, Agri/Other, [X] For RSC, Table ___

Other Regulations: CCME, Sanitary Sewer Bylaw, Reg 558, Storm Sewer Bylaw, MISA, Municipality, PWQO, Other

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? N

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; O.Reg 153 Metals (Reg 153 metals); O.Reg 153 VOCs by HS & F1-F4 (Soil); O.Reg 153 PAHs (Soil); O.Reg 153 OC Pesticides (Soil); O.Reg 153 Semivolatiles Package (Soil); Sieve, 75um; PCBs; EC; SAR; PHC F1-F4

Turnaround Time (TAT) Required: Please provide advance notice for rush projects
Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	Reg 153 Metals	VOCs by HS & F1-F4	PAHs	OC Pesticides	Semivolatiles	Sieve	PCBs	EC	SAR	PHC F1-F4	# of Bottles	Comments
1		BH121 SS-1	May 25 2021	AM	SOIL				X				X			X	2	
2		Dup101	↓	AM	↓				X				X			X	2	
3		BHMW122 SS-6	↓	↓	↓		X	X	X							X	2	
4		BHMW122 SS-8	↓	↓	↓		X	X	X							X	2	
5		BHMW123 SS-5	↓	PM	↓		X	X	X							X	2	
6		BHMW124 SS-1	↓	↓	↓		X	X	X					X	X	X	2	
7		BHMW124 SS-8	↓	↓	↓		X	X	X					X	X	X	2	RECEIVED IN OTTAWA
8		Dup102	↓	↓	↓									X	X		1	ON Ice
9																		
10																		

28-May-21 12:45
Antonella Brasil
C1E5924
MIK ENV-736

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only
Mike Kosiw	May 28 2021	10:30 AM	[signature]	2021/05/28	12:45		Time Sensitive; Temperature (°C) on Recei: 5, 5, 6; Custody Seal Present / Intact: Yes
			Ainsley Pinsker	2021/05/29	08:30		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

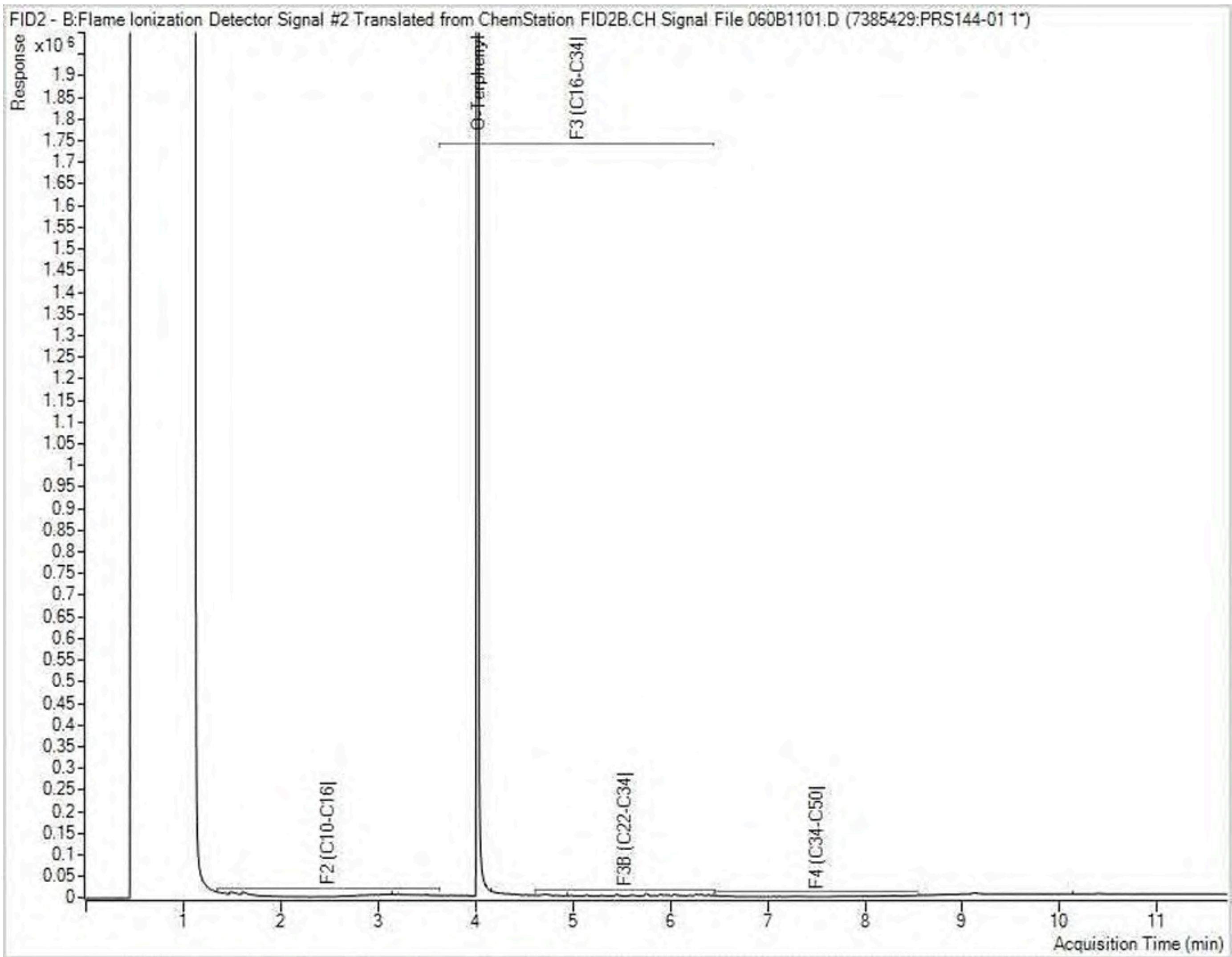
** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

3/0/-1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

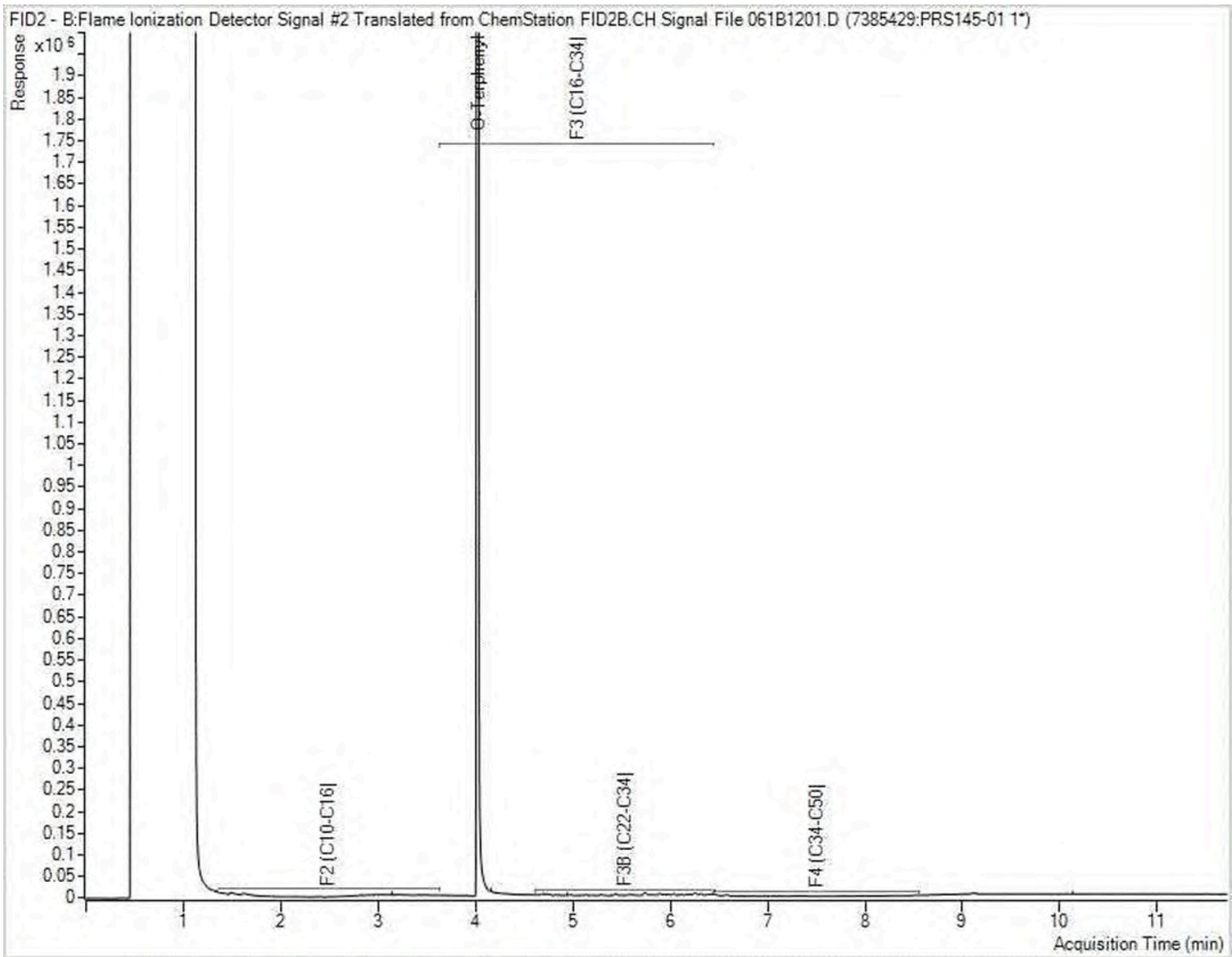


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1E5924
Report Date: 2021/06/08
BV Labs Sample: PRS145

Pinchin Ltd
Client Project #: 285722.003
Client ID: DUP101

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

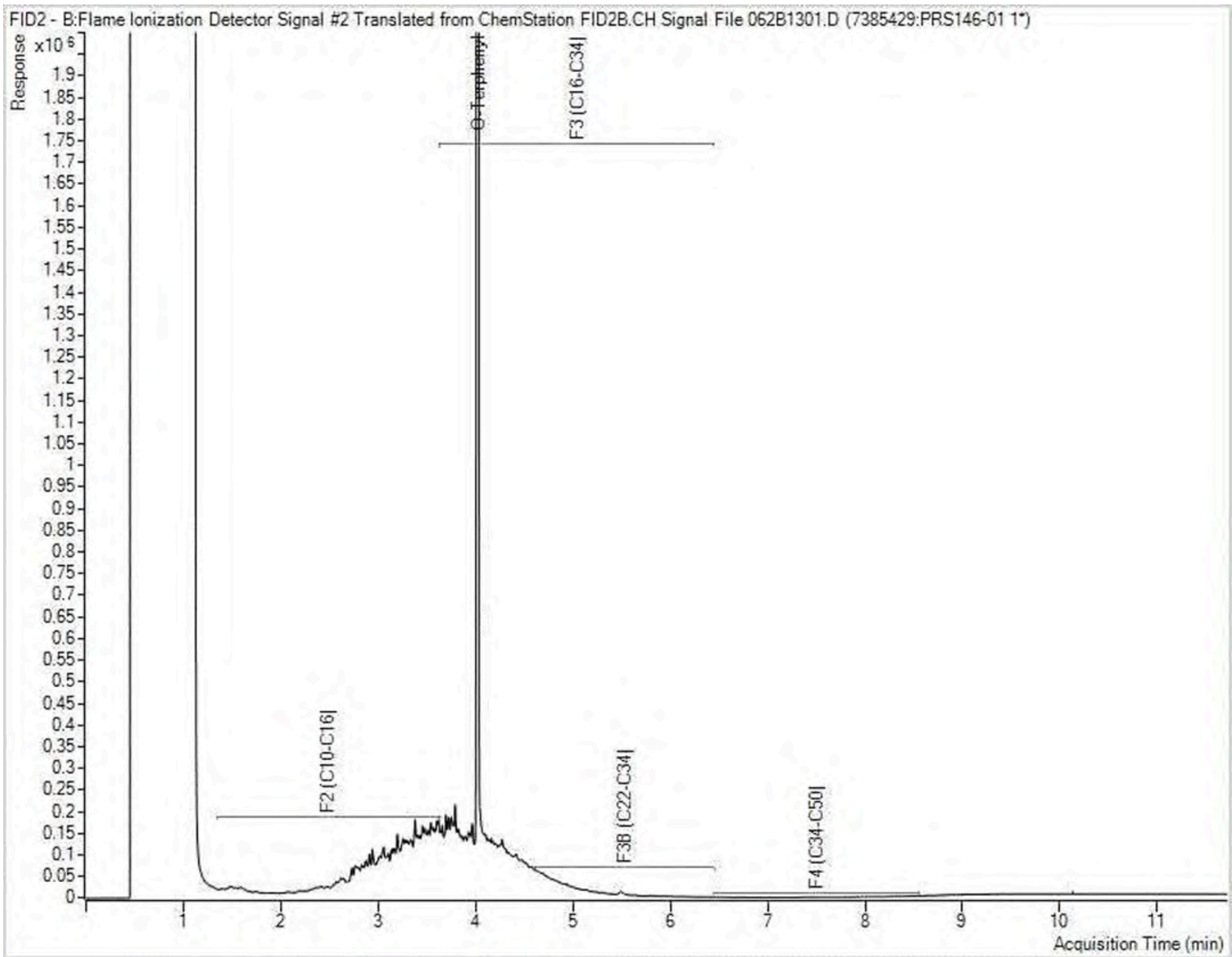


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1E5924
Report Date: 2021/06/08
BV Labs Sample: PRS146

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW122SS-6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

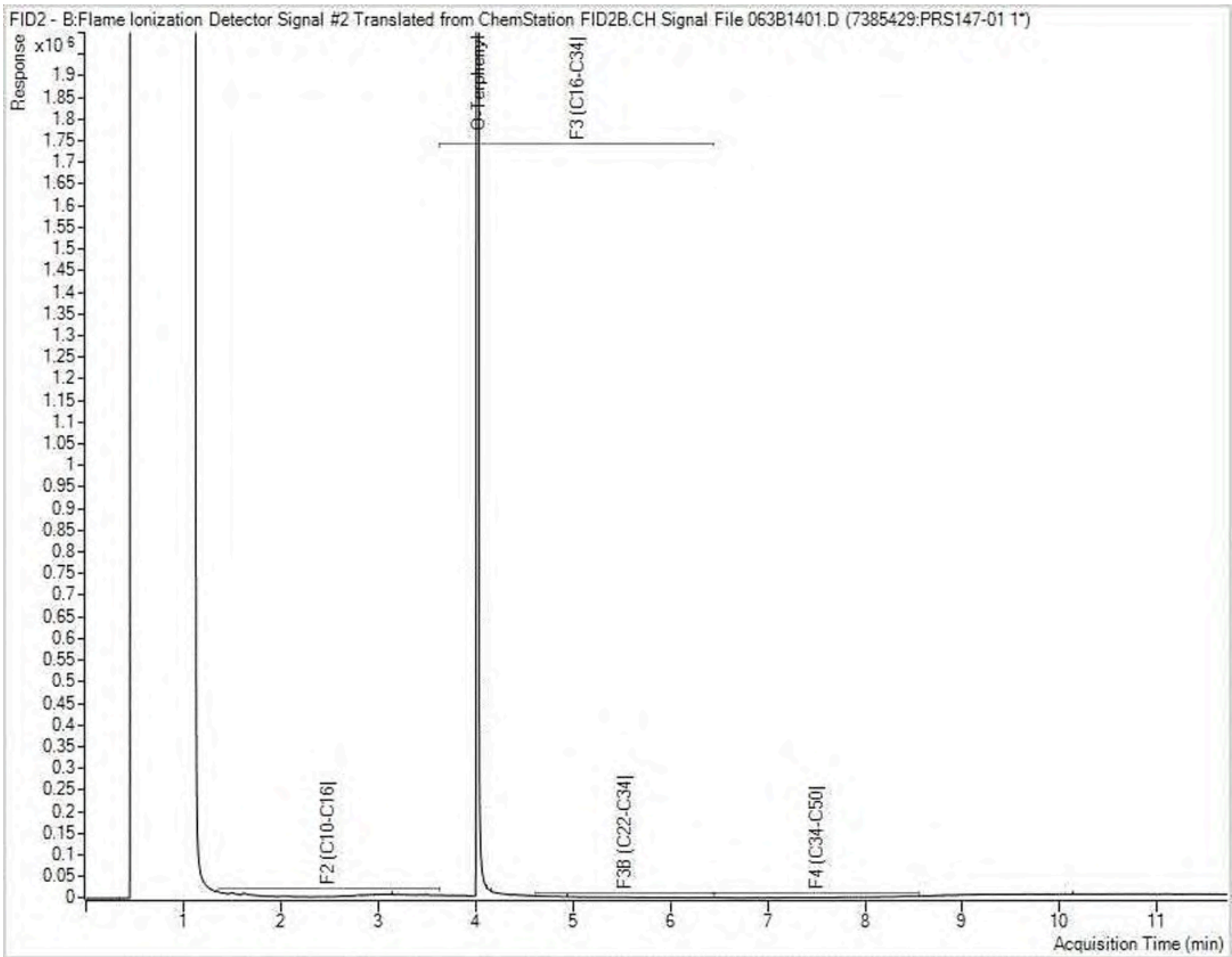


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1E5924
Report Date: 2021/06/08
BV Labs Sample: PRS147

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW122SS-8

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

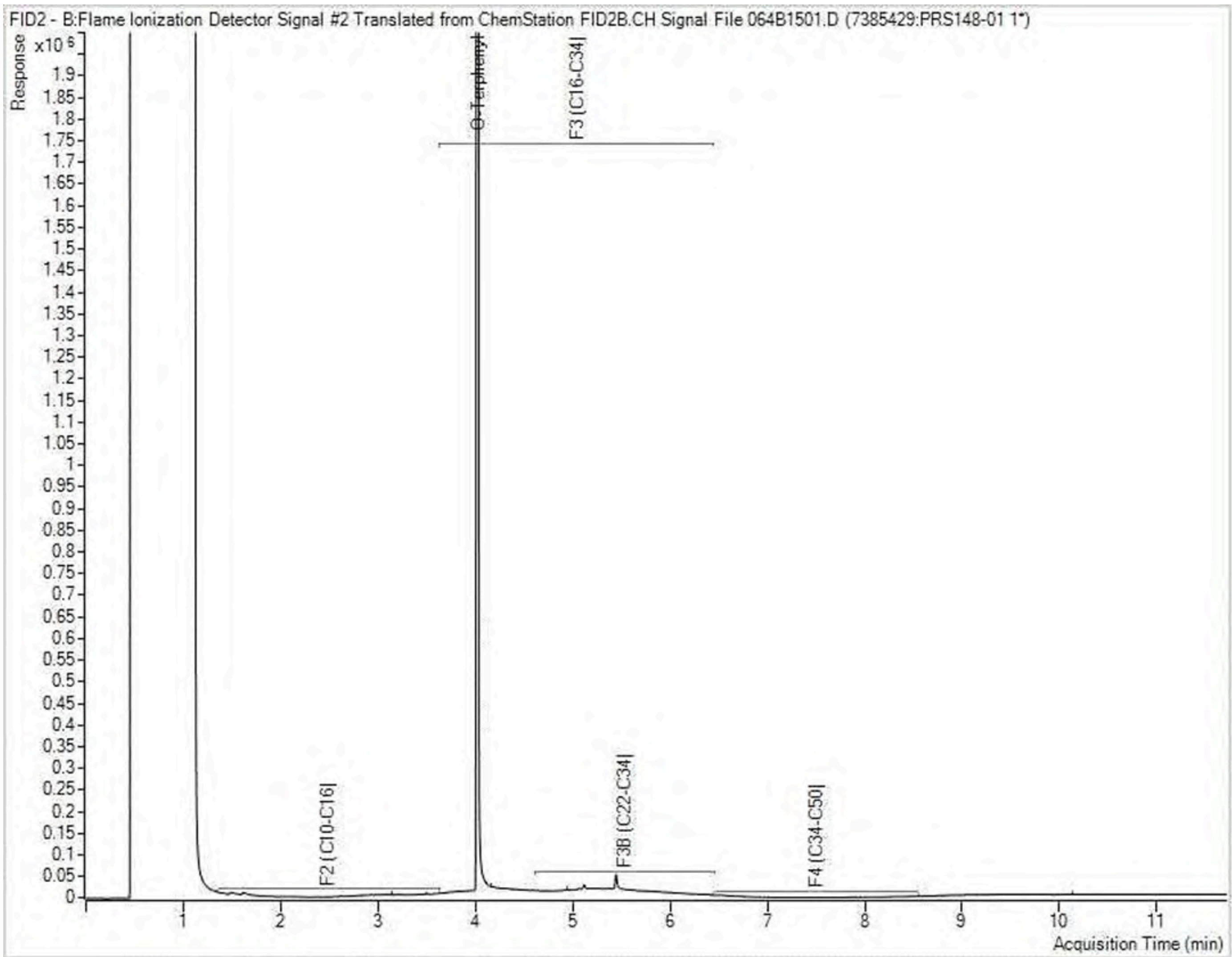


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1E5924
Report Date: 2021/06/08
BV Labs Sample: PRS148

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW123SS-5

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

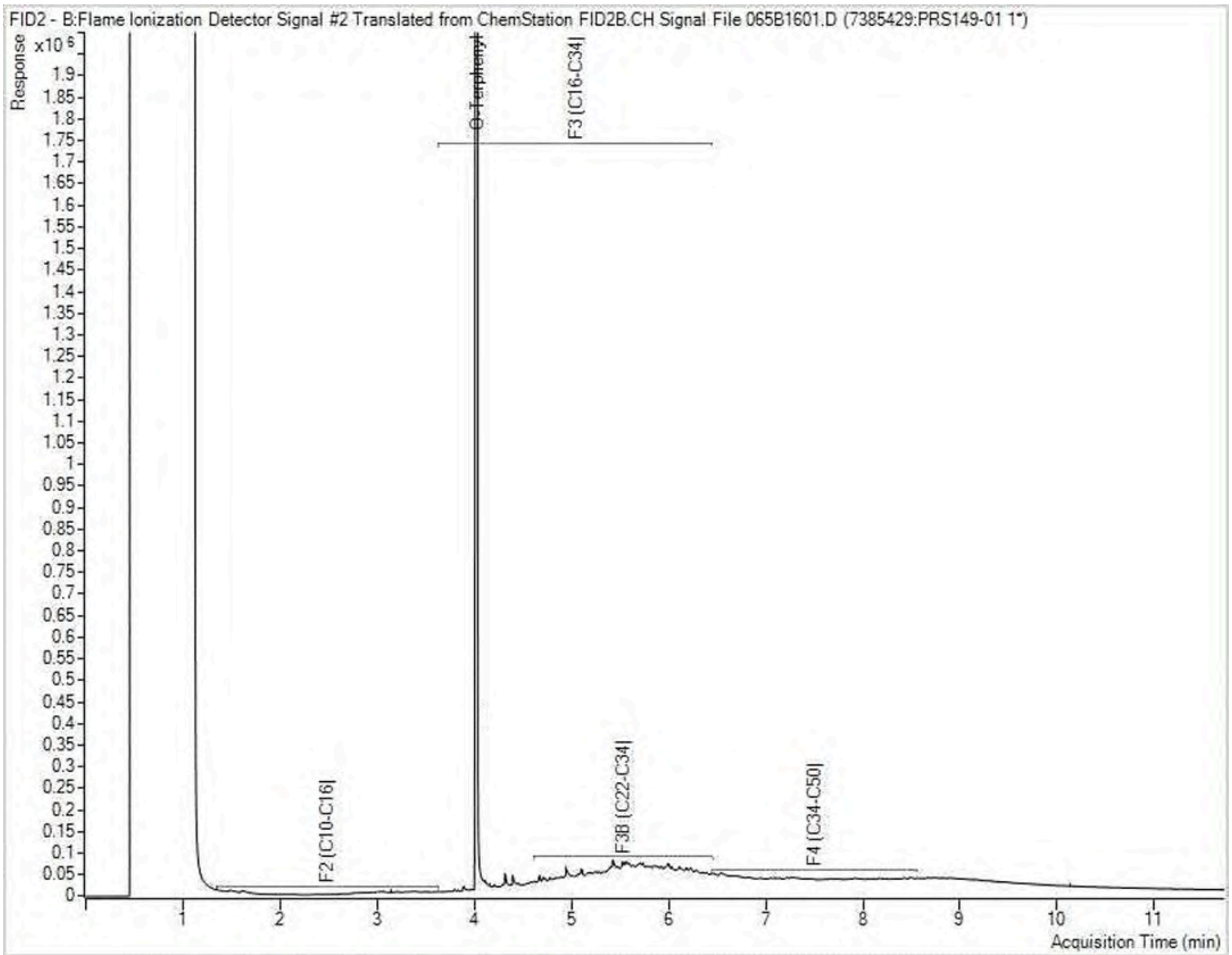


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1E5924
Report Date: 2021/06/08
BV Labs Sample: PRS149

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW124SS-1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

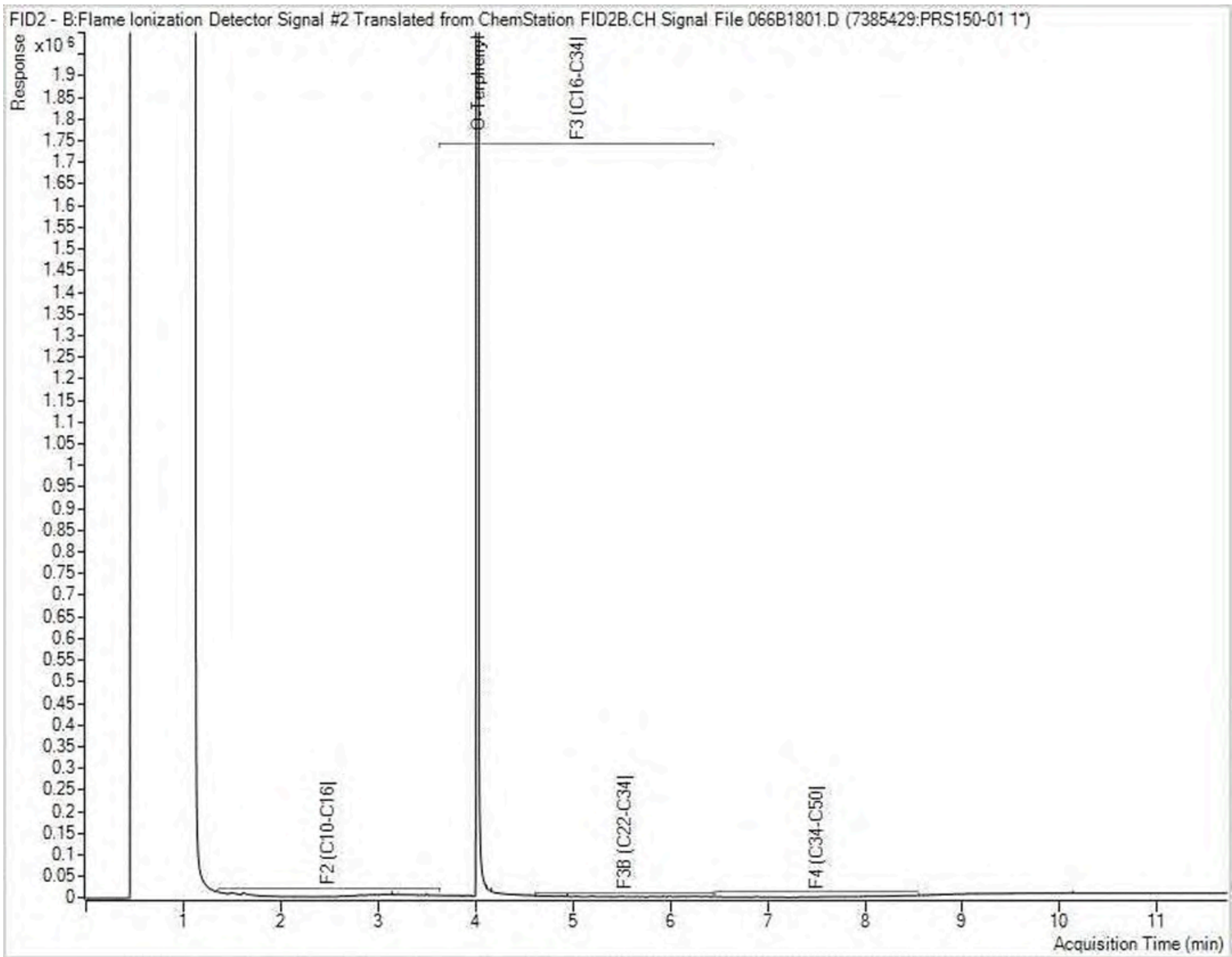


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1E5924
Report Date: 2021/06/08
BV Labs Sample: PRS150

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW124SS-8

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 285722.003
Your C.O.C. #: 832329-06-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
1 Hines Road
Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/10/21
Report #: R6862370
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1T8290
Received: 2021/10/13, 16:20

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	3	N/A	2021/10/20	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	3	N/A	2021/10/20		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	3	2021/10/18	2021/10/19	CAM SOP-00316	CCME CWS m
Moisture (1)	3	N/A	2021/10/15	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	3	2021/10/19	2021/10/20	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	3	N/A	2021/10/19	CAM SOP-00230	EPA 8260C m

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	2	N/A	2021/10/19	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	2	N/A	2021/10/20		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	2	2021/10/18	2021/10/19	CAM SOP-00316	CCME PHC-CWS m
PAH Compounds in Water by GC/MS (SIM) (1)	2	2021/10/18	2021/10/19	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	3	N/A	2021/10/20	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Your Project #: 285722.003
Your C.O.C. #: 832329-06-01

Attention: Matt, Ryan, Mike

Pinchin Ltd
Ottawa
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Suite 200
Kanata, ON
CANADA K2K 3C7

Report Date: 2021/10/21
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CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1T8290
Received: 2021/10/13, 16:20

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bureauveritas.com
Phone# (905)817-5817
===
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (SOIL)

Bureau Veritas ID		QXT935		QXT936		QXT937		
Sampling Date		2021/10/06		2021/10/06		2021/10/06		
COC Number		832329-06-01		832329-06-01		832329-06-01		
	UNITS	BHMW125 SS-7	RDL	BHMW126 SS-1	RDL	BHMW127 SS-6	RDL	QC Batch
Inorganics								
Moisture	%	10	1.0	8.9	1.0	15	1.0	7639393
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	17	0.071	<0.0071	0.0071	7637968
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	<0.0050	0.0050	39	0.050	<0.0050	0.0050	7646770
Acenaphthylene	ug/g	<0.0050	0.0050	0.77	0.050	<0.0050	0.0050	7646770
Anthracene	ug/g	<0.0050	0.0050	110	0.050	<0.0050	0.0050	7646770
Benzo(a)anthracene	ug/g	<0.0050	0.0050	180	0.050	<0.0050	0.0050	7646770
Benzo(a)pyrene	ug/g	<0.0050	0.0050	120	0.050	<0.0050	0.0050	7646770
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	200	0.050	<0.0050	0.0050	7646770
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	57	0.050	<0.0050	0.0050	7646770
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	65	0.050	<0.0050	0.0050	7646770
Chrysene	ug/g	<0.0050	0.0050	140	0.050	<0.0050	0.0050	7646770
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	18	0.050	<0.0050	0.0050	7646770
Fluoranthene	ug/g	<0.0050	0.0050	450	0.050	0.0079	0.0050	7646770
Fluorene	ug/g	<0.0050	0.0050	54	0.050	<0.0050	0.0050	7646770
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	62	0.050	<0.0050	0.0050	7646770
1-Methylnaphthalene	ug/g	<0.0050	0.0050	7.2	0.050	<0.0050	0.0050	7646770
2-Methylnaphthalene	ug/g	<0.0050	0.0050	9.3	0.050	<0.0050	0.0050	7646770
Naphthalene	ug/g	<0.0050	0.0050	12	0.050	<0.0050	0.0050	7646770
Phenanthrene	ug/g	<0.0050	0.0050	430	0.050	0.0087	0.0050	7646770
Pyrene	ug/g	<0.0050	0.0050	330	0.050	0.0057	0.0050	7646770
Surrogate Recovery (%)								
D10-Anthracene	%	94		120		99		7646770
D14-Terphenyl (FS)	%	90		313 (1)		96		7646770
D8-Acenaphthylene	%	56		120		68		7646770

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) Surrogate recovery was above the upper control limit due to matrix interference. This may represent a high bias in some results.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Bureau Veritas ID		QXT935	QXT936	QXT937		
Sampling Date		2021/10/06	2021/10/06	2021/10/06		
COC Number		832329-06-01	832329-06-01	832329-06-01		
	UNITS	**BHMW125 SS-7**	**BHMW126 SS-1**	**BHMW127 SS-6**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	0.050	7638071
Volatile Organics						
Acetone (2-Propanone)	ug/g	<0.49	<0.49	<0.49	0.49	7642664
Benzene	ug/g	<0.0060	0.0085	<0.0060	0.0060	7642664
Bromodichloromethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Bromoform	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Bromomethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Carbon Tetrachloride	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Chlorobenzene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Chloroform	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Dibromochloromethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,2-Dichlorobenzene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,3-Dichlorobenzene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,4-Dichlorobenzene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Dichlorodifluoromethane (FREON 12)	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,1-Dichloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,2-Dichloroethane	ug/g	<0.049	<0.049	<0.049	0.049	7642664
1,1-Dichloroethylene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
cis-1,2-Dichloroethylene	ug/g	<0.040	0.057	<0.040	0.040	7642664
trans-1,2-Dichloroethylene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,2-Dichloropropane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	0.030	7642664
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Ethylbenzene	ug/g	<0.010	0.017	<0.010	0.010	7642664
Ethylene Dibromide	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Hexane	ug/g	<0.040	0.058	<0.040	0.040	7642664
Methylene Chloride(Dichloromethane)	ug/g	<0.049	<0.049	<0.049	0.049	7642664
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.40	<0.40	<0.40	0.40	7642664
Methyl Isobutyl Ketone	ug/g	<0.40	<0.40	<0.40	0.40	7642664
Methyl t-butyl ether (MTBE)	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Styrene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,1,1,2-Tetrachloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
1,1,2,2-Tetrachloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Tetrachloroethylene	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Toluene	ug/g	<0.020	0.053	<0.020	0.020	7642664
1,1,1-Trichloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Bureau Veritas ID		QXT935	QXT936	QXT937		
Sampling Date		2021/10/06	2021/10/06	2021/10/06		
COC Number		832329-06-01	832329-06-01	832329-06-01		
	UNITS	**BHMW125 SS-7**	**BHMW126 SS-1**	**BHMW127 SS-6**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Trichloroethylene	ug/g	<0.010	0.023	<0.010	0.010	7642664
Trichlorofluoromethane (FREON 11)	ug/g	<0.040	<0.040	<0.040	0.040	7642664
Vinyl Chloride	ug/g	<0.019	<0.019	<0.019	0.019	7642664
p+m-Xylene	ug/g	<0.020	0.088	<0.020	0.020	7642664
o-Xylene	ug/g	<0.020	0.053	<0.020	0.020	7642664
Total Xylenes	ug/g	<0.020	0.14	<0.020	0.020	7642664
F1 (C6-C10)	ug/g	<10	<10	<10	10	7642664
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	10	7642664
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	<10	290	<10	10	7644377
F3 (C16-C34 Hydrocarbons)	ug/g	<50	6200	<50	50	7644377
F4 (C34-C50 Hydrocarbons)	ug/g	<50	1400	<50	50	7644377
Reached Baseline at C50	ug/g	Yes	Yes	Yes		7644377
Surrogate Recovery (%)						
o-Terphenyl	%	86	99	84		7644377
4-Bromofluorobenzene	%	98	99	98		7642664
D10-o-Xylene	%	100	106	109		7642664
D4-1,2-Dichloroethane	%	89	89	88		7642664
D8-Toluene	%	97	97	97		7642664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID		QXT940		
Sampling Date		2021/10/12		
COC Number		832329-06-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	7640033
Benzene	ug/L	<0.17	0.17	7640033
Bromodichloromethane	ug/L	<0.50	0.50	7640033
Bromoform	ug/L	<1.0	1.0	7640033
Bromomethane	ug/L	<0.50	0.50	7640033
Carbon Tetrachloride	ug/L	<0.20	0.20	7640033
Chlorobenzene	ug/L	<0.20	0.20	7640033
Chloroform	ug/L	<0.20	0.20	7640033
Dibromochloromethane	ug/L	<0.50	0.50	7640033
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7640033
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7640033
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7640033
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7640033
1,1-Dichloroethane	ug/L	<0.20	0.20	7640033
1,2-Dichloroethane	ug/L	<0.50	0.50	7640033
1,1-Dichloroethylene	ug/L	<0.20	0.20	7640033
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7640033
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7640033
1,2-Dichloropropane	ug/L	<0.20	0.20	7640033
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7640033
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7640033
Ethylbenzene	ug/L	<0.20	0.20	7640033
Ethylene Dibromide	ug/L	<0.20	0.20	7640033
Hexane	ug/L	<1.0	1.0	7640033
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7640033
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7640033
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7640033
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7640033
Styrene	ug/L	<0.50	0.50	7640033
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7640033
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7640033
Tetrachloroethylene	ug/L	<0.20	0.20	7640033
Toluene	ug/L	<0.20	0.20	7640033
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7640033
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7640033
Trichloroethylene	ug/L	<0.20	0.20	7640033

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID		QXT940		
Sampling Date		2021/10/12		
COC Number		832329-06-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7640033
Vinyl Chloride	ug/L	<0.20	0.20	7640033
p+m-Xylene	ug/L	<0.20	0.20	7640033
o-Xylene	ug/L	<0.20	0.20	7640033
Total Xylenes	ug/L	<0.20	0.20	7640033
F1 (C6-C10)	ug/L	<25	25	7640033
F1 (C6-C10) - BTEX	ug/L	<25	25	7640033
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	87		7640033
D4-1,2-Dichloroethane	%	98		7640033
D8-Toluene	%	106		7640033

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 PAHS (WATER)

Bureau Veritas ID		QXT938	QXT939		
Sampling Date		2021/10/12	2021/10/12		
COC Number		832329-06-01	832329-06-01		
	UNITS	**BHMW125**	**BHM127**	**RDL**	**QC Batch**
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	7637229
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	<0.050	0.10	0.050	7643885
Acenaphthylene	ug/L	<0.050	<0.050	0.050	7643885
Anthracene	ug/L	<0.050	<0.050	0.050	7643885
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	7643885
Benzo(a)pyrene	ug/L	<0.0090	0.040	0.0090	7643885
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	7643885
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	7643885
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	7643885
Chrysene	ug/L	<0.050	0.057	0.050	7643885
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	0.050	7643885
Fluoranthene	ug/L	<0.050	0.14	0.050	7643885
Fluorene	ug/L	<0.050	0.076	0.050	7643885
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	7643885
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7643885
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7643885
Naphthalene	ug/L	<0.050	0.053	0.050	7643885
Phenanthrene	ug/L	<0.030	0.25	0.030	7643885
Pyrene	ug/L	<0.050	0.11	0.050	7643885
Surrogate Recovery (%)					
D10-Anthracene	%	109	115		7643885
D14-Terphenyl (FS)	%	103	110		7643885
D8-Acenaphthylene	%	85	94		7643885

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Bureau Veritas ID		QXT938			QXT938			QXT939		
Sampling Date		2021/10/12			2021/10/12			2021/10/12		
COC Number		832329-06-01			832329-06-01			832329-06-01		
	UNITS	**BHMW125**	**RDL**	**QC Batch**	**BHMW125 Lab-Dup**	**RDL**	**QC Batch**	**BHM127**	**RDL**	**QC Batch**
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	7637343				<0.50	0.50	7637343
Volatile Organics										
Acetone (2-Propanone)	ug/L	<10	10	7640033	<10	10	7640033	<10	10	7640033
Benzene	ug/L	<0.17	0.17	7640033	<0.17	0.17	7640033	0.47	0.17	7640033
Bromodichloromethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Bromoform	ug/L	<1.0	1.0	7640033	<1.0	1.0	7640033	<1.0	1.0	7640033
Bromomethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Carbon Tetrachloride	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Chlorobenzene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Chloroform	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Dibromochloromethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,2-Dichlorobenzene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,3-Dichlorobenzene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,4-Dichlorobenzene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7640033	<1.0	1.0	7640033	<1.0	1.0	7640033
1,1-Dichloroethane	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	0.48	0.20	7640033
1,2-Dichloroethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	1.1	0.50	7640033
1,1-Dichloroethylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,2-Dichloropropane	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7640033	<0.30	0.30	7640033	<0.30	0.30	7640033
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7640033	<0.40	0.40	7640033	<0.40	0.40	7640033
Ethylbenzene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Ethylene Dibromide	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Hexane	ug/L	<1.0	1.0	7640033	<1.0	1.0	7640033	<1.0	1.0	7640033
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7640033	<2.0	2.0	7640033	<2.0	2.0	7640033
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7640033	<10	10	7640033	<10	10	7640033
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7640033	<5.0	5.0	7640033	<5.0	5.0	7640033
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	46	0.50	7640033
Styrene	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Tetrachloroethylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Toluene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

O.REG 153 VOCS BY HS & F1-F4 (WATER)

Bureau Veritas ID		QXT938			QXT938			QXT939		
Sampling Date		2021/10/12			2021/10/12			2021/10/12		
COC Number		832329-06-01			832329-06-01			832329-06-01		
	UNITS	**BHMW125**	**RDL**	**QC Batch**	**BHMW125 Lab-Dup**	**RDL**	**QC Batch**	**BHM127**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
1,1,2-Trichloroethane	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Trichloroethylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7640033	<0.50	0.50	7640033	<0.50	0.50	7640033
Vinyl Chloride	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
p+m-Xylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
o-Xylene	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
Total Xylenes	ug/L	<0.20	0.20	7640033	<0.20	0.20	7640033	<0.20	0.20	7640033
F1 (C6-C10)	ug/L	<25	25	7640033	<25	25	7640033	<25	25	7640033
F1 (C6-C10) - BTEX	ug/L	<25	25	7640033	<25	25	7640033	<25	25	7640033
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	7643884				<100	100	7643884
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	7643884				<200	200	7643884
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	7643884				<200	200	7643884
Reached Baseline at C50	ug/L	Yes		7643884				Yes		7643884
Surrogate Recovery (%)										
o-Terphenyl	%	89		7643884				92		7643884
4-Bromofluorobenzene	%	85		7640033	84		7640033	87		7640033
D4-1,2-Dichloroethane	%	94		7640033	91		7640033	98		7640033
D8-Toluene	%	108		7640033	110		7640033	106		7640033

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

Bureau Veritas ID: QXT935
Sample ID: BHMW125 SS-7
Matrix: Soil

Collected: 2021/10/06
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637968	N/A	2021/10/20	Automated Statchk
1,3-Dichloropropene Sum	CALC	7638071	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7644377	2021/10/18	2021/10/19	Ravinder Gaidhu
Moisture	BAL	7639393	N/A	2021/10/15	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7646770	2021/10/19	2021/10/20	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7642664	N/A	2021/10/19	Anna Gabrielyan

Bureau Veritas ID: QXT936
Sample ID: BHMW126 SS-1
Matrix: Soil

Collected: 2021/10/06
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637968	N/A	2021/10/20	Automated Statchk
1,3-Dichloropropene Sum	CALC	7638071	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7644377	2021/10/18	2021/10/19	Ravinder Gaidhu
Moisture	BAL	7639393	N/A	2021/10/15	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7646770	2021/10/19	2021/10/20	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7642664	N/A	2021/10/19	Anna Gabrielyan

Bureau Veritas ID: QXT937
Sample ID: BHMW127 SS-6
Matrix: Soil

Collected: 2021/10/06
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637968	N/A	2021/10/20	Automated Statchk
1,3-Dichloropropene Sum	CALC	7638071	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7644377	2021/10/18	2021/10/19	Ravinder Gaidhu
Moisture	BAL	7639393	N/A	2021/10/15	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7646770	2021/10/19	2021/10/20	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7642664	N/A	2021/10/19	Anna Gabrielyan

Bureau Veritas ID: QXT938
Sample ID: BHMW125
Matrix: Water

Collected: 2021/10/12
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637229	N/A	2021/10/19	Automated Statchk
1,3-Dichloropropene Sum	CALC	7637343	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7643884	2021/10/18	2021/10/19	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7643885	2021/10/18	2021/10/19	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7640033	N/A	2021/10/20	Blair Gannon

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

TEST SUMMARY

Bureau Veritas ID: QXT938 Dup
Sample ID: BHMW125
Matrix: Water

Collected: 2021/10/12
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7640033	N/A	2021/10/20	Blair Gannon

Bureau Veritas ID: QXT939
Sample ID: BHM127
Matrix: Water

Collected: 2021/10/12
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7637229	N/A	2021/10/19	Automated Statchk
1,3-Dichloropropene Sum	CALC	7637343	N/A	2021/10/20	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7643884	2021/10/18	2021/10/19	Ravinder Gaidhu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7643885	2021/10/18	2021/10/19	Jonghan Yoon
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7640033	N/A	2021/10/20	Blair Gannon

Bureau Veritas ID: QXT940
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2021/10/12
Shipped:
Received: 2021/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7640033	N/A	2021/10/20	Blair Gannon

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C

Cooler custody seal was present and intact.

All 40 ml vials for F1BTEX and VOC analyses contained visible sediment.
All 100 ml amber glass bottles for F2-F4 and PAH analyses contained visible sediment, which was included in the extraction.

Sample QXT936 [BHMW126 SS-1] : PAH ANALYSIS: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7639393	MBW	RPD	Moisture	2021/10/15	15		%	20
7640033	BG1	Matrix Spike [QXT938-03]	4-Bromofluorobenzene	2021/10/19		98	%	70 - 130
			D4-1,2-Dichloroethane	2021/10/19		94	%	70 - 130
			D8-Toluene	2021/10/19		106	%	70 - 130
			Acetone (2-Propanone)	2021/10/19		86	%	60 - 140
			Benzene	2021/10/19		91	%	70 - 130
			Bromodichloromethane	2021/10/19		94	%	70 - 130
			Bromoform	2021/10/19		87	%	70 - 130
			Bromomethane	2021/10/19		95	%	60 - 140
			Carbon Tetrachloride	2021/10/19		101	%	70 - 130
			Chlorobenzene	2021/10/19		97	%	70 - 130
			Chloroform	2021/10/19		97	%	70 - 130
			Dibromochloromethane	2021/10/19		90	%	70 - 130
			1,2-Dichlorobenzene	2021/10/19		97	%	70 - 130
			1,3-Dichlorobenzene	2021/10/19		108	%	70 - 130
			1,4-Dichlorobenzene	2021/10/19		96	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/10/19		91	%	60 - 140
			1,1-Dichloroethane	2021/10/19		94	%	70 - 130
			1,2-Dichloroethane	2021/10/19		87	%	70 - 130
			1,1-Dichloroethylene	2021/10/19		102	%	70 - 130
			cis-1,2-Dichloroethylene	2021/10/19		97	%	70 - 130
			trans-1,2-Dichloroethylene	2021/10/19		99	%	70 - 130
			1,2-Dichloropropane	2021/10/19		92	%	70 - 130
			cis-1,3-Dichloropropene	2021/10/19		83	%	70 - 130
			trans-1,3-Dichloropropene	2021/10/19		90	%	70 - 130
			Ethylbenzene	2021/10/19		95	%	70 - 130
			Ethylene Dibromide	2021/10/19		91	%	70 - 130
			Hexane	2021/10/19		103	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/10/19		98	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/10/19		82	%	60 - 140
			Methyl Isobutyl Ketone	2021/10/19		66 (1)	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/10/19		84	%	70 - 130
			Styrene	2021/10/19		96	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/10/19		98	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/10/19		88	%	70 - 130
			Tetrachloroethylene	2021/10/19		100	%	70 - 130
			Toluene	2021/10/19		91	%	70 - 130
			1,1,1-Trichloroethane	2021/10/19		104	%	70 - 130
			1,1,2-Trichloroethane	2021/10/19		100	%	70 - 130
			Trichloroethylene	2021/10/19		106	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/10/19		104	%	70 - 130
			Vinyl Chloride	2021/10/19		98	%	70 - 130
			p+m-Xylene	2021/10/19		92	%	70 - 130
			o-Xylene	2021/10/19		90	%	70 - 130
			F1 (C6-C10)	2021/10/19		117	%	60 - 140
7640033	BG1	Spiked Blank	4-Bromofluorobenzene	2021/10/19		98	%	70 - 130
			D4-1,2-Dichloroethane	2021/10/19		102	%	70 - 130
			D8-Toluene	2021/10/19		102	%	70 - 130
			Acetone (2-Propanone)	2021/10/19		95	%	60 - 140
			Benzene	2021/10/19		88	%	70 - 130
			Bromodichloromethane	2021/10/19		97	%	70 - 130
			Bromoform	2021/10/19		92	%	70 - 130
			Bromomethane	2021/10/19		94	%	60 - 140
			Carbon Tetrachloride	2021/10/19		93	%	70 - 130

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chlorobenzene	2021/10/19		94	%	70 - 130
			Chloroform	2021/10/19		96	%	70 - 130
			Dibromochloromethane	2021/10/19		92	%	70 - 130
			1,2-Dichlorobenzene	2021/10/19		94	%	70 - 130
			1,3-Dichlorobenzene	2021/10/19		98	%	70 - 130
			1,4-Dichlorobenzene	2021/10/19		94	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2021/10/19		83	%	60 - 140
			1,1-Dichloroethane	2021/10/19		92	%	70 - 130
			1,2-Dichloroethane	2021/10/19		93	%	70 - 130
			1,1-Dichloroethylene	2021/10/19		95	%	70 - 130
			cis-1,2-Dichloroethylene	2021/10/19		96	%	70 - 130
			trans-1,2-Dichloroethylene	2021/10/19		93	%	70 - 130
			1,2-Dichloropropane	2021/10/19		93	%	70 - 130
			cis-1,3-Dichloropropene	2021/10/19		86	%	70 - 130
			trans-1,3-Dichloropropene	2021/10/19		92	%	70 - 130
			Ethylbenzene	2021/10/19		87	%	70 - 130
			Ethylene Dibromide	2021/10/19		96	%	70 - 130
			Hexane	2021/10/19		95	%	70 - 130
			Methylene Chloride(Dichloromethane)	2021/10/19		100	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/10/19		96	%	60 - 140
			Methyl Isobutyl Ketone	2021/10/19		83	%	70 - 130
			Methyl t-butyl ether (MTBE)	2021/10/19		90	%	70 - 130
			Styrene	2021/10/19		95	%	70 - 130
			1,1,1,2-Tetrachloroethane	2021/10/19		96	%	70 - 130
			1,1,2,2-Tetrachloroethane	2021/10/19		95	%	70 - 130
			Tetrachloroethylene	2021/10/19		88	%	70 - 130
			Toluene	2021/10/19		85	%	70 - 130
			1,1,1-Trichloroethane	2021/10/19		96	%	70 - 130
			1,1,2-Trichloroethane	2021/10/19		103	%	70 - 130
			Trichloroethylene	2021/10/19		99	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2021/10/19		95	%	70 - 130
			Vinyl Chloride	2021/10/19		92	%	70 - 130
			p+m-Xylene	2021/10/19		84	%	70 - 130
			o-Xylene	2021/10/19		85	%	70 - 130
			F1 (C6-C10)	2021/10/19		97	%	60 - 140
7640033	BG1	Method Blank	4-Bromofluorobenzene	2021/10/19		90	%	70 - 130
			D4-1,2-Dichloroethane	2021/10/19		109	%	70 - 130
			D8-Toluene	2021/10/19		100	%	70 - 130
			Acetone (2-Propanone)	2021/10/19	<10		ug/L	
			Benzene	2021/10/19	<0.17		ug/L	
			Bromodichloromethane	2021/10/19	<0.50		ug/L	
			Bromoform	2021/10/19	<1.0		ug/L	
			Bromomethane	2021/10/19	<0.50		ug/L	
			Carbon Tetrachloride	2021/10/19	<0.20		ug/L	
			Chlorobenzene	2021/10/19	<0.20		ug/L	
			Chloroform	2021/10/19	<0.20		ug/L	
			Dibromochloromethane	2021/10/19	<0.50		ug/L	
			1,2-Dichlorobenzene	2021/10/19	<0.50		ug/L	
			1,3-Dichlorobenzene	2021/10/19	<0.50		ug/L	
			1,4-Dichlorobenzene	2021/10/19	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2021/10/19	<1.0		ug/L	
			1,1-Dichloroethane	2021/10/19	<0.20		ug/L	
			1,2-Dichloroethane	2021/10/19	<0.50		ug/L	
			1,1-Dichloroethylene	2021/10/19	<0.20		ug/L	

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,2-Dichloroethylene	2021/10/19	<0.50		ug/L	
			trans-1,2-Dichloroethylene	2021/10/19	<0.50		ug/L	
			1,2-Dichloropropane	2021/10/19	<0.20		ug/L	
			cis-1,3-Dichloropropene	2021/10/19	<0.30		ug/L	
			trans-1,3-Dichloropropene	2021/10/19	<0.40		ug/L	
			Ethylbenzene	2021/10/19	<0.20		ug/L	
			Ethylene Dibromide	2021/10/19	<0.20		ug/L	
			Hexane	2021/10/19	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2021/10/19	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2021/10/19	<10		ug/L	
			Methyl Isobutyl Ketone	2021/10/19	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2021/10/19	<0.50		ug/L	
			Styrene	2021/10/19	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2021/10/19	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2021/10/19	<0.50		ug/L	
			Tetrachloroethylene	2021/10/19	<0.20		ug/L	
			Toluene	2021/10/19	<0.20		ug/L	
			1,1,1-Trichloroethane	2021/10/19	<0.20		ug/L	
			1,1,2-Trichloroethane	2021/10/19	<0.50		ug/L	
			Trichloroethylene	2021/10/19	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2021/10/19	<0.50		ug/L	
			Vinyl Chloride	2021/10/19	<0.20		ug/L	
			p+m-Xylene	2021/10/19	<0.20		ug/L	
			o-Xylene	2021/10/19	<0.20		ug/L	
			Total Xylenes	2021/10/19	<0.20		ug/L	
			F1 (C6-C10)	2021/10/19	<25		ug/L	
			F1 (C6-C10) - BTEX	2021/10/19	<25		ug/L	
7640033	BG1	RPD [QXT938-03]	Acetone (2-Propanone)	2021/10/20	NC		%	30
			Benzene	2021/10/20	NC		%	30
			Bromodichloromethane	2021/10/20	NC		%	30
			Bromoform	2021/10/20	NC		%	30
			Bromomethane	2021/10/20	NC		%	30
			Carbon Tetrachloride	2021/10/20	NC		%	30
			Chlorobenzene	2021/10/20	NC		%	30
			Chloroform	2021/10/20	NC		%	30
			Dibromochloromethane	2021/10/20	NC		%	30
			1,2-Dichlorobenzene	2021/10/20	NC		%	30
			1,3-Dichlorobenzene	2021/10/20	NC		%	30
			1,4-Dichlorobenzene	2021/10/20	NC		%	30
			Dichlorodifluoromethane (FREON 12)	2021/10/20	NC		%	30
			1,1-Dichloroethane	2021/10/20	NC		%	30
			1,2-Dichloroethane	2021/10/20	NC		%	30
			1,1-Dichloroethylene	2021/10/20	NC		%	30
			cis-1,2-Dichloroethylene	2021/10/20	NC		%	30
			trans-1,2-Dichloroethylene	2021/10/20	NC		%	30
			1,2-Dichloropropane	2021/10/20	NC		%	30
			cis-1,3-Dichloropropene	2021/10/20	NC		%	30
			trans-1,3-Dichloropropene	2021/10/20	NC		%	30
			Ethylbenzene	2021/10/20	NC		%	30
			Ethylene Dibromide	2021/10/20	NC		%	30
			Hexane	2021/10/20	NC		%	30
			Methylene Chloride(Dichloromethane)	2021/10/20	NC		%	30
			Methyl Ethyl Ketone (2-Butanone)	2021/10/20	NC		%	30
			Methyl Isobutyl Ketone	2021/10/20	NC		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Methyl t-butyl ether (MTBE)	2021/10/20	NC		%	30
			Styrene	2021/10/20	NC		%	30
			1,1,1,2-Tetrachloroethane	2021/10/20	NC		%	30
			1,1,2,2-Tetrachloroethane	2021/10/20	NC		%	30
			Tetrachloroethylene	2021/10/20	NC		%	30
			Toluene	2021/10/20	NC		%	30
			1,1,1-Trichloroethane	2021/10/20	NC		%	30
			1,1,2-Trichloroethane	2021/10/20	NC		%	30
			Trichloroethylene	2021/10/20	NC		%	30
			Trichlorofluoromethane (FREON 11)	2021/10/20	NC		%	30
			Vinyl Chloride	2021/10/20	NC		%	30
			p+m-Xylene	2021/10/20	NC		%	30
			o-Xylene	2021/10/20	NC		%	30
			Total Xylenes	2021/10/20	NC		%	30
			F1 (C6-C10)	2021/10/20	NC		%	30
			F1 (C6-C10) - BTEX	2021/10/20	NC		%	30
7642664	AYA	Matrix Spike	4-Bromofluorobenzene	2021/10/18		109	%	60 - 140
			D10-o-Xylene	2021/10/18		112	%	60 - 130
			D4-1,2-Dichloroethane	2021/10/18		86	%	60 - 140
			D8-Toluene	2021/10/18		105	%	60 - 140
			Acetone (2-Propanone)	2021/10/18		83	%	60 - 140
			Benzene	2021/10/18		86	%	60 - 140
			Bromodichloromethane	2021/10/18		90	%	60 - 140
			Bromoform	2021/10/18		85	%	60 - 140
			Bromomethane	2021/10/18		92	%	60 - 140
			Carbon Tetrachloride	2021/10/18		93	%	60 - 140
			Chlorobenzene	2021/10/18		100	%	60 - 140
			Chloroform	2021/10/18		87	%	60 - 140
			Dibromochloromethane	2021/10/18		75	%	60 - 140
			1,2-Dichlorobenzene	2021/10/18		98	%	60 - 140
			1,3-Dichlorobenzene	2021/10/18		106	%	60 - 140
			1,4-Dichlorobenzene	2021/10/18		112	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2021/10/18		95	%	60 - 140
			1,1-Dichloroethane	2021/10/18		84	%	60 - 140
			1,2-Dichloroethane	2021/10/18		81	%	60 - 140
			1,1-Dichloroethylene	2021/10/18		96	%	60 - 140
			cis-1,2-Dichloroethylene	2021/10/18		94	%	60 - 140
			trans-1,2-Dichloroethylene	2021/10/18		93	%	60 - 140
			1,2-Dichloropropane	2021/10/18		88	%	60 - 140
			cis-1,3-Dichloropropene	2021/10/18		102	%	60 - 140
			trans-1,3-Dichloropropene	2021/10/18		105	%	60 - 140
			Ethylbenzene	2021/10/18		103	%	60 - 140
			Ethylene Dibromide	2021/10/18		84	%	60 - 140
			Hexane	2021/10/18		104	%	60 - 140
			Methylene Chloride(Dichloromethane)	2021/10/18		86	%	60 - 140
			Methyl Ethyl Ketone (2-Butanone)	2021/10/18		96	%	60 - 140
			Methyl Isobutyl Ketone	2021/10/18		79	%	60 - 140
			Methyl t-butyl ether (MTBE)	2021/10/18		98	%	60 - 140
			Styrene	2021/10/18		90	%	60 - 140
			1,1,1,2-Tetrachloroethane	2021/10/18		90	%	60 - 140
			1,1,2,2-Tetrachloroethane	2021/10/18		78	%	60 - 140
			Tetrachloroethylene	2021/10/18		88	%	60 - 140
			Toluene	2021/10/18		95	%	60 - 140
			1,1,1-Trichloroethane	2021/10/18		95	%	60 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,2-Trichloroethane	2021/10/18		85	%	60 - 140
			Trichloroethylene	2021/10/18		102	%	60 - 140
			Trichlorofluoromethane (FREON 11)	2021/10/18		95	%	60 - 140
			Vinyl Chloride	2021/10/18		94	%	60 - 140
			p+m-Xylene	2021/10/18		110	%	60 - 140
			o-Xylene	2021/10/18		103	%	60 - 140
			F1 (C6-C10)	2021/10/18		88	%	60 - 140
7642664	AYA	Spiked Blank	4-Bromofluorobenzene	2021/10/18		109	%	60 - 140
			D10-o-Xylene	2021/10/18		113	%	60 - 130
			D4-1,2-Dichloroethane	2021/10/18		89	%	60 - 140
			D8-Toluene	2021/10/18		105	%	60 - 140
			Acetone (2-Propanone)	2021/10/18		84	%	60 - 140
			Benzene	2021/10/18		84	%	60 - 130
			Bromodichloromethane	2021/10/18		90	%	60 - 130
			Bromoform	2021/10/18		86	%	60 - 130
			Bromomethane	2021/10/18		84	%	60 - 140
			Carbon Tetrachloride	2021/10/18		92	%	60 - 130
			Chlorobenzene	2021/10/18		97	%	60 - 130
			Chloroform	2021/10/18		87	%	60 - 130
			Dibromochloromethane	2021/10/18		76	%	60 - 130
			1,2-Dichlorobenzene	2021/10/18		97	%	60 - 130
			1,3-Dichlorobenzene	2021/10/18		102	%	60 - 130
			1,4-Dichlorobenzene	2021/10/18		108	%	60 - 130
			Dichlorodifluoromethane (FREON 12)	2021/10/18		64	%	60 - 140
			1,1-Dichloroethane	2021/10/18		83	%	60 - 130
			1,2-Dichloroethane	2021/10/18		81	%	60 - 130
			1,1-Dichloroethylene	2021/10/18		92	%	60 - 130
			cis-1,2-Dichloroethylene	2021/10/18		93	%	60 - 130
			trans-1,2-Dichloroethylene	2021/10/18		92	%	60 - 130
			1,2-Dichloropropane	2021/10/18		88	%	60 - 130
			cis-1,3-Dichloropropene	2021/10/18		92	%	60 - 130
			trans-1,3-Dichloropropene	2021/10/18		95	%	60 - 130
			Ethylbenzene	2021/10/18		97	%	60 - 130
			Ethylene Dibromide	2021/10/18		84	%	60 - 130
			Hexane	2021/10/18		99	%	60 - 130
			Methylene Chloride(Dichloromethane)	2021/10/18		86	%	60 - 130
			Methyl Ethyl Ketone (2-Butanone)	2021/10/18		96	%	60 - 140
			Methyl Isobutyl Ketone	2021/10/18		77	%	60 - 130
			Methyl t-butyl ether (MTBE)	2021/10/18		92	%	60 - 130
			Styrene	2021/10/18		87	%	60 - 130
			1,1,1,2-Tetrachloroethane	2021/10/18		90	%	60 - 130
			1,1,2,2-Tetrachloroethane	2021/10/18		81	%	60 - 130
			Tetrachloroethylene	2021/10/18		88	%	60 - 130
			Toluene	2021/10/18		93	%	60 - 130
			1,1,1-Trichloroethane	2021/10/18		94	%	60 - 130
			1,1,2-Trichloroethane	2021/10/18		86	%	60 - 130
			Trichloroethylene	2021/10/18		100	%	60 - 130
			Trichlorofluoromethane (FREON 11)	2021/10/18		91	%	60 - 130
			Vinyl Chloride	2021/10/18		84	%	60 - 130
			p+m-Xylene	2021/10/18		102	%	60 - 130
			o-Xylene	2021/10/18		99	%	60 - 130
			F1 (C6-C10)	2021/10/18		96	%	80 - 120
7642664	AYA	Method Blank	4-Bromofluorobenzene	2021/10/18		96	%	60 - 140
			D10-o-Xylene	2021/10/18		107	%	60 - 130

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			D4-1,2-Dichloroethane	2021/10/18		91	%	60 - 140
			D8-Toluene	2021/10/18		95	%	60 - 140
			Acetone (2-Propanone)	2021/10/18	<0.49		ug/g	
			Benzene	2021/10/18	<0.0060		ug/g	
			Bromodichloromethane	2021/10/18	<0.040		ug/g	
			Bromoform	2021/10/18	<0.040		ug/g	
			Bromomethane	2021/10/18	<0.040		ug/g	
			Carbon Tetrachloride	2021/10/18	<0.040		ug/g	
			Chlorobenzene	2021/10/18	<0.040		ug/g	
			Chloroform	2021/10/18	<0.040		ug/g	
			Dibromochloromethane	2021/10/18	<0.040		ug/g	
			1,2-Dichlorobenzene	2021/10/18	<0.040		ug/g	
			1,3-Dichlorobenzene	2021/10/18	<0.040		ug/g	
			1,4-Dichlorobenzene	2021/10/18	<0.040		ug/g	
			Dichlorodifluoromethane (FREON 12)	2021/10/18	<0.040		ug/g	
			1,1-Dichloroethane	2021/10/18	<0.040		ug/g	
			1,2-Dichloroethane	2021/10/18	<0.049		ug/g	
			1,1-Dichloroethylene	2021/10/18	<0.040		ug/g	
			cis-1,2-Dichloroethylene	2021/10/18	<0.040		ug/g	
			trans-1,2-Dichloroethylene	2021/10/18	<0.040		ug/g	
			1,2-Dichloropropane	2021/10/18	<0.040		ug/g	
			cis-1,3-Dichloropropene	2021/10/18	<0.030		ug/g	
			trans-1,3-Dichloropropene	2021/10/18	<0.040		ug/g	
			Ethylbenzene	2021/10/18	<0.010		ug/g	
			Ethylene Dibromide	2021/10/18	<0.040		ug/g	
			Hexane	2021/10/18	<0.040		ug/g	
			Methylene Chloride(Dichloromethane)	2021/10/18	<0.049		ug/g	
			Methyl Ethyl Ketone (2-Butanone)	2021/10/18	<0.40		ug/g	
			Methyl Isobutyl Ketone	2021/10/18	<0.40		ug/g	
			Methyl t-butyl ether (MTBE)	2021/10/18	<0.040		ug/g	
			Styrene	2021/10/18	<0.040		ug/g	
			1,1,1,2-Tetrachloroethane	2021/10/18	<0.040		ug/g	
			1,1,2,2-Tetrachloroethane	2021/10/18	<0.040		ug/g	
			Tetrachloroethylene	2021/10/18	<0.040		ug/g	
			Toluene	2021/10/18	<0.020		ug/g	
			1,1,1-Trichloroethane	2021/10/18	<0.040		ug/g	
			1,1,2-Trichloroethane	2021/10/18	<0.040		ug/g	
			Trichloroethylene	2021/10/18	<0.010		ug/g	
			Trichlorofluoromethane (FREON 11)	2021/10/18	<0.040		ug/g	
			Vinyl Chloride	2021/10/18	<0.019		ug/g	
			p+m-Xylene	2021/10/18	<0.020		ug/g	
			o-Xylene	2021/10/18	<0.020		ug/g	
			Total Xylenes	2021/10/18	<0.020		ug/g	
			F1 (C6-C10)	2021/10/18	<10		ug/g	
			F1 (C6-C10) - BTEX	2021/10/18	<10		ug/g	
7642664	AYA	RPD	Acetone (2-Propanone)	2021/10/18	NC		%	50
			Benzene	2021/10/18	NC		%	50
			Bromodichloromethane	2021/10/18	NC		%	50
			Bromoform	2021/10/18	NC		%	50
			Bromomethane	2021/10/18	NC		%	50
			Carbon Tetrachloride	2021/10/18	NC		%	50
			Chlorobenzene	2021/10/18	NC		%	50
			Chloroform	2021/10/18	NC		%	50
			Dibromochloromethane	2021/10/18	NC		%	50

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-Dichlorobenzene	2021/10/18	NC		%	50
			1,3-Dichlorobenzene	2021/10/18	NC		%	50
			1,4-Dichlorobenzene	2021/10/18	NC		%	50
			Dichlorodifluoromethane (FREON 12)	2021/10/18	NC		%	50
			1,1-Dichloroethane	2021/10/18	NC		%	50
			1,2-Dichloroethane	2021/10/18	NC		%	50
			1,1-Dichloroethylene	2021/10/18	NC		%	50
			cis-1,2-Dichloroethylene	2021/10/18	NC		%	50
			trans-1,2-Dichloroethylene	2021/10/18	NC		%	50
			1,2-Dichloropropane	2021/10/18	NC		%	50
			cis-1,3-Dichloropropene	2021/10/18	NC		%	50
			trans-1,3-Dichloropropene	2021/10/18	NC		%	50
			Ethylbenzene	2021/10/18	NC		%	50
			Ethylene Dibromide	2021/10/18	NC		%	50
			Hexane	2021/10/18	NC		%	50
			Methylene Chloride(Dichloromethane)	2021/10/18	NC		%	50
			Methyl Ethyl Ketone (2-Butanone)	2021/10/18	NC		%	50
			Methyl Isobutyl Ketone	2021/10/18	NC		%	50
			Methyl t-butyl ether (MTBE)	2021/10/18	NC		%	50
			Styrene	2021/10/18	NC		%	50
			1,1,1,2-Tetrachloroethane	2021/10/18	NC		%	50
			1,1,2,2-Tetrachloroethane	2021/10/18	NC		%	50
			Tetrachloroethylene	2021/10/18	NC		%	50
			Toluene	2021/10/18	0.41		%	50
			1,1,1-Trichloroethane	2021/10/18	NC		%	50
			1,1,2-Trichloroethane	2021/10/18	NC		%	50
			Trichloroethylene	2021/10/18	NC		%	50
			Trichlorofluoromethane (FREON 11)	2021/10/18	NC		%	50
			Vinyl Chloride	2021/10/18	NC		%	50
			p+m-Xylene	2021/10/18	NC		%	50
			o-Xylene	2021/10/18	NC		%	50
			Total Xylenes	2021/10/18	NC		%	50
			F1 (C6-C10)	2021/10/18	NC		%	30
			F1 (C6-C10) - BTEX	2021/10/18	NC		%	30
7643884	RGA	Matrix Spike	o-Terphenyl	2021/10/18		91	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/18		99	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/10/18		102	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/10/18		104	%	60 - 130
7643884	RGA	Spiked Blank	o-Terphenyl	2021/10/18		94	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/18		103	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2021/10/18		106	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2021/10/18		107	%	60 - 130
7643884	RGA	Method Blank	o-Terphenyl	2021/10/18		91	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/18	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2021/10/18	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2021/10/18	<200		ug/L	
7643884	RGA	RPD	F2 (C10-C16 Hydrocarbons)	2021/10/19	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2021/10/19	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2021/10/19	NC		%	30
7643885	JYO	Matrix Spike	D10-Anthracene	2021/10/19		110	%	50 - 130
			D14-Terphenyl (FS)	2021/10/19		109	%	50 - 130
			D8-Acenaphthylene	2021/10/19		96	%	50 - 130
			Acenaphthene	2021/10/19		91	%	50 - 130
			Acenaphthylene	2021/10/19		88	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Anthracene	2021/10/19		103	%	50 - 130
			Benzo(a)anthracene	2021/10/19		102	%	50 - 130
			Benzo(a)pyrene	2021/10/19		87	%	50 - 130
			Benzo(b/j)fluoranthene	2021/10/19		101	%	50 - 130
			Benzo(g,h,i)perylene	2021/10/19		102	%	50 - 130
			Benzo(k)fluoranthene	2021/10/19		106	%	50 - 130
			Chrysene	2021/10/19		100	%	50 - 130
			Dibenzo(a,h)anthracene	2021/10/19		95	%	50 - 130
			Fluoranthene	2021/10/19		118	%	50 - 130
			Fluorene	2021/10/19		94	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/10/19		102	%	50 - 130
			1-Methylnaphthalene	2021/10/19		97	%	50 - 130
			2-Methylnaphthalene	2021/10/19		91	%	50 - 130
			Naphthalene	2021/10/19		87	%	50 - 130
			Phenanthrene	2021/10/19		100	%	50 - 130
			Pyrene	2021/10/19		115	%	50 - 130
7643885	JYO	Spiked Blank	D10-Anthracene	2021/10/19		104	%	50 - 130
			D14-Terphenyl (FS)	2021/10/19		106	%	50 - 130
			D8-Acenaphthylene	2021/10/19		91	%	50 - 130
			Acenaphthene	2021/10/19		95	%	50 - 130
			Acenaphthylene	2021/10/19		93	%	50 - 130
			Anthracene	2021/10/19		107	%	50 - 130
			Benzo(a)anthracene	2021/10/19		106	%	50 - 130
			Benzo(a)pyrene	2021/10/19		92	%	50 - 130
			Benzo(b/j)fluoranthene	2021/10/19		108	%	50 - 130
			Benzo(g,h,i)perylene	2021/10/19		109	%	50 - 130
			Benzo(k)fluoranthene	2021/10/19		112	%	50 - 130
			Chrysene	2021/10/19		105	%	50 - 130
			Dibenzo(a,h)anthracene	2021/10/19		102	%	50 - 130
			Fluoranthene	2021/10/19		127	%	50 - 130
			Fluorene	2021/10/19		97	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/10/19		110	%	50 - 130
			1-Methylnaphthalene	2021/10/19		100	%	50 - 130
			2-Methylnaphthalene	2021/10/19		92	%	50 - 130
			Naphthalene	2021/10/19		89	%	50 - 130
			Phenanthrene	2021/10/19		104	%	50 - 130
			Pyrene	2021/10/19		121	%	50 - 130
7643885	JYO	Method Blank	D10-Anthracene	2021/10/19		118	%	50 - 130
			D14-Terphenyl (FS)	2021/10/19		115	%	50 - 130
			D8-Acenaphthylene	2021/10/19		93	%	50 - 130
			Acenaphthene	2021/10/19	<0.050		ug/L	
			Acenaphthylene	2021/10/19	<0.050		ug/L	
			Anthracene	2021/10/19	<0.050		ug/L	
			Benzo(a)anthracene	2021/10/19	<0.050		ug/L	
			Benzo(a)pyrene	2021/10/19	<0.0090		ug/L	
			Benzo(b/j)fluoranthene	2021/10/19	<0.050		ug/L	
			Benzo(g,h,i)perylene	2021/10/19	<0.050		ug/L	
			Benzo(k)fluoranthene	2021/10/19	<0.050		ug/L	
			Chrysene	2021/10/19	<0.050		ug/L	
			Dibenzo(a,h)anthracene	2021/10/19	<0.050		ug/L	
			Fluoranthene	2021/10/19	<0.050		ug/L	
			Fluorene	2021/10/19	<0.050		ug/L	
			Indeno(1,2,3-cd)pyrene	2021/10/19	<0.050		ug/L	
			1-Methylnaphthalene	2021/10/19	<0.050		ug/L	

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21

Pinchin Ltd
Client Project #: 285722.003
Sampler Initials: MK

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			2-Methylnaphthalene	2021/10/19	<0.050		ug/L	
			Naphthalene	2021/10/19	<0.050		ug/L	
			Phenanthrene	2021/10/19	<0.030		ug/L	
			Pyrene	2021/10/19	<0.050		ug/L	
7643885	JYO	RPD	Acenaphthene	2021/10/19	NC		%	30
			Acenaphthylene	2021/10/19	NC		%	30
			Anthracene	2021/10/19	NC		%	30
			Benzo(a)anthracene	2021/10/19	NC		%	30
			Benzo(a)pyrene	2021/10/19	NC		%	30
			Benzo(b/j)fluoranthene	2021/10/19	NC		%	30
			Benzo(g,h,i)perylene	2021/10/19	NC		%	30
			Benzo(k)fluoranthene	2021/10/19	NC		%	30
			Chrysene	2021/10/19	NC		%	30
			Dibenzo(a,h)anthracene	2021/10/19	NC		%	30
			Fluoranthene	2021/10/19	NC		%	30
			Fluorene	2021/10/19	NC		%	30
			Indeno(1,2,3-cd)pyrene	2021/10/19	NC		%	30
			1-Methylnaphthalene	2021/10/19	NC		%	30
			2-Methylnaphthalene	2021/10/19	NC		%	30
			Naphthalene	2021/10/19	NC		%	30
			Phenanthrene	2021/10/19	NC		%	30
			Pyrene	2021/10/19	NC		%	30
7644377	RGA	Matrix Spike	o-Terphenyl	2021/10/19		84	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/19		NC	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2021/10/19		NC	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2021/10/19		NC	%	50 - 130
7644377	RGA	Spiked Blank	o-Terphenyl	2021/10/19		85	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/19		88	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2021/10/19		89	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2021/10/19		90	%	80 - 120
7644377	RGA	Method Blank	o-Terphenyl	2021/10/19		86	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2021/10/19	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2021/10/19	<50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2021/10/19	<50		ug/g	
7644377	RGA	RPD	F2 (C10-C16 Hydrocarbons)	2021/10/19	36 (2)		%	30
			F3 (C16-C34 Hydrocarbons)	2021/10/19	39 (2)		%	30
			F4 (C34-C50 Hydrocarbons)	2021/10/19	38 (2)		%	30
7646770	JYO	Matrix Spike	D10-Anthracene	2021/10/20		93	%	50 - 130
			D14-Terphenyl (FS)	2021/10/20		92	%	50 - 130
			D8-Acenaphthylene	2021/10/20		86	%	50 - 130
			Acenaphthene	2021/10/20		98	%	50 - 130
			Acenaphthylene	2021/10/20		95	%	50 - 130
			Anthracene	2021/10/20		102	%	50 - 130
			Benzo(a)anthracene	2021/10/20		107	%	50 - 130
			Benzo(a)pyrene	2021/10/20		94	%	50 - 130
			Benzo(b/j)fluoranthene	2021/10/20		96	%	50 - 130
			Benzo(g,h,i)perylene	2021/10/20		99	%	50 - 130
			Benzo(k)fluoranthene	2021/10/20		118	%	50 - 130
			Chrysene	2021/10/20		105	%	50 - 130
			Dibenzo(a,h)anthracene	2021/10/20		96	%	50 - 130
			Fluoranthene	2021/10/20		103	%	50 - 130
			Fluorene	2021/10/20		104	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/10/20		103	%	50 - 130
			1-Methylnaphthalene	2021/10/20		90	%	50 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			2-Methylnaphthalene	2021/10/20		89	%	50 - 130
			Naphthalene	2021/10/20		76	%	50 - 130
			Phenanthrene	2021/10/20		102	%	50 - 130
			Pyrene	2021/10/20		100	%	50 - 130
7646770	JYO	Spiked Blank	D10-Anthracene	2021/10/20		102	%	50 - 130
			D14-Terphenyl (FS)	2021/10/20		97	%	50 - 130
			D8-Acenaphthylene	2021/10/20		77	%	50 - 130
			Acenaphthene	2021/10/20		101	%	50 - 130
			Acenaphthylene	2021/10/20		100	%	50 - 130
			Anthracene	2021/10/20		114	%	50 - 130
			Benzo(a)anthracene	2021/10/20		112	%	50 - 130
			Benzo(a)pyrene	2021/10/20		99	%	50 - 130
			Benzo(b/j)fluoranthene	2021/10/20		110	%	50 - 130
			Benzo(g,h,i)perylene	2021/10/20		107	%	50 - 130
			Benzo(k)fluoranthene	2021/10/20		112	%	50 - 130
			Chrysene	2021/10/20		116	%	50 - 130
			Dibenzo(a,h)anthracene	2021/10/20		97	%	50 - 130
			Fluoranthene	2021/10/20		110	%	50 - 130
			Fluorene	2021/10/20		109	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/10/20		112	%	50 - 130
			1-Methylnaphthalene	2021/10/20		97	%	50 - 130
			2-Methylnaphthalene	2021/10/20		95	%	50 - 130
			Naphthalene	2021/10/20		77	%	50 - 130
			Phenanthrene	2021/10/20		110	%	50 - 130
			Pyrene	2021/10/20		108	%	50 - 130
7646770	JYO	Method Blank	D10-Anthracene	2021/10/20		108	%	50 - 130
			D14-Terphenyl (FS)	2021/10/20		99	%	50 - 130
			D8-Acenaphthylene	2021/10/20		65	%	50 - 130
			Acenaphthene	2021/10/20	<0.0050		ug/g	
			Acenaphthylene	2021/10/20	<0.0050		ug/g	
			Anthracene	2021/10/20	<0.0050		ug/g	
			Benzo(a)anthracene	2021/10/20	<0.0050		ug/g	
			Benzo(a)pyrene	2021/10/20	<0.0050		ug/g	
			Benzo(b/j)fluoranthene	2021/10/20	<0.0050		ug/g	
			Benzo(g,h,i)perylene	2021/10/20	<0.0050		ug/g	
			Benzo(k)fluoranthene	2021/10/20	<0.0050		ug/g	
			Chrysene	2021/10/20	<0.0050		ug/g	
			Dibenzo(a,h)anthracene	2021/10/20	<0.0050		ug/g	
			Fluoranthene	2021/10/20	<0.0050		ug/g	
			Fluorene	2021/10/20	<0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2021/10/20	<0.0050		ug/g	
			1-Methylnaphthalene	2021/10/20	<0.0050		ug/g	
			2-Methylnaphthalene	2021/10/20	<0.0050		ug/g	
			Naphthalene	2021/10/20	<0.0050		ug/g	
			Phenanthrene	2021/10/20	<0.0050		ug/g	
			Pyrene	2021/10/20	<0.0050		ug/g	
7646770	JYO	RPD	Acenaphthene	2021/10/20	NC		%	40
			Acenaphthylene	2021/10/20	NC		%	40
			Anthracene	2021/10/20	NC		%	40
			Benzo(a)anthracene	2021/10/20	NC		%	40
			Benzo(a)pyrene	2021/10/20	NC		%	40
			Benzo(b/j)fluoranthene	2021/10/20	NC		%	40
			Benzo(g,h,i)perylene	2021/10/20	NC		%	40
			Benzo(k)fluoranthene	2021/10/20	NC		%	40

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chrysene	2021/10/20	NC		%	40
			Dibenzo(a,h)anthracene	2021/10/20	NC		%	40
			Fluoranthene	2021/10/20	NC		%	40
			Fluorene	2021/10/20	NC		%	40
			Indeno(1,2,3-cd)pyrene	2021/10/20	NC		%	40
			1-Methylnaphthalene	2021/10/20	NC		%	40
			2-Methylnaphthalene	2021/10/20	NC		%	40
			Naphthalene	2021/10/20	NC		%	40
			Phenanthrene	2021/10/20	NC		%	40
			Pyrene	2021/10/20	NC		%	40

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Affix Job Label Here

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5
Page 1 of 1

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

Bottle Types

	Sample ID	All	Inorganics					Organics											Hydrocarbons							Volatiles				Other
			Cr/VI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/ Herb 1 of 2	Pest/ Herb 2 of 2	SVOC/ ABN 1 of 2	SVOC/ ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	BHMW125	TS																												
2	BHM127	TS																												
3	TRIP BLANK	TS																												
4																														
5																														
6																														
7																														
8																														
9																														
10																														

Comments:

Legend:	
P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print) [signature] / L MCLEAN

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#982 Pinchin Ltd	Company Name		Quotation #	A70927	BV Labs Job #:	Bottle Order #:
Attention	Accounts Payable	Attention	Matt, Ryan, Mike	P.O. #			832329
Address	1 Hines Road Suite 200	Address		Project	285722.003	COC #:	Project Manager:
	Kanata ON K2K 3C7			Project Name		C#832329-06-01	Antonella Brasil
Tel	(613) 592-3387 Fax (613) 592-5897	Tel	Fax	Site #			
Email	ap@pinchin.com	Email	mkosiw@Pinchin.com, rlaronde@pinchin.com; mryan@	Sampled By	M. Kosiw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☒ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☒ Coarse ☒ Table 3 ☐ Agri/Other ☒ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? N

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required ___ Time Required ___
Rush Confirmation Number ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Metals & Inorganics Pkg (Soil)	O.Reg 153 VOCs by HS & F1-F4 (Soil)	O.Reg 153 PCBs (Soil)	O.Reg 153 PAHs (Soil)	O.Reg 153 Semivolatiles Package (Soil)	Acid Extractables by GC/MS	O.Reg 153 OC Pesticides (Soil)				# of Bottles	Comments
1		BHMW125 SS-7	Oct 6 2021		Soil			X		X							2	PHCs F1-F4 VOCs
2		BHMW125 SS-1	↓		↓			X		X							2	PAHs
3		BHMW127 SS6	↓		↓			X		X							2	↓
4																		
5		BHMW125	Oct 12		GW			X		X							5	PHCs, VOCs, PAHs
6		BHM127	↓		↓			X		X							5	↓
7		Trip Blank	↓		↓			X									2	Trip Blank VOCs / F1
8																		
9																		
10																		

13-Oct-21 16:20
Antonella Brasil
C1T8290
ASD ENV-1528

RECEIVED IN OTTAWA
On Ice 2021/10/13

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
M. Kosiw	Oct 13 2021	930 Am	Aisling Mulcahy	2021/10/13	16:20
				2021/10/14	04:00

Time Sensitive

Laboratory Use Only			
Temperature (°C) on Recei	Custody Seal	Yes	No
6, 6, 6	Present	Y	
	Intact	Y	

White: BV Labs Yellow: Client

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

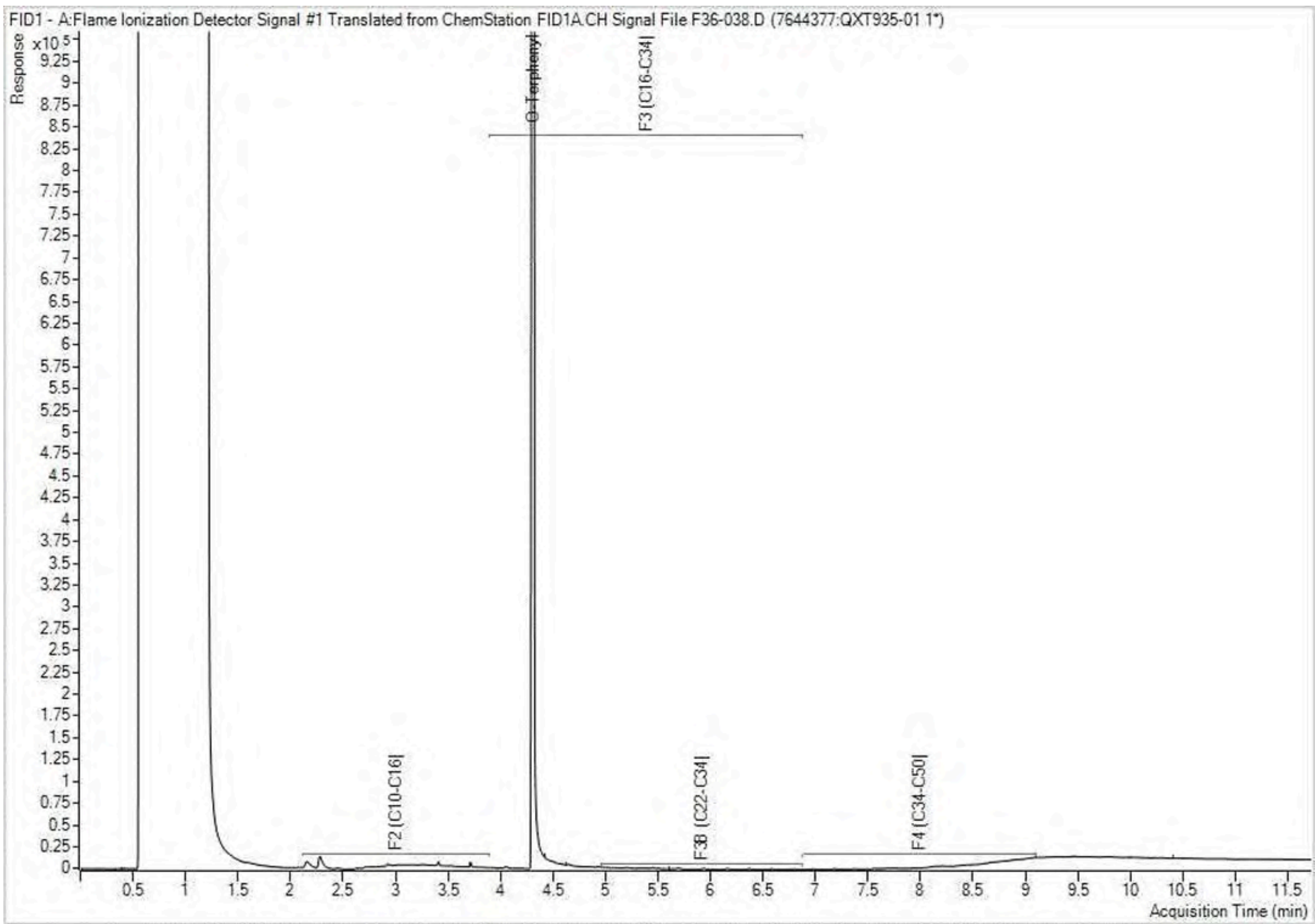
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

7/6/6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

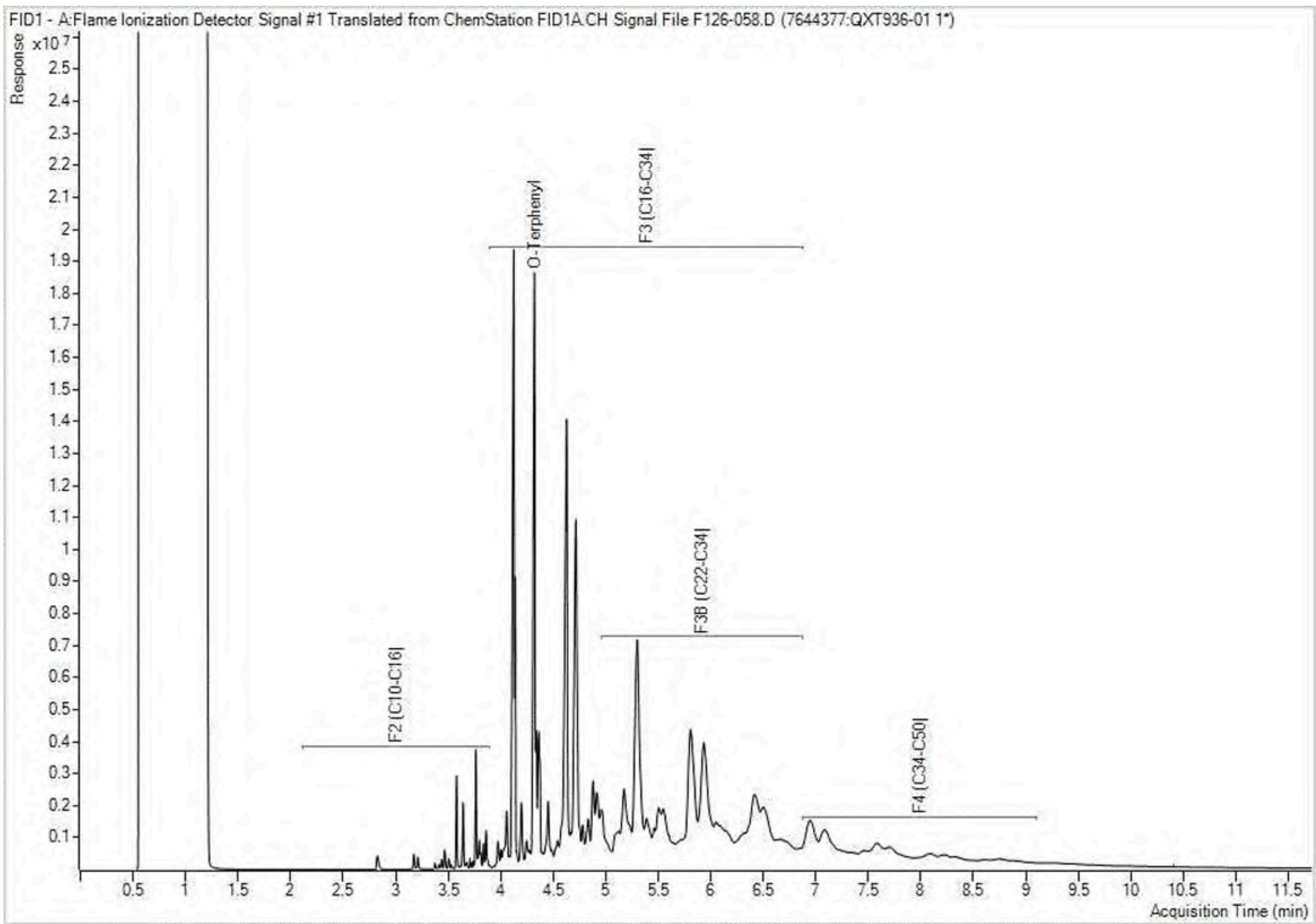


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21
Bureau Veritas Sample: QXT936

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW126 SS-1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

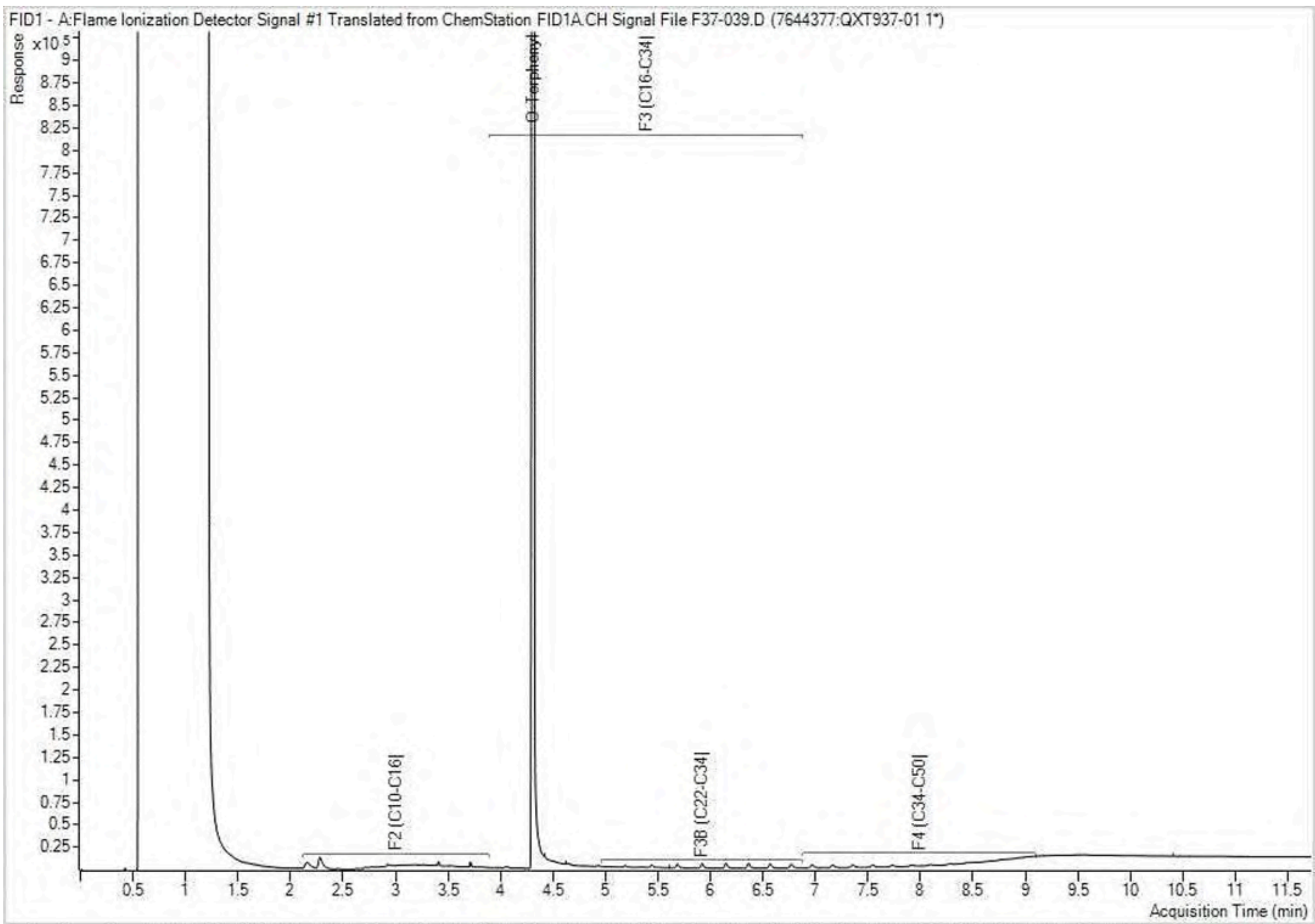


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21
Bureau Veritas Sample: QXT937

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW127 SS-6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

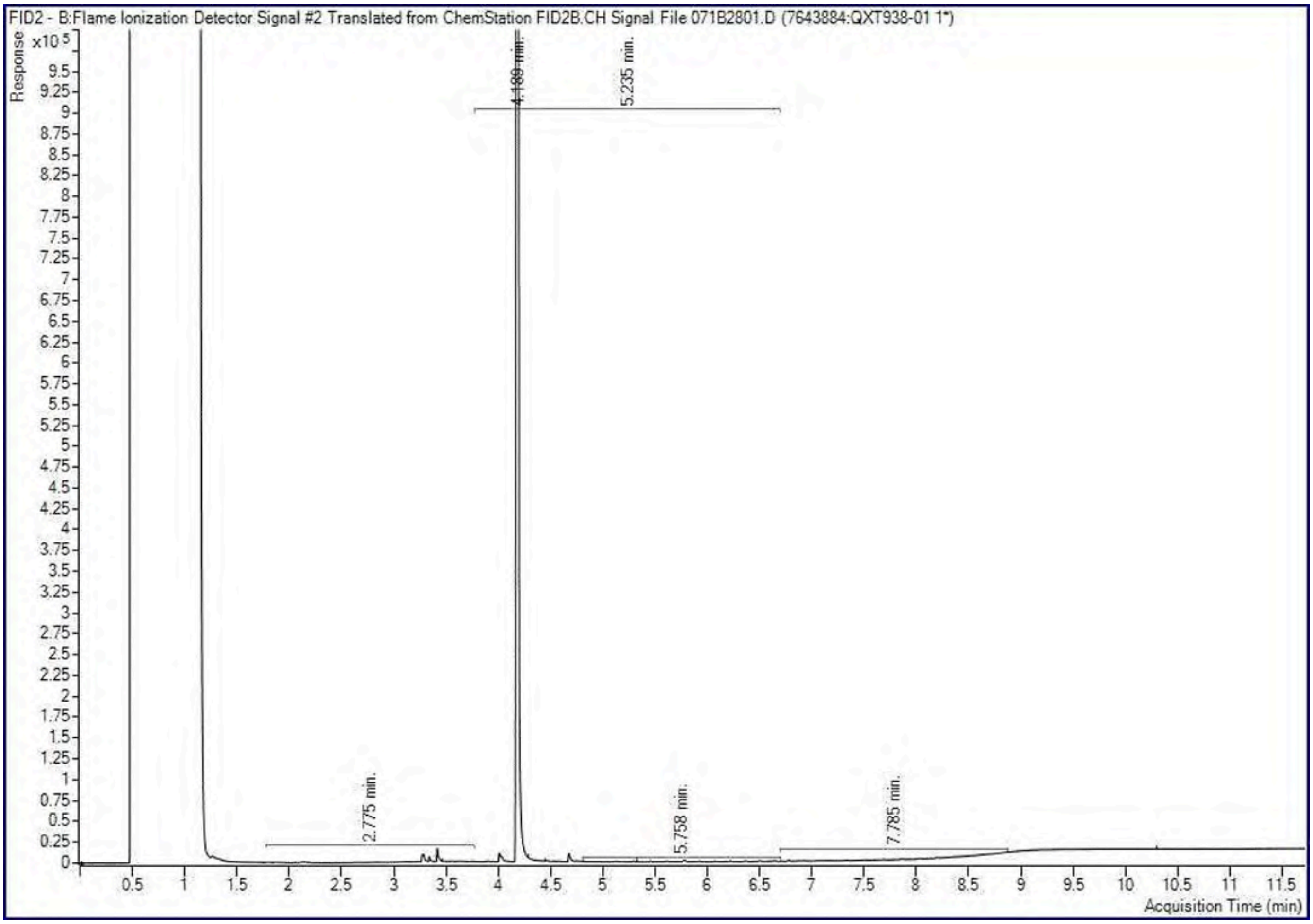


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21
Bureau Veritas Sample: QXT938

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHMW125

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

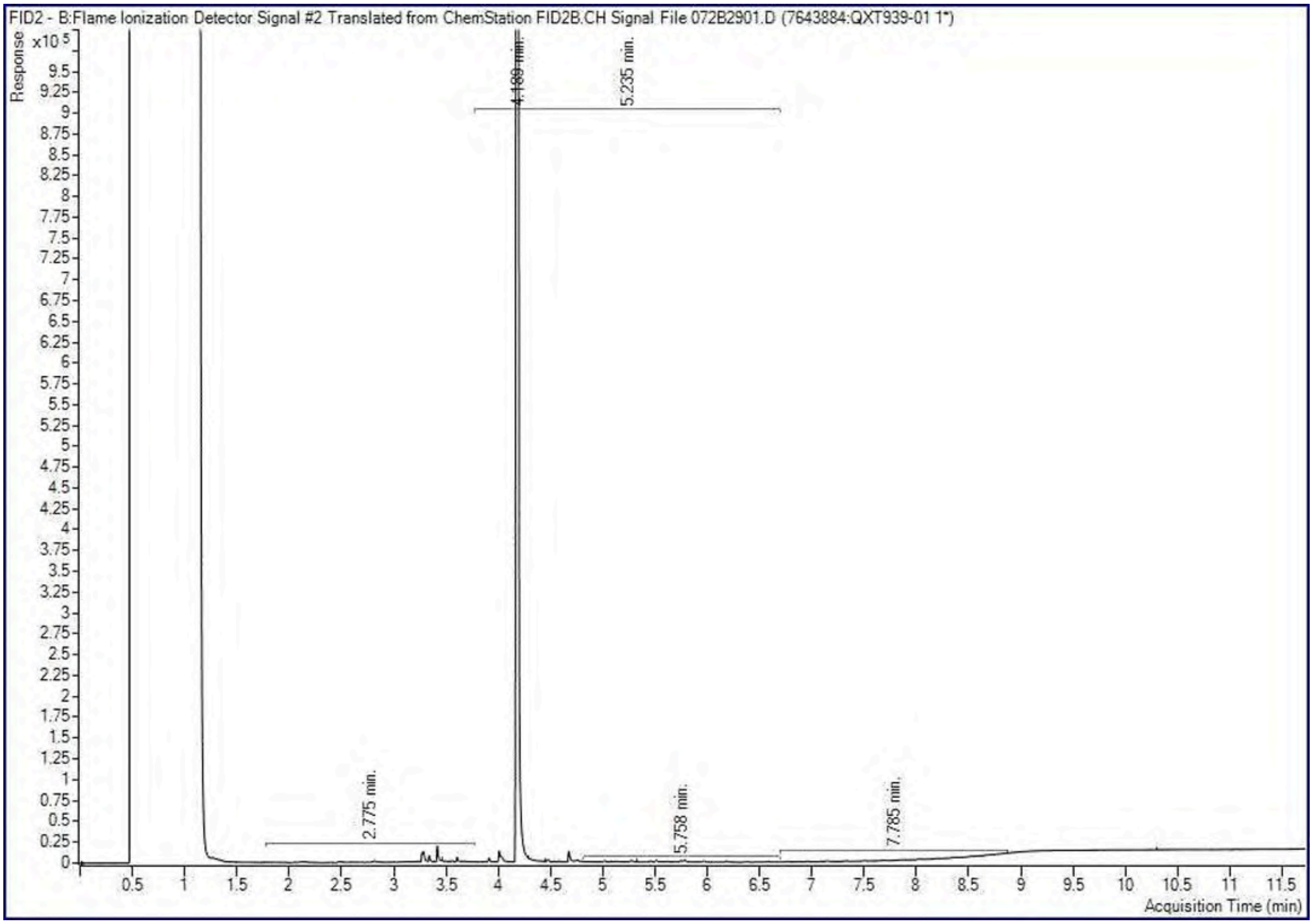


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C1T8290
Report Date: 2021/10/21
Bureau Veritas Sample: QXT939

Pinchin Ltd
Client Project #: 285722.003
Client ID: BHM127

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.