

Prepared By:



Phase Two Environmental Site Assessment

370 William Street - Warton, ON

GMBP File: 220089

July 2020

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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

370 WILLIAM STREET - WIARTON, ON

JULY 2020

GMBP FILE: 220089

1. INTRODUCTION & BACKGROUND

GM BluePlan Engineering Limited (GMBP) was retained by the Town of South Bruce Peninsula to complete a Phase Two Environmental Site Assessment (ESA) of the subject property located at 370 William Street, Wiarton in the Town of South Bruce Peninsula, County of Bruce. The general site location is presented on Figure 1.

It is our understanding that the Phase Two ESA is being completed to identify actual or potential environmental impacts or risks associated with the subject property to support a potential property transaction. It is also our understanding that the intended property use will remain commercial, and therefore, this Phase Two ESA is not being completed to support the filing of a Record of Site Condition (RSC) under Ontario Regulation 153/04 (as amended).

2. PREVIOUS INVESTIGATIONS

A Phase One ESA entitled “*Phase One Environmental Site Assessment, 370 William Street – Wiarton, ON*” was previously completed by GMBP for the subject property in April of 2020. The specific areas of potential environmental concern (APECs) identified in the Phase One ESA at the subject property (in relation to soil and groundwater) are summarized below:

- APEC-1: The unknown subsurface conditions associated with the former rail yard that operated on the subject property from 1881 to 1972.

Based on the findings of the Phase One ESA investigation, a Phase Two ESA work plan and scope was developed by GMBP in consultation with the client to assess the environmental condition of the subsurface related to the potential areas of environmental concern identified in the Phase One ESA.

The Phase Two ESA investigation was undertaken to reduce the uncertainty with respect to the environmental condition of the subsurface soil and groundwater at the site.

For additional information regarding the previous investigations, please refer directly to the above noted Phase One ESA.

3. PHYSIOGRAPHY & HYDROGEOLOGY

The subject property is located within the physiographic region known as the *Bruce Peninsula* (Chapman and Putnam, 2007). The most prominent geologic feature of the Bruce Peninsula is the Niagara Escarpment, which extends along the east side of the peninsula northwest to Manitoulin Island and southeast to the Niagara Peninsula. West of the escarpment, relief is low and rolling and the ground surface generally slopes gradually towards Lake Huron.

Warton is mostly located at the base of the Escarpment leading to Colpoy's Bay. The Bruce County Soils Map identifies local surficial soils as medium textured silt till from the Harkaway Series. This generally corresponds to the clay plains identified by Chapman and Putnam (1984) on Map 2224 of the Physiography of Southern Ontario. The overburden thickness varies but can be generally 20 m deep in the area of the subject property.

Based on a Ministry of the Environment, Conservation and Parks (MECP) well records search, the well records indicate that the native soils on the site consist of silt and clay up to a depth of about 8 mbgs, underlain by limestone bedrock.

At the Site, the direction of shallow groundwater flow is inferred to be east to northeasterly, toward the shoreline of Colpoy's Bay, which is located approximately 150 m northeast of the Site. Regional surface water flow is inferred to flow to the northeast as well, based on the topography, which also slopes towards the shoreline of Colpoy's Bay.

4. APPLICABLE SOIL/GROUNDWATER CRITERIA – REGULATORY SETTING

For the purpose of the Phase Two ESA, impacts to the subject property are determined by comparison to the criteria identified in the Soil, Ground Water, and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, Ministry of the Environment (MOE), April 15, 2011, under Ontario Regulation 153/04, hereafter referred to as the Standard. To determine the applicable regulatory criteria under the Standard as per O. Reg. 153/04 (as amended), the site must be characterized based on its property use, drinking water source, soil grain size, depth of overburden, and proximity to a water body, as summarized below.

Property Use

The property use for determining the applicable criteria are divided into three categories: Residential/Parkland/Institutional; Industrial/Commercial/Community; and Agricultural or Other. Currently, the subject site is occupied by a former Foodland grocery store. Thus, the criteria for an Industrial/Commercial/Community property use have been selected.

Drinking Water Source

There are two sets of generic criteria for a site condition, with respect to drinking water source, which includes a non-potable groundwater condition and a potable groundwater condition. The site and surrounding properties are supplied treated municipal water from the municipal water system. Therefore, the Table 3 criteria of the Standard (i.e., for a non-potable groundwater condition) was selected as the regulatory criteria for the subsurface investigation.

Soil Grain Size

As part of the determination of the applicable criteria, the soil texture must be defined as “fine and medium textured” or “coarse textured” based on site conditions. By definition, coarse textured soils contain more than 50 percent by mass of particles greater than or equal to 75 µm in diameter. Based on a review of available well logs and geologic mapping, the onsite soils consist primarily of coarse gravel and sand fill underlain by the native sand, silt and clay. Therefore, the coarse textured soil criteria has been selected as the applicable regulatory criteria.

Depth of Overburden

The depth of soil (overburden) must also be taken into consideration. Sites containing less than 2 m of overburden over 1/3 of the property or more are defined as being “a shallow soil property” by O. Reg. 153/04 (as amended) and as a result, are considered more environmentally sensitive and have a more stringent set of criteria.

Based on a preliminary review of available water well records in the area of the Site, the depth of overburden in the area of the site is approximately 8 metres. Additionally, based on completion of the drilling and testpitting investigations, the onsite soils extend to a depth of at least 3.8 metres below ground surface (mbgs). Therefore, based on the observed subsurface conditions and the documented depth of overburden in the area, the shallow soil property criteria are not applicable.

Proximity to a Water Body

Where all or part of the subject property lies within 30 m of a surface water body, separate criteria were derived with the objective of protecting surface water body ecology. The nearest water body is Colpoy's Bay, which is located approximately 150 m northeast of the site. Therefore, the criteria for a water body within 30 m of the site does not apply.

In consideration of the site-specific conditions noted above, the Table 3 Commercial/Industrial/Community Property Use criteria for coarse textured soils (in a non-potable groundwater condition) have been selected as the regulatory Standard for the subject property.

5. METHODOLOGY

The purpose of this Phase Two ESA investigation is to determine with more certainty the nature and extent of potential impacts to the subsurface soils and groundwater in the vicinity of APECs that have been identified in the Phase One ESA investigation. The scope of work for this project was determined in consultation with the client and was developed to address the potential for impacts to the subsurface associated with the identified APECs.

5.1 Drilling Investigation

Ms. A. Eriksen of GMBP was onsite June 18, 2020 to complete a subsurface drilling investigation at the subject property. During the subsurface drilling investigation, a total of three boreholes were advanced and each was completed with a monitoring well to investigate the environmental condition of the subsurface at the subject property. The locations of boreholes/monitoring wells are presented on Figure 2. Aardvark Drilling Inc. (Aardvark) was retained as the drilling contractor to complete the boreholes and for the installation of monitoring wells. During the investigation, the nature and occurrence of the soils and groundwater was documented by GMBP personnel. Borehole/monitoring well logs are presented in Appendix “C”. Photographs of the site conditions were taken during the subsurface investigation and copies of the site photographs are presented in Appendix “A”.

To allow the collection of groundwater samples, monitoring wells were installed in each of the boreholes (i.e., MW-1, MW-2 & MW-3). The wells were constructed of 50 mm diameter, flush thread, PVC solid and slotted well screen pipe. The annulus at each monitoring well was backfilled with silica sand with at least a 0.3 m thick bentonite seal at the surface of the groundwater monitoring well. Details of the construction are shown on the appended borehole logs (Appendix "C"). Each well was secured with a lockable expandable J-plug and a protective steel flush-mount casing.

Additionally, at the time of the onsite investigations, three pre-existing monitoring wells were discovered onsite that are reportedly associated with a previous onsite assessment that was conducted by others. The monitoring wells were inspected to determine their existing condition and suitability for use in further determining the environmental condition of the groundwater as part of the groundwater sampling program. Two of the monitoring wells were determined to be in "usable" condition, while one was damaged and had an obstruction in the well pipe that made it inaccessible. The locations of the pre-existing monitoring wells are presented on Figure 2, and are identified as MW-A & MW-B.

Prior to purging and sampling, the static groundwater level and well depth were measured in each monitoring well. After purging three casing volumes of water, samples were collected from the recharged groundwater. Groundwater purging and sampling was conducted using dedicated Waterra™ tubing and inertial-type foot valves.

Soil and groundwater samples were collected using industry accepted methodology. Groundwater samples were collected for analysis of, benzene, toluene, ethylbenzene and total xylenes (BTEX) and petroleum hydrocarbons (PHCs) in the F1-F4 fractions. The samples were collected by pumping water into pre-preserved laboratory supplied containers. Sample bottles for petroleum hydrocarbons in the F1 fraction and BTEX were filled with no headspace remaining.

Soil samples for the analysis of metals and the F2 to F4 fraction of PHCs were placed in laboratory supplied jars. Soil samples collected for the analysis of BTEX and the F1 fraction of PHCs were collected using laboratory supplied, sample dedicated, methanol vials. Collected plugs of soil (~5 grams) were deposited into pre-preserved laboratory supplied sample vials.

Samples were submitted to Bureau Veritas Laboratories (BVL) within the specified hold times in coolers and under standard chain of custody protocols. BVL is accredited by the Canadian Association for Laboratory Accreditation (CALA) and by the Standards Council of Canada for the analyses requested. Copies of the laboratory Certificate of Analyses are provided in Appendix "B" and the results for soil and groundwater are summarized in Tables 3 and 4, respectively.

A summary of the borehole/monitoring well locations, the associated APECs, and the analytical testing conducted is provided in Table 1 below.

Table 1 - Summary of Borehole/Monitoring Well Information

<u>Sample ID</u>	<u>Sample Location</u>	<u>Rationale</u>	<u>Analysis</u>
MW-1	Northernmost portion of property, near northwest property corner and northern corner of subject building.	To investigate the quality of the subsurface for potential PHC, PAH, and metals impacts.	BTEX, PHC fractions F1 to F4, Metals, PAH
MW-2-5	Western portion of property, near to northwestern building corner.	To investigate the quality of the subsurface for potential PHC, PAH, and metals impacts.	BTEX, PHC fractions F1 to F4, Metals, PAH
MW-2-12	Western portion of property, near to northwestern building corner.	To investigate the quality of the subsurface for potential PHC impacts.	BTEX, PHC fractions F1 to F4
MW-3	Southeastern property corner.	To investigate the quality of the subsurface for potential PHC, PAH, and metals impacts.	BTEX, PHC fractions F1 to F4, Metals, PAH

5.2 Testhole Investigation

As a follow-up to the drilling investigation and to further investigate the environmental condition of the shallow onsite fill, and the previously identified area of petroleum hydrocarbon impacts, a testpitting investigation was completed at the Site. On June 23, 2020, Ms. A. Eriksen, of GMBP was onsite to document the findings of the testpitting investigation at the subject property. A total of nine testholes were excavated to investigate areas of potential environmental concern (APECs) identified within the previous Phase One ESA (GMBP, 2020). The locations of the testholes are presented on Figure 3. Excavation of the testholes was completed by Bridge Contracting. During the investigation, the nature and occurrence of the soils was documented by GMBP personnel. Photographs of the site conditions were taken during the subsurface investigation and copies of the site photographs are presented in Appendix "A". Testhole logs are presented in Appendix "C".

Soil samples were collected using industry accepted methodology. Soil samples for the analysis of metals and the F2 to F4 fraction of PHCs were placed in laboratory supplied jars. Soil samples collected for the analysis of VOC's, BTEXs and the F1 fraction of PHCs were collected using laboratory supplied, sample dedicated, methanol vials. Collected plugs of soil (~5 grams) were deposited into pre-preserved laboratory supplied sample vials.

Samples were submitted to Bureau Veritas Laboratories (BVL) within the specified hold times in coolers and under standard chain of custody protocols. BVL is accredited by the Canadian Association for Laboratory Accreditation (CALA) and by the Standards Council of Canada for the analyses requested. Copies of the laboratory Certificate of Analyses are provided in Appendix "B" and the soil results are summarized in Table 3.

A summary of the testhole locations, the associated APEC, and the analytical testing conducted is provided in Table 2 below.

Table 2 – Summary of Testhole Information

<u>Sample ID</u>	<u>Sample Location</u>	<u>Rationale</u>	<u>Analysis</u>
TH-1	Northwest property corner.	To investigate the quality of the subsurface for potential PAH and metals impacts.	Metals, PAH
TH-2	Near western property line, directly west of northwesternmost corner of subject building.	To investigate the quality of the subsurface for potential PAH, PHC, and metals impacts.	
TH-2A	South adjacent to northwesternmost corner of the subject building.	To further investigate the quality of the subsurface and to further delineate the PHC impacts identified at MW-2.	BTEX, PHC fractions F1 to F4
TH-2B	West adjacent to northwesternmost corner of the subject building.	To further investigate the quality of the subsurface and to further delineate the PHC impacts identified at MW-2.	
TH-3	Westerly portion of property, in parking area southwest of northwestern corner of the subject building.	To investigate the quality of the subsurface for potential PAH and metals impacts.	Metals, PAH
TH-4	Southwesterly portion of the property, in parking area directly west of onsite hydro pole.	To investigate the quality of the subsurface for potential PAH and metals impacts.	Metals, PAH
TH-5	Central portion of the property, directly south of southwest-facing (front) wall of the subject building.	To investigate the quality of the subsurface for potential PAH and metals impacts.	Metals, PAH
TH-6	Southwestern property corner.	To investigate the quality of the subsurface for potential PAH and metals impacts.	Metals, PAH
TH-7	Near eastern property line, adjacent to southeastern corner of the subject building.	To investigate the quality of the subsurface for potential PAH, PHC, and metals impacts.	

6. DISCUSSION OF FINDINGS

As reported in the Phase One ESA (GMBP, 2020), a former rail yard operated on the subject property from 1881 to 1972. The rail yard consisted of structures used for storage of oil and coal, as well as an engine house, engine turntable, and a section of rail track. Historically, railways were often constructed with slag, coal ash, and other industrial byproducts, railroad ties were treated with chemicals such as creosote, and material of unknown quality was commonly used when constructing the rail base.

Based on the historical rail yard operations, an APEC was identified for the subject property. In order to investigate the potential presence of impacts to the soil and/or groundwater due to former operations, three boreholes complete with monitoring wells and nine testholes were advanced in various locations throughout the subject property.

6.1 Drilling Investigation – Findings

Three boreholes were advanced and were completed with monitoring wells throughout the property. The locations of the boreholes are shown in Figure 2. The soils within boreholes MW-1 and MW-3 were observed to generally consist of a layer of evident black stained fill, brown coarse sand, which is underlain by the native grey clay. MW-2, which was advanced at the location of the former loading dock area, was observed to generally consist of the same layer of visible black fill, brown coarse sand, and grey stained sand with an evident petroleum odour, sheen, and staining noted throughout the soils.

During the completion of MW-1, a layer of dry black fill with coal, slag, wood, and glass was identified in the shallow soils between 0.05 to 0.96 mbgs with an underlying layer of wet coarse sand with stones. Finer sand/silt was encountered at approximate depths ranging between 0.76 and 1.52 mbgs. A soil sample collected from the black fill layer at 0.91 mbgs was submitted for analysis of F1 to F4 PHCs and BTEX, metals, and PAHs. No exceedances of the Table 3 criteria were reported.

During the advancement and installation of MW-2, the same visible layer of dry black fill with coal and slag was encountered between 0.15 and 0.61 mbgs. Additionally, a layer of wet grey stained coarse sand, becoming finer with depth, and emitting an evident petroleum odour, was encountered between 1.52 and 3.66 mbgs. A soil sample collected from the black fill layer and upper grey stained sand layer was submitted (i.e., identified as MW-2-5) for analysis of F1 to F4 PHCs and BTEX, metals, and PAHs. A soil sample collected from the lower grey stained sand layer was submitted as MW-2-12 for analysis of F1 to F4 PHCs and BTEX.

The reported analytical results for the soil sample from MW-2-5 indicates that concentrations of F1 PHCs (460 µg/L) exceed the Table 3 criteria of 230 µg/L. Additionally, trace concentrations of F2 and F4 PHCs, benzene, ethylbenzene, total xylenes, naphthalene, and SAR were reported below the Table 3 criteria.

The reported analytical results for the soil sample from MW-2-12 indicate that the concentrations of F1 (520 µg/L) and F2 (4500 µg/L) PHCs exceed the Table 3 criteria of 230 µg/L and 150 µg/L, respectively, for these parameters. The analytical results also indicate trace concentrations of benzene, ethylbenzene, total xylenes, and F3 PHCs below the Table 3 criteria.

During the completion of MW-3, the same evident layer of dry black fill with coal, slag, and wood ash was identified in the upper layer of fill, which is underlain by brown coarse sand that was encountered between 0.05 and 1.37 mbgs. A soil sample collected from the black fill layer at 0.91 mbgs was submitted for analysis of F1 to F4 PHCs and BTEX, metals, and PAHs. No exceedances of the Table 3 criteria were reported at this location.

Localized remediation of the PHC exceedances in the area of MW-2 would be required to meet the Table 3 criteria of the Standard.

6.2 Testhole Investigation – Findings

The investigative testholes were excavated in various locations on the subject property to depths ranging between 0.56 and 1.60 mbgs. The locations of the testholes are presented in Figure 3. Based on the subsurface conditions identified within the testhole excavations, the local soils within the site consist primarily of a layer of gravel fill immediately underlying the finished asphalt surface, which is further underlain by mixed fill with evident black staining that appears to be associated with the historical rail yard, with a layer of native brown sand that becomes more evident with depth.

During the completion of the testholes, the identified layer of black fill was observed in all testhole locations between approximately 0.04 to 0.97 mbgs. It is noted that a localized area of grey stained sand with evident petroleum odour was also observed at TH-2A and TH-2B (i.e., immediately adjacent to MW-2) between 1.22 to 1.60 mbgs. To confirm the quality of soil, samples were collected at each location and selected samples were submitted for analysis of BTEX and PHC fractions F1 to F4, as well as for PAH, and Metals and Inorganics. The analytical results for the soil samples indicate several exceedances of the applicable criteria of the Standard.

Samples collected from the visible layer of shallow black fill at TH-1, TH-3, TH-4, TH-5, and TH-6 were submitted for analysis of PAHs and metals and inorganics. A sample collected from the grey stained, odorous sand layer in TH-2A was submitted for BTEX and F1-F4 PHC analysis.

The reported analytical results of the soil sample from TH-1 indicate that the concentration of lead (200 µg/L), exceeds the Table 3 criteria of 120 µg/L. The analytical results also indicate that the concentrations of several PAHs exceed the Table 3 criteria.

The reported analytical results of the soil sample from TH-2A indicate that the concentrations of F1 (390 µg/L) and F2 (2,500 µg/L) PHCs exceed the Table 3 criteria of 230 µg/L and 150 µg/L, respectively, for these parameters.

The reported analytical results of the soil sample from TH-3 indicate that the concentration of benzo(a)pyrene (0.6 µg/L) exceeds the Table 3 criteria of 0.3 µg/L.

The reported analytical results of the soil sample from TH-4 indicate that the concentration of lead (200 µg/L) exceeds the Table 3 criteria of 120 µg/L. The analytical results also indicate that the concentrations of several PAHs exceed the Table 3 criteria.

The reported analytical results of the soil sample from TH-5 indicate no exceedances of Table 3 criteria at this location.

The reported analytical results of the soil sample from TH-6 indicate that the concentrations of lead (820 µg/L) and zinc (450 µg/L), exceed the Table 3 criteria of 120 µg/L, and 340 µg/L, respectively, for these parameters. The analytical results also indicate that measured concentrations of several PAH compounds were reported at this location, but remain below the Table 3 criteria of the Standard, which further suggests the presence of historical rail yard fill throughout the site.

Remediation of the identified exceedances throughout the site and localized remediation of PHC exceedances in the area of TH-2A and TH-2B would be required to meet the Table 3 criteria of the Standard.

6.3 Groundwater Investigation – Findings

Groundwater samples were collected from MW-1, MW-2, and MW-3 following the initial drilling investigation. Additionally, groundwater samples were collected from the pre-existing onsite monitoring wells, MW-A and MW-B. Prior to sampling, three water column volumes were purged from the monitoring wells.

A summary of the groundwater analytical results is provided as follows:

- The reported analytical parameters for the groundwater samples collected at each of MW-1, MW-3, MW-A, and MW-B meet the Table 3 Criteria of the Standard for all tested parameters,
- The reported analytical results for the groundwater sample collected from MW-2 indicate significant PHC impacts to the groundwater at that location. the reported concentrations of F2 (150,000 µg/L) and F3 (35,000 µg/L) PHCs significantly exceed the Table 3 criteria of 150 µg/L and 500 µg/L, respectively, for these parameters.
- Trace concentrations of BTEX, F1, and F4 PHCs were also reported within the groundwater sample collected at MW-2. However, the concentrations of these parameters remain below the Table 3 criteria of the Standard.

7. SUMMARY OF FINDINGS

The Phase One ESA completed by GMBP in April of 2020 identified the following APEC for the subject property:

- APEC-1: The unknown subsurface conditions associated with the former rail yard that operated on the subject property from 1881 to 1972.

The Phase Two ESA was undertaken to investigate the APEC associated with the subject property resulting from historical land use on the site. To provide more certainty regarding the subsurface conditions associated with the onsite APEC, three boreholes advanced and were completed with the installation of monitoring wells. Nine testholes were also completed in strategic locations across the subject property to evaluate the environmental condition of the shallow fill/soils. The findings of the investigations, sampling, and analytical testing obtained through completion of the Phase Two ESA are summarized below:

- In general, the subject property consists of a visually evident layer of black stained fill that is mixed with various debris including slag, ash, coal, wood, and glass. The impacted fill appears to be associated with the historical rail corridor and rail yard that was located at the Site. The identified layer of impacted fill appears to be limited to the upper, shallow layer of fill, and is further underlain by native brown sand and native grey clay.
- The black coloured layer of fill identified throughout the site is impacted with several PAH and metals/inorganics parameters at concentrations that exceed the Table 3 criteria at the locations of TH-1, TH-3, and TH-4, and TH-6.
- The reported concentrations of F1 and F2 PHCs exceed the Table 3 criteria of the Standard at the locations of TH-2A, MW-2-5, and MW-2-12. The PHC impacts at these locations are coincident with the presence of evident grey stained and odorous soils (i.e., petroleum hydrocarbon odour, staining, and sheen) from the depth of the shallow/surficial fill to the depth of the groundwater table. The PHC impacts were also identified in the subsurface at the location of TH-2B.
- The concentrations of F2 and F3 PHCs in the groundwater sample collected from MW-2 exceeds the Table 3 criteria.

8. CONCLUSIONS AND RECOMMENDATIONS

A Phase One and Phase Two ESA were undertaken to identify potential and/or actual environmental concerns associated with the subject property located at 370 William Street, Wiarton resulting from current and historical land use on the Site and adjacent lands. Analysis of the information collected from the Phase One ESA indicated that there was potential for environmental risks associated with on-site sources, and therefore, this Phase Two ESA was completed to further investigate the environmental conditions of the subsurface at the Site.

To provide more certainty regarding the environmental condition of the subsurface soils and the groundwater at the subject property, three boreholes were advanced and completed with the installation of monitoring wells to allow for the completion of soil and groundwater sampling and analysis. Additionally, nine testholes were excavated at various locations throughout the site to allow for the collection of soil samples and laboratory analysis.

Based on the PAH and Metals/Inorganics impacted soil identified in the shallow layer of black stained fill at all sampled locations, remediation of the identified soil impacts would be required to meet the Table 3 criteria of the *Soil, Groundwater, and Sediment Standards* for Use Under Part XV.1 of Ontario Regulation 153/04 (as amended).

Based on the evident PHC impacted soil and groundwater identified at MW-2, and TH-2A, localized remediation of the identified impacts in the vicinity of MW-2, TH-2A, and TH-2B would be required to meet the Table 3 criteria of the *Soil, Groundwater, and Sediment Standards* for Use Under Part XV.1 of Ontario Regulation 153/04 (as amended).

9. STATEMENT OF LIMITATIONS

The information in this Phase Two ESA is intended for the use of the Town of South Bruce Peninsula. GM BluePlan Engineering Limited accepts no liability for use of this information by third parties. Any decisions made by third parties on the basis of information provided in this report are made at the sole risk of the third parties.

GM BluePlan Engineering Limited cannot guarantee the accuracy or reliability of information provided by others. GM BluePlan Engineering Limited does not accept liability for unknown, unidentified, undisclosed or unforeseen surface or sub-surface contamination that may be later identified.

The conclusions pertaining to the environmental condition of soils identified at the site are based on the visual observations at the locations of the investigative boreholes/testholes and on the analytical data for the selected soil and groundwater samples. GM BluePlan Engineering Limited cannot guarantee the environmental condition of soil and/or groundwater that may be encountered at the site in locations that were not specifically investigated.

This report is believed to provide documentation of site conditions as of June 23, 2020.

10. QUALIFICATIONS OF ASSESSORS

Mrs. Kate Charpontier Env. Tech., has a diploma in Environmental Technology from Georgian College. Mrs. Charpontier has conducted numerous environmental investigations, including the completion of Phase One and Two Environmental Site Assessments. Mrs. Charpontier has also been involved in various investigations related to residential, commercial, and industrial properties.

Mr. Alen Bringleson, B.E.S., C.E.T., is a Certified Engineering Technologist (Environmental Designation) with over seventeen years of experience preparing Phase One and Phase Two Environmental Site Assessments, completing site remediation, and conducting various environmental and civil investigations. Mr. Bringleson is a principal in the firm and has been involved with detailed environmental site investigations and the remediation of residential, commercial, and industrial properties. Mr. Bringleson is a member of the Ontario Association of Certified Engineering Technicians and Technologists (OACETT).

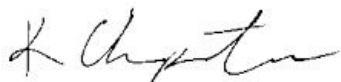
Mr. Matthew Nelson, M.Sc., P.Geo., is an Environmental Engineer/Hydrogeologist with over eighteen years of experience with environmental, hydrogeological, and remedial investigations. Mr. Nelson has experience preparing numerous Phase One and Phase Two Environmental Site Assessments, environmental investigations, and the completion of Phase Three site remediations. Mr. Nelson has been involved with detailed environmental site investigations for several large commercial and industrial properties.

GM Blue Plan Limited has completed numerous Phase One Environmental Site Assessments, which also include follow-up Phase Two ESAs. GM BluePlan Limited has also been involved with the remediation of numerous sites, and with the preparation of a Record of Site Condition in certain cases.

All of which is respectfully submitted.

GM BLUEPLAN ENGINEERING LIMITED

Per:

A handwritten signature in black ink, appearing to read 'K. Charpontier'.

Kate Charpontier, Env. Tech. Dipl.

Per:

A handwritten signature in blue ink, appearing to read 'Alen Bringleson'.

Alen Bringleson, B.E.S., C.E.T

Per:

A handwritten signature in blue ink, appearing to read 'Matthew Nelson'.

Matthew Nelson, P.Eng, P.Geo.

FIGURES:

TOWN OF SOUTH
BRUCE PENINSULA



SITE LOCATION
MAP

370 WILLIAM STREET
WIARTON
PHASE TWO ESA

Figure No. 1



220089
JULY 2020
N.T.S.

TOWN OF SOUTH
BRUCE PENINSULA



MONITORING WELL
LOCATIONS

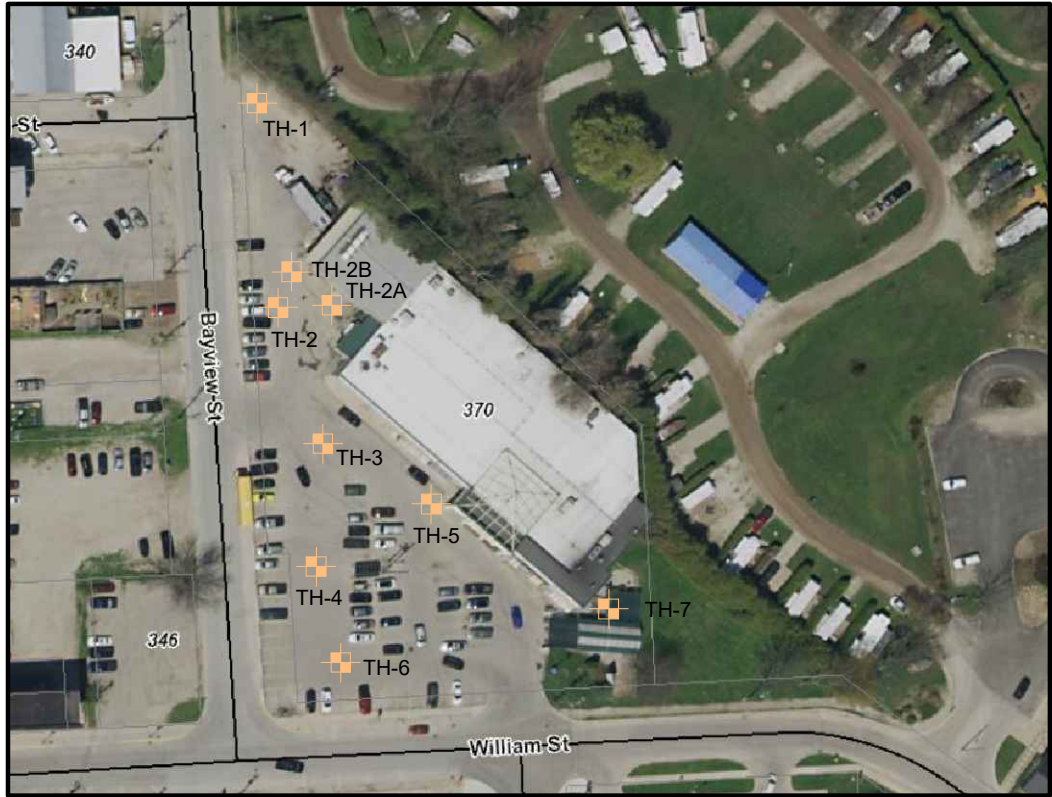
370 WILLIAM STREET
WIARTON
PHASE TWO ESA

Figure No. 2



220089
JULY 2020
N.T.S.

TOWN OF SOUTH
BRUCE PENINSULA



TESTHOLE
LOCATIONS

370 WILLIAM STREET
WIARTON
PHASE TWO ESA

Figure No. 3



220089
JULY 2020
N.T.S.

TABLES:

Table 3: Soil Analytical Results

Sample ID	Guideline 2011 Table 3 Non-Potable GW	TH-1	TH-3	TH-4	TH-5	TH-6	MW-1	MW-2-5	MW-3
Sampling Date	Res/Park/ Inst/Ind/ Comm/Comm'ty	23-Jun-2020	23-Jun-2020	23-Jun-2020	23-Jun-2020	23-Jun-2020	18-Jun-2020	18-Jun-2020	18-Jun-2020
Coarse Grained									
METALS (ug/g)									
Antimony	40	2.2	1.3	0.74	1.6	0.39	0.87	<0.20	2.1
Arsenic	18	6.1	11	6.6	8.6	6.8	9.3	1.2	5.4
Barium	670	75	120	78	46	470	110	7.5	63
Beryllium	8	0.43	0.93	0.33	0.56	<0.20	0.63	<0.20	0.21
Boron (Hot Water Soluble)	2	1.1	0.23	1.3	0.45	0.82	0.25	0.12	4.9
Cadmium	1.9	0.26	0.19	0.23	0.14	0.56	0.16	<0.10	0.22
Chromium	160	8.2	13	9.7	9	11	12	7.4	8
Chromium VI	8	<0.18	<0.18	<0.90	<0.18	<0.18	<0.18	<0.18	<0.90
Cobalt	80	4	8.2	3.7	5.4	3.3	7.2	1.8	3.3
Copper	230	52	100	24	44	39	87	5.2	30
Lead	120	<u>200</u>	60	<u>200</u>	55	<u>820</u>	52	4.8	94
Mercury	3.9	0.24	0.28	0.093	0.083	<0.050	0.51	<0.050	0.067
Molybdenum	40	1.1	2.6	0.71	2.3	<0.50	2.4	<0.50	0.87
Nickel	270	19	21	8.2	15	5.3	19	4.5	7.7
Selenium	5.5	0.71	1	0.7	0.58	<0.50	0.89	<0.50	<0.50
Silver	40	0.64	<0.20	<0.20	<0.20	<0.20	0.28	<0.20	<0.20
Thallium	3.3	0.11	0.33	0.13	0.2	<0.050	0.3	<0.050	0.089
Vanadium	86	12	26	12	19	13	25	13	11
Zinc	340	120	76	100	45	<u>450</u>	87	16	82
pH (pH Units)	NV	7.09	7.46	7.38	7.75	8.85	7.55	7.55	7.22
Conductivity (ms/cm)	1.4	0.26	0.27	0.62	0.24	0.51	0.29	0.21	0.35
Sodium Adsorption Ratio	12	0.46	0.2	5.3	4.1	0.61	0.43	2.7	0.67
Cyanide, Free	0.051	0.01	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	0.02
Boron (Total)	120	11	9.9	8.1	12	15	7.3	<5.0	20
Uranium	33	0.45	0.64	0.39	0.89	0.45	0.62	0.29	0.29
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (ug/g)									
Acenaphthene	96	0.46	0.097	0.53	0.02	<0.0050	<0.0050	<0.050	<0.0050
Acenaphthylene	0.15	<u>0.24</u>	0.068	<u>0.57</u>	0.018	<0.0050	<0.0050	<0.050	<0.0050
Anthracene	0.67	<u>0.96</u>	0.18	<u>1.5</u>	0.03	<0.0050	<0.0050	<0.050	<0.0050
Benzo(a)anthracene	0.96	<u>2.5</u>	0.6	<u>6.1</u>	0.059	<0.0050	<0.0050	0.061	<0.0050
Benzo(a)pyrene	0.3	<u>2.4</u>	<u>0.6</u>	<u>6.2</u>	0.054	<0.0050	<0.0050	0.076	<0.0050
Benzo(b)fluoranthene	0.96	<u>3.1</u>	0.82	<u>7.5</u>	0.09	0.013	<0.0050	0.12	<0.0050
Benzo(ghi)perylene	9.6	1.4	0.42	3.8	0.054	0.0074	<0.0050	0.076	<0.0050
Benzo(k)fluoranthene	0.96	<u>1.1</u>	0.3	<u>2.7</u>	0.024	<0.0050	<0.0050	<0.050	<0.0050
Chrysene	9.6	2.1	0.53	5.1	0.066	0.006	<0.0050	0.066	0.0053
Dibenzo(a,h)anthracene	0.1	<u>0.39</u>	0.097	<u>0.93</u>	0.011	<0.0050	<0.0050	<0.050	<0.0050
Fluoranthene	9.6	5.9	1.3	<u>13</u>	0.09	0.0098	<0.0050	0.1	<0.0050
Fluorene	62	0.45	0.09	0.58	0.016	<0.0050	<0.0050	<0.050	<0.0050
Indeno(1,2,3-cd)pyrene	0.76	<u>1.6</u>	0.43	<u>3.8</u>	0.041	0.0066	<0.0050	0.065	<0.0050
1-Methylnaphthalene	76	0.2	0.19	0.21	0.25	<0.0050	<0.0050	0.27	<0.0050
2-Methylnaphthalene	76	0.21	0.19	0.23	0.25	<0.0050	<0.0050	0.27	<0.0050
Naphthalene	9.6	0.14	0.12	0.37	0.14	0.0064	<0.0050	0.2	<0.0050
Phenanthrene	12	3.8	0.96	6.5	0.28	0.01	<0.0050	0.12	0.0077
Pyrene	96	4.7	1.1	11	0.096	0.043	<0.0050	0.1	<0.0050
Methylnaphthalene, 2-(1-)	76	0.42	0.37	0.44	0.5	<0.0071	<0.0071	0.54	<0.0071

Notes:

- Criteria are from the Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.
- Parameters that are underlined in red exceed the Table 3 (Non-Potable Groundwater) criteria of the Standard for Industrial/Commercial/Community property use.
- " - " = Associated parameter was not analyzed.

Table 3: Soil Analytical Results

Sample ID	Guideline	TH-2A	MW-1	MW-2-5	MW-2-12	MW-3
	2011 Table 3 Non-Potable GW					
	Res/Park/ Inst/Ind/ Comm/Comm'ty					
Sampling Date	Coarse Grained	23-Jun-2020	18-Jun-2020	18-Jun-2020	18-Jun-2020	18-Jun-2020
PETROLEUM HYDROCARBONS (PHCs) (ug/g)						
Benzene	0.32	<0.10*	<0.020	0.18	0.026	<0.020
Toluene	68	<0.10	<0.020	<0.10	<0.020	<0.020
Ethylbenzene	9.5	<0.10*	<0.020	0.54	0.026	<0.020
m-Xylene & p-Xylene	NV	<0.20	<0.040	0.43	0.048	<0.040
o-Xylene	NV	<0.10	<0.020	0.21	0.051	<0.020
Total Xylenes	26	<0.20*	<0.040	0.64	0.099	<0.040
F1 (C6-C10)	230	<u>390</u>	<10	<u>460</u>	<u>520</u>	<10
F1 (C6-C16) - BTEX	230	<u>390</u>	<10	<u>450</u>	<u>520</u>	<10
F2 (C10-C16)	150	<u>2500</u>	<10	70	<u>4500</u>	<10
F3 (C16-C34)	1700	880	<50	170	1000	<50
F4 (C34-C50)	3300	<50	<50	270	<50	<50

Notes:

1. Criteria are from the Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.
2. Parameters that are underlined in red exceed the Table 3 (Non-Potable Groundwater) criteria of the Standard for Industrial/Commercial/Community property use.
3. " - " = Associated parameter was not analyzed.
4. " * " = Detection limit for result exceeds the guideline limit. Actual assessment against criteria cannot be made.

Table 4: Groundwater Analytical Results

Sample ID	Guideline	MW-1	MW-2	MW-3	MW-A	MW-B
	2011 Table 3 Non-Potable GW					
Sampling Date	Ind/Comm/Com'ty	18-Jun-2020	18-Jun-2020	18-Jun-2020	18-Jun-2020	18-Jun-2020
	Coarse Grained					
PETROLEUM HYDROCARBONS (PHCs) (ug/g)						
Benzene	44	<0.20	6.9	<0.20	<0.20	<0.20
Toluene	18000	<0.20	0.49	<0.20	<0.20	<0.20
Ethylbenzene	2300	<0.20	0.95	<0.20	<0.20	<0.20
m-Xylene & p-Xylene	NV	<0.40	0.49	<0.40	<0.40	<0.40
o-Xylene	NV	<0.20	0.59	<0.20	<0.20	<0.20
Total Xylenes	4200	<0.40	1.1	<0.40	<0.40	<0.40
F1 (C6-C10)	750	<25	430	<25	<25	<25
F1 (C6-C16) - BTEX	750	<25	420	<25	<25	<25
F2 (C10-C16)	150	<100	<u>150000</u>	<100	<100	<100
F3 (C16-C34)	200	<200	<u>35000</u>	<200	<200	<200
F4 (C34-C50)	200	<200	410	<200	<200	<200

Notes:

1. Criteria are from the Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.
2. Parameters that are underlined in red exceed the Table 3 (Non-Potable Groundwater) criteria of the Standard for Industrial/Commercial/Community property use.
3. " - " = Associated parameter was not analyzed.
4. " * " = Detection limit for result exceeds the guideline limit. Actual assessment against criteria cannot be made.

APPENDIX A: SITE PHOTOGRAPHS

**Phase Two ESA -
370 William Street, Warton**



Photo 1 - Shallow black fill layer from 0.05 to 0.96 mbgs at MW-1



Photo 2 - Brown sand layer from 0.96 to 1.52 mbgs at MW-1

**Phase Two ESA -
370 William Street, Warton**



Photo 3 - Grey stained sand and stones layer from 1.37 to 2.13 mbgs in MW-2



Photo 4 - Grey stained sand layer from 2.13 to 2.90 mbgs in MW-2

**Phase Two ESA -
370 William Street, Warton**



Photo 5 - Black fill layer from 0.05 to 1.37 mbgs in MW-3



Photo 6 - Grey clay layer from 1.37 to 2.13 mbgs in MW-3

**Phase Two ESA -
370 William Street, Warton**



Photo 7 - Black fill layer from TH-1



Photo 8 - View of TH, showing black fill layer between brown gravel fill and brown sand layer.

**Phase Two ESA -
370 William Street, Warton**



Photo 9 - Grey stained sand layer from TH-2A



Photo 10 - View of TH-2A, showing depth of grey stained layer

APPENDIX B:
LABORATORY CERTIFICATE OF ANALYSIS



Your Project #: 220089
 Site Location: 370 WILLIAM ST., WIARTON
 Your C.O.C. #: na

Attention: Reporting Contacts

GM BluePlan Engineering Limited
 1260 - 2nd Ave E
 Unit 1
 Owen Sound, ON
 CANADA N4K 2J3

Report Date: 2020/06/29
 Report #: R6227569
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F3401

Received: 2020/06/20, 09:37

Sample Matrix: Soil
 # Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum	3	N/A	2020/06/25	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron	3	2020/06/23	2020/06/24	CAM SOP-00408	R153 Ana. Prot. 2011
Free (WAD) Cyanide	3	2020/06/24	2020/06/25	CAM SOP-00457	OMOE E3015 m
Conductivity	3	2020/06/24	2020/06/24	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1)	3	2020/06/23	2020/06/25	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	4	N/A	2020/06/25	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	4	2020/06/23	2020/06/27	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	3	2020/06/23	2020/06/25	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2020/06/22	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	3	2020/06/24	2020/06/25	CAM SOP-00318	EPA 8270D m
pH CaCl2 EXTRACT	3	2020/06/23	2020/06/23	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR)	3	N/A	2020/06/26	CAM SOP-00102	EPA 6010C

Sample Matrix: Water
 # Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Petroleum Hydro. CCME F1 & BTEX in Water	5	N/A	2020/06/25	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (3)	5	2020/06/24	2020/06/26	CAM SOP-00316	CCME PHC-CWS m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs 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 BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs 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.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and



Your Project #: 220089
Site Location: 370 WILLIAM ST., WIARTON
Your C.O.C. #: na

Attention: Reporting Contacts

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2020/06/29
Report #: R6227569
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F3401

Received: 2020/06/20, 09:37

use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, 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) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for F1BTX & 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.

Ashton Gibson, Project Manager

Email: Ashton.Gibson@bvlabs.com

Phone# (905)817-5765

=====

This report has been generated and distributed using a secure automated process.

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

BV Labs Job #: C0F3401

Report Date: 2020/06/29

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAM ST., WIARTON

Sampler Initials: AE

O.REG 153 METALS & INORGANICS PKG (SOIL)

BV Labs ID		MXQ126	MXQ127			MXQ127			MXQ128		
Sampling Date		2020/06/18	2020/06/18			2020/06/18			2020/06/18		
COC Number		na	na			na			na		
	UNITS	MW-1	MW-2-5	RDL	QC Batch	MW-2-5 Lab-Dup	RDL	QC Batch	MW-3	RDL	QC Batch

Calculated Parameters

Sodium Adsorption Ratio	N/A	0.43	2.7		6797456				0.67		6797456
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Inorganics

Conductivity	mS/cm	0.29	0.21	0.002	6802412				0.35	0.002	6802412
Available (CaCl ₂) pH	pH	7.55	7.55		6801042				7.22		6801042
WAD Cyanide (Free)	ug/g	<0.01	<0.01	0.01	6803207				0.02	0.01	6803207
Chromium (VI)	ug/g	<0.18	<0.18	0.18	6801880				<0.90 (1)	0.90	6801880

Metals

Hot Water Ext. Boron (B)	ug/g	0.25	0.12	0.050	6800085				4.9	0.050	6800085
Acid Extractable Antimony (Sb)	ug/g	0.87	<0.20	0.20	6800198	<0.20	0.20	6800198	2.1	0.20	6800198
Acid Extractable Arsenic (As)	ug/g	9.3	1.2	1.0	6800198	1.2	1.0	6800198	5.4	1.0	6800198
Acid Extractable Barium (Ba)	ug/g	110	7.5	0.50	6800198	7.2	0.50	6800198	63	0.50	6800198
Acid Extractable Beryllium (Be)	ug/g	0.63	<0.20	0.20	6800198	<0.20	0.20	6800198	0.21	0.20	6800198
Acid Extractable Boron (B)	ug/g	7.3	<5.0	5.0	6800198	<5.0	5.0	6800198	20	5.0	6800198
Acid Extractable Cadmium (Cd)	ug/g	0.16	<0.10	0.10	6800198	<0.10	0.10	6800198	0.22	0.10	6800198
Acid Extractable Chromium (Cr)	ug/g	12	7.4	1.0	6800198	8.0	1.0	6800198	8.0	1.0	6800198
Acid Extractable Cobalt (Co)	ug/g	7.2	1.8	0.10	6800198	1.9	0.10	6800198	3.3	0.10	6800198
Acid Extractable Copper (Cu)	ug/g	87	5.2	0.50	6800198	5.4	0.50	6800198	30	0.50	6800198
Acid Extractable Lead (Pb)	ug/g	52	4.8	1.0	6800198	4.9	1.0	6800198	94	1.0	6800198
Acid Extractable Molybdenum (Mo)	ug/g	2.4	<0.50	0.50	6800198	<0.50	0.50	6800198	0.87	0.50	6800198
Acid Extractable Nickel (Ni)	ug/g	19	4.5	0.50	6800198	4.8	0.50	6800198	7.7	0.50	6800198
Acid Extractable Selenium (Se)	ug/g	0.89	<0.50	0.50	6800198	<0.50	0.50	6800198	<0.50	0.50	6800198
Acid Extractable Silver (Ag)	ug/g	0.28	<0.20	0.20	6800198	<0.20	0.20	6800198	<0.20	0.20	6800198
Acid Extractable Thallium (Tl)	ug/g	0.30	<0.050	0.050	6800198	<0.050	0.050	6800198	0.089	0.050	6800198
Acid Extractable Uranium (U)	ug/g	0.62	0.29	0.050	6800198	0.29	0.050	6800198	0.29	0.050	6800198
Acid Extractable Vanadium (V)	ug/g	25	13	5.0	6800198	13	5.0	6800198	11	5.0	6800198
Acid Extractable Zinc (Zn)	ug/g	87	16	5.0	6800198	17	5.0	6800198	82	5.0	6800198
Acid Extractable Mercury (Hg)	ug/g	0.51	<0.050	0.050	6800198	<0.050	0.050	6800198	0.067	0.050	6800198

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) Due to sample matrix, sample required dilution. The detection limits were adjusted accordingly



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BV Labs Job #: C0F3401
Report Date: 2020/06/29

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAM ST., WIARTON
Sampler Initials: AE

O.REG 153 PAHS (SOIL)

BV Labs ID		MXQ126		MXQ127		MXQ128		
Sampling Date		2020/06/18		2020/06/18		2020/06/18		
COC Number		na		na		na		
	UNITS	MW-1	RDL	MW-2-5	RDL	MW-3	RDL	QC Batch
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	0.54	0.071	<0.0071	0.0071	6797513
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	<0.0050	0.0050	<0.050	0.050	<0.0050	0.0050	6803955
Acenaphthylene	ug/g	<0.0050	0.0050	<0.050	0.050	<0.0050	0.0050	6803955
Anthracene	ug/g	<0.0050	0.0050	<0.050	0.050	<0.0050	0.0050	6803955
Benzo(a)anthracene	ug/g	<0.0050	0.0050	0.061	0.050	<0.0050	0.0050	6803955
Benzo(a)pyrene	ug/g	<0.0050	0.0050	0.076	0.050	<0.0050	0.0050	6803955
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	0.12	0.050	<0.0050	0.0050	6803955
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	0.076	0.050	<0.0050	0.0050	6803955
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	<0.050	0.050	<0.0050	0.0050	6803955
Chrysene	ug/g	<0.0050	0.0050	0.066	0.050	0.0053	0.0050	6803955
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	<0.050	0.050	<0.0050	0.0050	6803955
Fluoranthene	ug/g	<0.0050	0.0050	0.10	0.050	<0.0050	0.0050	6803955
Fluorene	ug/g	<0.0050	0.0050	<0.050	0.050	<0.0050	0.0050	6803955
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	0.065	0.050	<0.0050	0.0050	6803955
1-Methylnaphthalene	ug/g	<0.0050	0.0050	0.27	0.050	<0.0050	0.0050	6803955
2-Methylnaphthalene	ug/g	<0.0050	0.0050	0.27	0.050	<0.0050	0.0050	6803955
Naphthalene	ug/g	<0.0050	0.0050	0.20	0.050	<0.0050	0.0050	6803955
Phenanthrene	ug/g	<0.0050	0.0050	0.12	0.050	0.0077	0.0050	6803955
Pyrene	ug/g	<0.0050	0.0050	0.10	0.050	<0.0050	0.0050	6803955
Surrogate Recovery (%)								
D10-Anthracene	%	108		118		111		6803955
D14-Terphenyl (FS)	%	103		101		107		6803955
D8-Acenaphthylene	%	111		94		117		6803955
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



BUREAU
VERITAS

BV Labs Job #: C0F3401
Report Date: 2020/06/29

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAM ST., WIARTON
Sampler Initials: AE

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		MXQ126		MXQ127		MXQ128	MXQ134		
Sampling Date		2020/06/18		2020/06/18		2020/06/18	2020/06/18		
COC Number		na		na		na	na		
	UNITS	MW-1	RDL	MW-2-5	RDL	MW-3	MW-2-12	RDL	QC Batch
Inorganics									
Moisture	%	17	1.0	8.5	1.0	14	19	1.0	6798707
BTEX & F1 Hydrocarbons									
Benzene	ug/g	<0.020	0.020	0.18	0.10	<0.020	0.026	0.020	6803874
Toluene	ug/g	<0.020	0.020	<0.10	0.10	<0.020	<0.020	0.020	6803874
Ethylbenzene	ug/g	<0.020	0.020	0.54	0.10	<0.020	0.026	0.020	6803874
o-Xylene	ug/g	<0.020	0.020	0.21	0.10	<0.020	0.051	0.020	6803874
p+m-Xylene	ug/g	<0.040	0.040	0.43	0.20	<0.040	0.048	0.040	6803874
Total Xylenes	ug/g	<0.040	0.040	0.64	0.20	<0.040	0.099	0.040	6803874
F1 (C6-C10)	ug/g	<10	10	460	50	<10	520	10	6803874
F1 (C6-C10) - BTEX	ug/g	<10	10	450	50	<10	520	10	6803874
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	70	10	<10	4500	10	6803542
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	170	50	<50	1000	50	6803542
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	270	50	<50	<50	50	6803542
Reached Baseline at C50	ug/g	Yes		No		Yes	Yes		6803542
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	97		95		96	94		6803874
4-Bromofluorobenzene	%	104		107		105	122		6803874
D10-o-Xylene	%	102		104		114	130		6803874
D4-1,2-Dichloroethane	%	101		98		102	100		6803874
o-Terphenyl	%	87		87		87	84		6803542
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									



BUREAU
VERITAS

BV Labs Job #: C0F3401
Report Date: 2020/06/29

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAM ST., WIARTON
Sampler Initials: AE

O.REG 153 PHCS, BTEX/F1-F4 (WATER)

BV Labs ID		MXQ129	MXQ130	MXQ131	MXQ132	MXQ133		
Sampling Date		2020/06/18	2020/06/18	2020/06/18	2020/06/18	2020/06/18		
COC Number		na	na	na	na	na		
	UNITS	MW-A	MW-B	MW-1	MW-2	MW-3	RDL	QC Batch
BTEX & F1 Hydrocarbons								
Benzene	ug/L	<0.20	<0.20	<0.20	6.9	<0.20	0.20	6804388
Toluene	ug/L	<0.20	<0.20	<0.20	0.49	<0.20	0.20	6804388
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.95	<0.20	0.20	6804388
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.59	<0.20	0.20	6804388
p+m-Xylene	ug/L	<0.40	<0.40	<0.40	0.49	<0.40	0.40	6804388
Total Xylenes	ug/L	<0.40	<0.40	<0.40	1.1	<0.40	0.40	6804388
F1 (C6-C10)	ug/L	<25	<25	<25	430	<25	25	6804388
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	420	<25	25	6804388
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	150000	<100	100	6803566
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	35000	<200	200	6803566
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	410	<200	200	6803566
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes		6803566
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	95	97	94	95	98		6804388
4-Bromofluorobenzene	%	105	104	106	106	104		6804388
D10-o-Xylene	%	103	106	106	105	106		6804388
D4-1,2-Dichloroethane	%	102	101	100	99	104		6804388
o-Terphenyl	%	90	89	90	100	89		6803566
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



**BUREAU
VERITAS**

BV Labs Job #: C0F3401
Report Date: 2020/06/29

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAM ST., WIARTON
Sampler Initials: AE

TEST SUMMARY

BV Labs ID: MXQ126
Sample ID: MW-1
Matrix: Soil

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6797513	N/A	2020/06/25	Automated Statchk
Hot Water Extractable Boron	ICP	6800085	2020/06/23	2020/06/24	Suban Kanapathipplai
Free (WAD) Cyanide	TECH	6803207	2020/06/24	2020/06/25	Louise Harding
Conductivity	AT	6802412	2020/06/24	2020/06/24	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	6801880	2020/06/23	2020/06/25	Violeta Porcila
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6803874	N/A	2020/06/25	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6803542	2020/06/23	2020/06/27	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6800198	2020/06/23	2020/06/25	Viviana Canzonieri
Moisture	BAL	6798707	N/A	2020/06/22	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6803955	2020/06/24	2020/06/25	Mitesh Raj
pH CaCl2 EXTRACT	AT	6801042	2020/06/23	2020/06/23	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	6797456	N/A	2020/06/26	Automated Statchk

BV Labs ID: MXQ127
Sample ID: MW-2-5
Matrix: Soil

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6797513	N/A	2020/06/25	Automated Statchk
Hot Water Extractable Boron	ICP	6800085	2020/06/23	2020/06/24	Suban Kanapathipplai
Free (WAD) Cyanide	TECH	6803207	2020/06/24	2020/06/25	Louise Harding
Conductivity	AT	6802412	2020/06/24	2020/06/24	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	6801880	2020/06/23	2020/06/25	Violeta Porcila
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6803874	N/A	2020/06/25	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6803542	2020/06/23	2020/06/27	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6800198	2020/06/23	2020/06/25	Viviana Canzonieri
Moisture	BAL	6798707	N/A	2020/06/22	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6803955	2020/06/24	2020/06/25	Mitesh Raj
pH CaCl2 EXTRACT	AT	6801042	2020/06/23	2020/06/23	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	6797456	N/A	2020/06/26	Automated Statchk

BV Labs ID: MXQ127 Dup
Sample ID: MW-2-5
Matrix: Soil

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6800198	2020/06/23	2020/06/25	Viviana Canzonieri

BV Labs ID: MXQ128
Sample ID: MW-3
Matrix: Soil

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6797513	N/A	2020/06/25	Automated Statchk



BV Labs Job #: C0F3401
Report Date: 2020/06/29

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAM ST., WIARTON
Sampler Initials: AE

TEST SUMMARY

BV Labs ID: MXQ128
Sample ID: MW-3
Matrix: Soil

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6800085	2020/06/23	2020/06/24	Suban Kanapathipplai
Free (WAD) Cyanide	TECH	6803207	2020/06/24	2020/06/25	Louise Harding
Conductivity	AT	6802412	2020/06/24	2020/06/24	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	6801880	2020/06/23	2020/06/25	Violeta Porcila
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6803874	N/A	2020/06/25	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6803542	2020/06/23	2020/06/27	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6800198	2020/06/23	2020/06/25	Viviana Canzonieri
Moisture	BAL	6798707	N/A	2020/06/22	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6803955	2020/06/24	2020/06/25	Mitesh Raj
pH CaCl2 EXTRACT	AT	6801042	2020/06/23	2020/06/23	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	6797456	N/A	2020/06/26	Automated Statchk

BV Labs ID: MXQ129
Sample ID: MW-A
Matrix: Water

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6804388	N/A	2020/06/25	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6803566	2020/06/24	2020/06/26	Prabhjot Gulati

BV Labs ID: MXQ130
Sample ID: MW-B
Matrix: Water

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6804388	N/A	2020/06/25	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6803566	2020/06/24	2020/06/26	Prabhjot Gulati

BV Labs ID: MXQ131
Sample ID: MW-1
Matrix: Water

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6804388	N/A	2020/06/25	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6803566	2020/06/24	2020/06/26	Prabhjot Gulati

BV Labs ID: MXQ132
Sample ID: MW-2
Matrix: Water

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6804388	N/A	2020/06/25	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6803566	2020/06/24	2020/06/26	Prabhjot Gulati



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BV Labs Job #: C0F3401
Report Date: 2020/06/29

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAM ST., WIARTON
Sampler Initials: AE

TEST SUMMARY

BV Labs ID: MXQ133
Sample ID: MW-3
Matrix: Water

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6804388	N/A	2020/06/25	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6803566	2020/06/24	2020/06/26	Prabhjot Gulati

BV Labs ID: MXQ134
Sample ID: MW-2-12
Matrix: Soil

Collected: 2020/06/18
Shipped:
Received: 2020/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6803874	N/A	2020/06/25	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6803542	2020/06/23	2020/06/27	(Kent) Maolin Li
Moisture	BAL	6798707	N/A	2020/06/22	Gurpreet Kaur (ONT)



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GENERAL COMMENTS

Sample MXQ126 [MW-1] : 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 MXQ127 [MW-2-5] : 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.

F1/BTEX Analysis

-Due to high concentration of target analytes, sample required dilution. Reporting limits were adjusted accordingly.

PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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BV Labs Job #: C0F3401

Report Date: 2020/06/29

QUALITY ASSURANCE REPORT

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAM ST., WIARTON

Sampler Initials: AE

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6803542	o-Terphenyl	2020/06/27	86	60 - 130	87	60 - 130	91	%		
6803566	o-Terphenyl	2020/06/26	95	60 - 130	95	60 - 130	91	%		
6803874	1,4-Difluorobenzene	2020/06/24	95	60 - 140	96	60 - 140	96	%		
6803874	4-Bromofluorobenzene	2020/06/24	104	60 - 140	105	60 - 140	106	%		
6803874	D10-o-Xylene	2020/06/24	100	60 - 140	97	60 - 140	97	%		
6803874	D4-1,2-Dichloroethane	2020/06/24	99	60 - 140	100	60 - 140	100	%		
6803955	D10-Anthracene	2020/06/25	107	50 - 130	115	50 - 130	111	%		
6803955	D14-Terphenyl (FS)	2020/06/25	107	50 - 130	112	50 - 130	108	%		
6803955	D8-Acenaphthylene	2020/06/25	112	50 - 130	110	50 - 130	107	%		
6804388	1,4-Difluorobenzene	2020/06/25	100	70 - 130	97	70 - 130	96	%		
6804388	4-Bromofluorobenzene	2020/06/25	103	70 - 130	104	70 - 130	104	%		
6804388	D10-o-Xylene	2020/06/25	88	70 - 130	87	70 - 130	105	%		
6804388	D4-1,2-Dichloroethane	2020/06/25	103	70 - 130	100	70 - 130	102	%		
6798707	Moisture	2020/06/22							1.7	20
6800085	Hot Water Ext. Boron (B)	2020/06/24	93	75 - 125	96	75 - 125	<0.050	ug/g	21	40
6800198	Acid Extractable Antimony (Sb)	2020/06/25	100	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
6800198	Acid Extractable Arsenic (As)	2020/06/25	100	75 - 125	105	80 - 120	<1.0	ug/g	6.3	30
6800198	Acid Extractable Barium (Ba)	2020/06/25	97	75 - 125	105	80 - 120	<0.50	ug/g	3.9	30
6800198	Acid Extractable Beryllium (Be)	2020/06/25	98	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
6800198	Acid Extractable Boron (B)	2020/06/25	100	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
6800198	Acid Extractable Cadmium (Cd)	2020/06/25	102	75 - 125	102	80 - 120	<0.10	ug/g	NC	30
6800198	Acid Extractable Chromium (Cr)	2020/06/25	105	75 - 125	108	80 - 120	<1.0	ug/g	7.4	30
6800198	Acid Extractable Cobalt (Co)	2020/06/25	99	75 - 125	105	80 - 120	<0.10	ug/g	3.5	30
6800198	Acid Extractable Copper (Cu)	2020/06/25	99	75 - 125	104	80 - 120	<0.50	ug/g	3.7	30
6800198	Acid Extractable Lead (Pb)	2020/06/25	98	75 - 125	104	80 - 120	<1.0	ug/g	3.3	30
6800198	Acid Extractable Mercury (Hg)	2020/06/25	89	75 - 125	95	80 - 120	<0.050	ug/g	NC	30
6800198	Acid Extractable Molybdenum (Mo)	2020/06/25	103	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
6800198	Acid Extractable Nickel (Ni)	2020/06/25	99	75 - 125	103	80 - 120	<0.50	ug/g	7.4	30
6800198	Acid Extractable Selenium (Se)	2020/06/25	102	75 - 125	107	80 - 120	<0.50	ug/g	NC	30
6800198	Acid Extractable Silver (Ag)	2020/06/25	100	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
6800198	Acid Extractable Thallium (Tl)	2020/06/25	99	75 - 125	103	80 - 120	<0.050	ug/g	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAM ST., WIARTON

Sampler Initials: AE

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6800198	Acid Extractable Uranium (U)	2020/06/25	98	75 - 125	102	80 - 120	<0.050	ug/g	0.48	30
6800198	Acid Extractable Vanadium (V)	2020/06/25	103	75 - 125	106	80 - 120	<5.0	ug/g	0.69	30
6800198	Acid Extractable Zinc (Zn)	2020/06/25	100	75 - 125	99	80 - 120	<5.0	ug/g	10	30
6801042	Available (CaCl ₂) pH	2020/06/23			98	97 - 103			0.11	N/A
6801880	Chromium (VI)	2020/06/25	20 (1)	70 - 130	96	80 - 120	<0.18	ug/g	NC	35
6802412	Conductivity	2020/06/24			103	90 - 110	<0.002	mS/cm	2.3	10
6803207	WAD Cyanide (Free)	2020/06/25	101	75 - 125	100	80 - 120	<0.01	ug/g	8.2	35
6803542	F2 (C10-C16 Hydrocarbons)	2020/06/27	97	50 - 130	97	80 - 120	<10	ug/g	NC	30
6803542	F3 (C16-C34 Hydrocarbons)	2020/06/27	100	50 - 130	101	80 - 120	<50	ug/g	NC	30
6803542	F4 (C34-C50 Hydrocarbons)	2020/06/27	98	50 - 130	99	80 - 120	<50	ug/g	NC	30
6803566	F2 (C10-C16 Hydrocarbons)	2020/06/26	NC	50 - 130	95	60 - 130	<100	ug/L	25	30
6803566	F3 (C16-C34 Hydrocarbons)	2020/06/26	NC	50 - 130	96	60 - 130	<200	ug/L	25	30
6803566	F4 (C34-C50 Hydrocarbons)	2020/06/26	95	50 - 130	96	60 - 130	<200	ug/L	29	30
6803874	Benzene	2020/06/24	98	60 - 140	95	60 - 140	<0.020	ug/g	NC	50
6803874	Ethylbenzene	2020/06/24	111	60 - 140	108	60 - 140	<0.020	ug/g	NC	50
6803874	F1 (C6-C10) - BTEX	2020/06/24					<10	ug/g	NC	30
6803874	F1 (C6-C10)	2020/06/24	103	60 - 140	97	80 - 120	<10	ug/g	NC	30
6803874	o-Xylene	2020/06/24	109	60 - 140	106	60 - 140	<0.020	ug/g	NC	50
6803874	p+m-Xylene	2020/06/24	108	60 - 140	105	60 - 140	<0.040	ug/g	NC	50
6803874	Toluene	2020/06/24	97	60 - 140	95	60 - 140	<0.020	ug/g	NC	50
6803874	Total Xylenes	2020/06/24					<0.040	ug/g	NC	50
6803955	1-Methylnaphthalene	2020/06/25	102	50 - 130	97	50 - 130	<0.0050	ug/g	17	40
6803955	2-Methylnaphthalene	2020/06/25	92	50 - 130	97	50 - 130	<0.0050	ug/g	19	40
6803955	Acenaphthene	2020/06/25	95	50 - 130	98	50 - 130	<0.0050	ug/g	7.6	40
6803955	Acenaphthylene	2020/06/25	101	50 - 130	103	50 - 130	<0.0050	ug/g	20	40
6803955	Anthracene	2020/06/25	86	50 - 130	104	50 - 130	<0.0050	ug/g	22	40
6803955	Benzo(a)anthracene	2020/06/25	102	50 - 130	103	50 - 130	<0.0050	ug/g	17	40
6803955	Benzo(a)pyrene	2020/06/25	87	50 - 130	106	50 - 130	<0.0050	ug/g	34	40
6803955	Benzo(b,j)fluoranthene	2020/06/25	75	50 - 130	112	50 - 130	<0.0050	ug/g	35	40
6803955	Benzo(g,h,i)perylene	2020/06/25	73	50 - 130	105	50 - 130	<0.0050	ug/g	33	40
6803955	Benzo(k)fluoranthene	2020/06/25	80	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40

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Client Project #: 220089

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Sampler Initials: AE

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6803955	Chrysene	2020/06/25	93	50 - 130	113	50 - 130	<0.0050	ug/g	23	40
6803955	Dibenzo(a,h)anthracene	2020/06/25	92	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
6803955	Fluoranthene	2020/06/25	100	50 - 130	110	50 - 130	<0.0050	ug/g	33	40
6803955	Fluorene	2020/06/25	98	50 - 130	104	50 - 130	<0.0050	ug/g	14	40
6803955	Indeno(1,2,3-cd)pyrene	2020/06/25	80	50 - 130	105	50 - 130	<0.0050	ug/g	47 (2)	40
6803955	Naphthalene	2020/06/25	85	50 - 130	91	50 - 130	<0.0050	ug/g	15	40
6803955	Phenanthrene	2020/06/25	98	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
6803955	Pyrene	2020/06/25	93	50 - 130	110	50 - 130	<0.0050	ug/g	14	40
6804388	Benzene	2020/06/25	96	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
6804388	Ethylbenzene	2020/06/25	106	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
6804388	F1 (C6-C10) - BTEX	2020/06/25					<25	ug/L	NC	30
6804388	F1 (C6-C10)	2020/06/25	96	70 - 130	95	70 - 130	<25	ug/L	NC	30
6804388	o-Xylene	2020/06/25	104	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
6804388	p+m-Xylene	2020/06/25	104	70 - 130	103	70 - 130	<0.40	ug/L	NC	30
6804388	Toluene	2020/06/25	95	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
6804388	Total Xylenes	2020/06/25					<0.40	ug/L	NC	30

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.

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 matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results

(2) Duplicate results exceeded RPD acceptance criteria due to the sample heterogeneity. The variability in the results for flagged analyte may be more pronounced.



BUREAU
VERITAS

BV Labs Job #: C0F3401

Report Date: 2020/06/29

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAM ST., WIARTON

Sampler Initials: AE

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.



6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/5

CHAIN OF CUSTODY RECORD

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required	
Company Name: GM BluePlan Engineering		Company Name:		Quotation #:		<input checked="" type="checkbox"/> Regular TAT (5-7 days) Most analyses	
Contact Name: Al Bringleston		Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS	
Address: 1260 2nd Ave E Owen Sound ON N4K 2J3		Address:		Project #: 220089		Rush TAT (Surcharges will be applied)	
Phone: 519-376-1805 Fax:		Phone: Fax:		Site Location: 370 Williams St. Warton		<input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days	
Email: al.bringleston@gmblueplan.ca amanda.eriksen@gmblueplan.ca		Email:		Site #:		Date Required:	
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY				Site Location Province: ON		Rush Confirmation #:	
Regulation 153		Other Regulations		Analysis Requested		LABORATORY USE ONLY	
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/ Fine		<input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw				CUSTODY SEAL Y / N	
<input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse		<input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw				Present Intact	
<input checked="" type="checkbox"/> Table 3 <input type="checkbox"/> Agri/ Other		<input type="checkbox"/> PWQO Region				N N 9/10/10	
<input type="checkbox"/> Table		<input type="checkbox"/> Other (Specify)					
FOR RSC (PLEASE CIRCLE) Y / N		<input type="checkbox"/> REG 558 (MIN. 3 DAY TAT REQUIRED)				COOLING MEDIA PRESENT: Y / N	
Include Criteria on Certificate of Analysis: Y / N						COMMENTS	
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS							
SAMPLE IDENTIFICATION		DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / Cu / Pb	DO NOT ANALYZE
1 MW-1	2020/06/18		Soil	3	X	X	X
2 MW-2-5				3	X	X	X
3 MW-3				3	X	X	X
4 MW-A			GW	4	N	X	X
5 MW-B				4	N	X	X
6 MW-1				4	N	X	X
7 MW-2				4	N	X	X
8 MW-3				4	N	X	X
9 MW-2-12			Soil	2	N	X	X
10							
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Amanda Erikson		2020/06/19		Purulator		2020/06/20	09:37

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas Laboratories' standard Terms and Conditions. Signing of this Chain of Custody does not constitute an agreement to any of our terms available at <http://www.bvlabs.com/terms-and-conditions>

20-Jun-20 09:37

Ashton Gibson

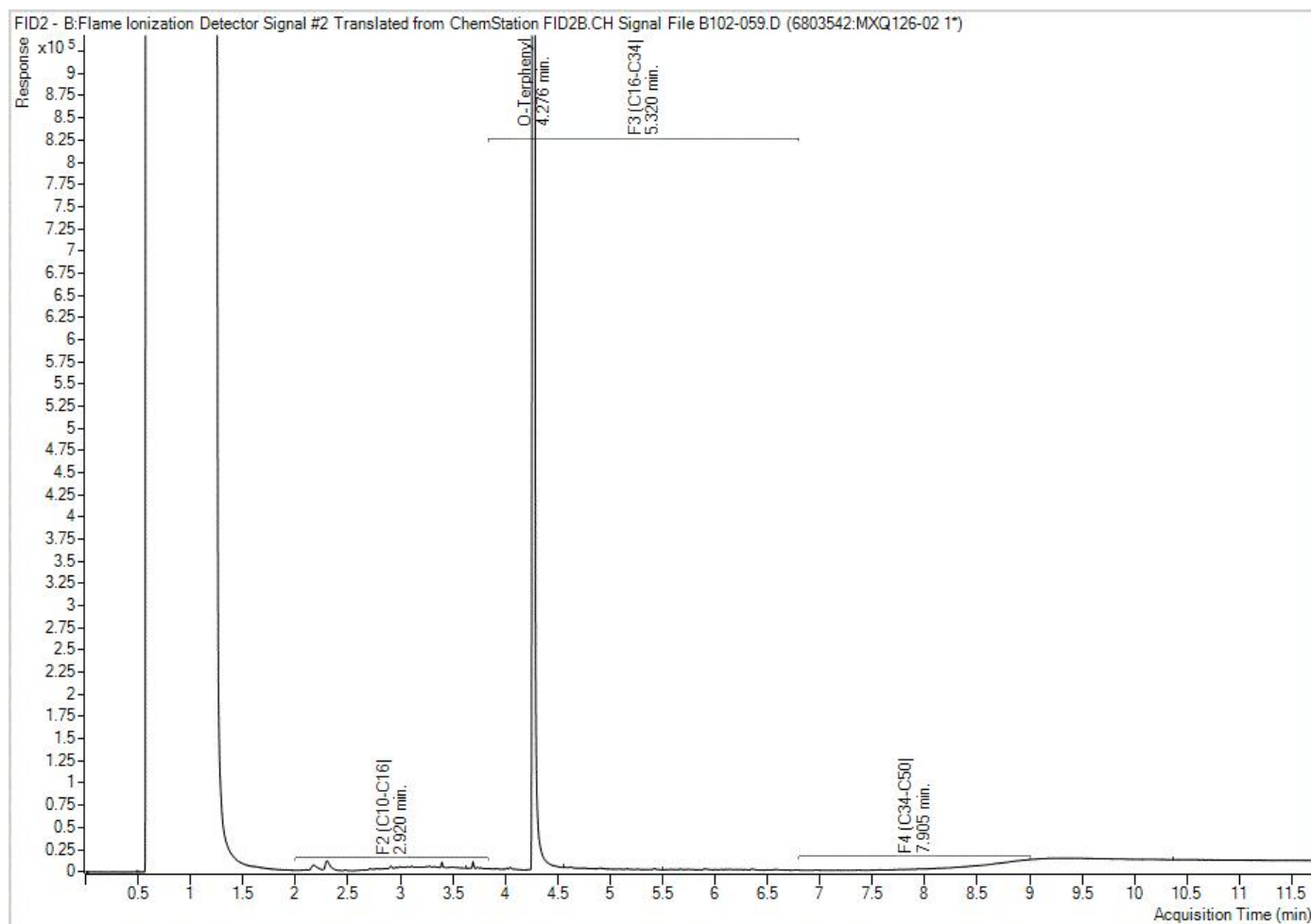
COF3401

MAF ENV-578

BV Labs Job #: C0F3401
Report Date: 2020/06/29
BV Labs Sample: MXQ126

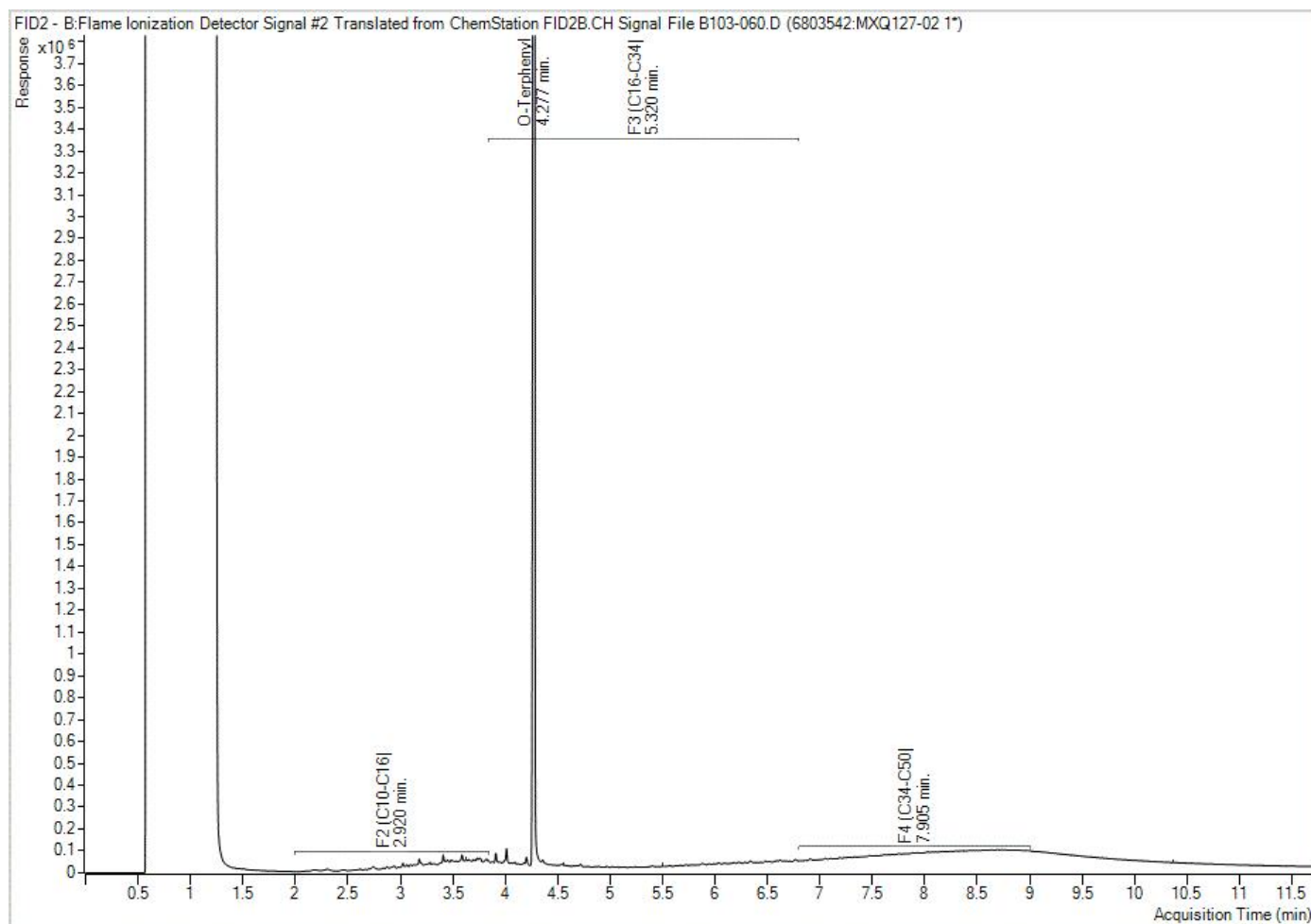
GM BluePlan Engineering Limited
Client Project #: 220089
Project name: 370 WILLIAM ST., WIARTON
Client ID: MW-1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



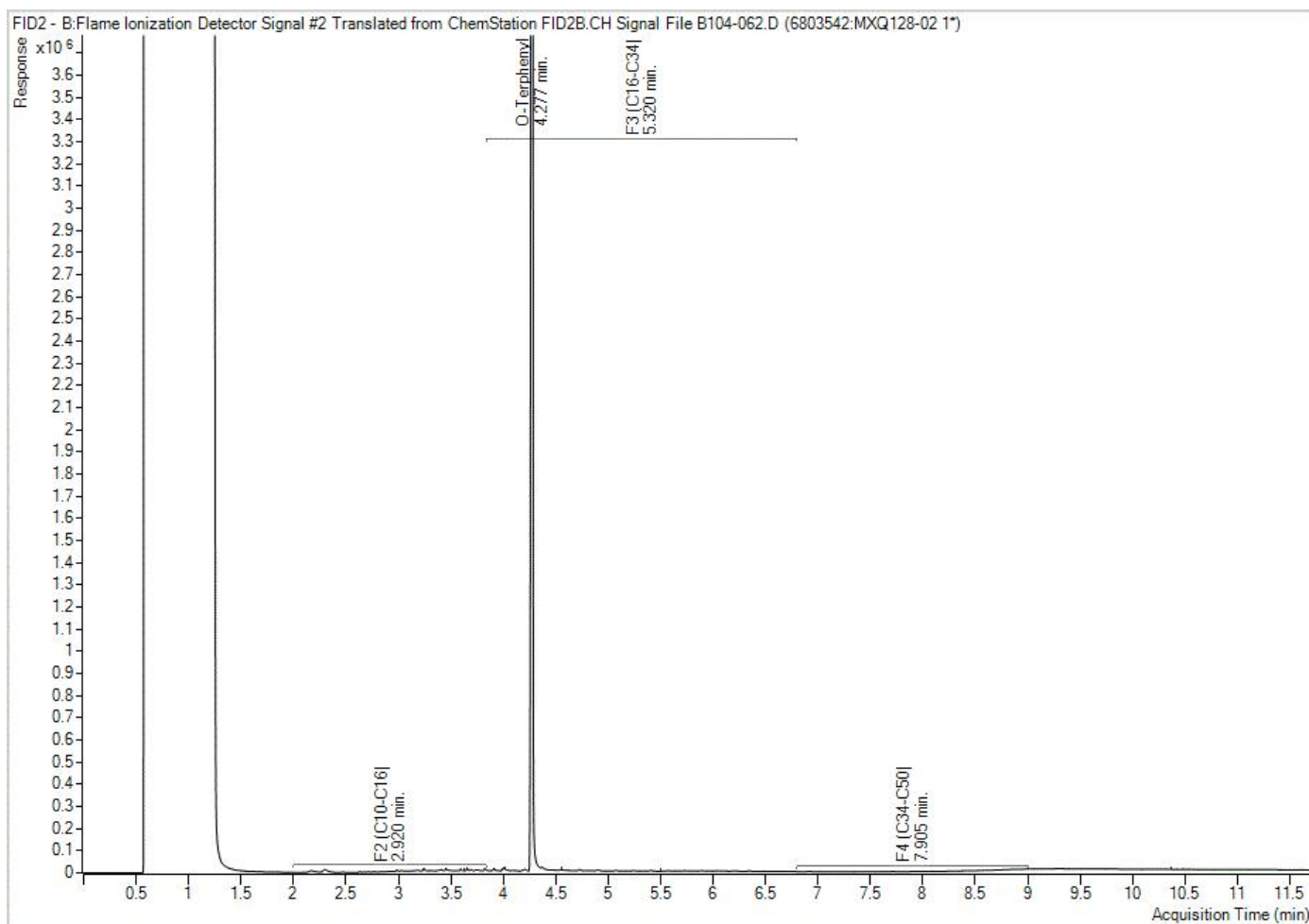
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



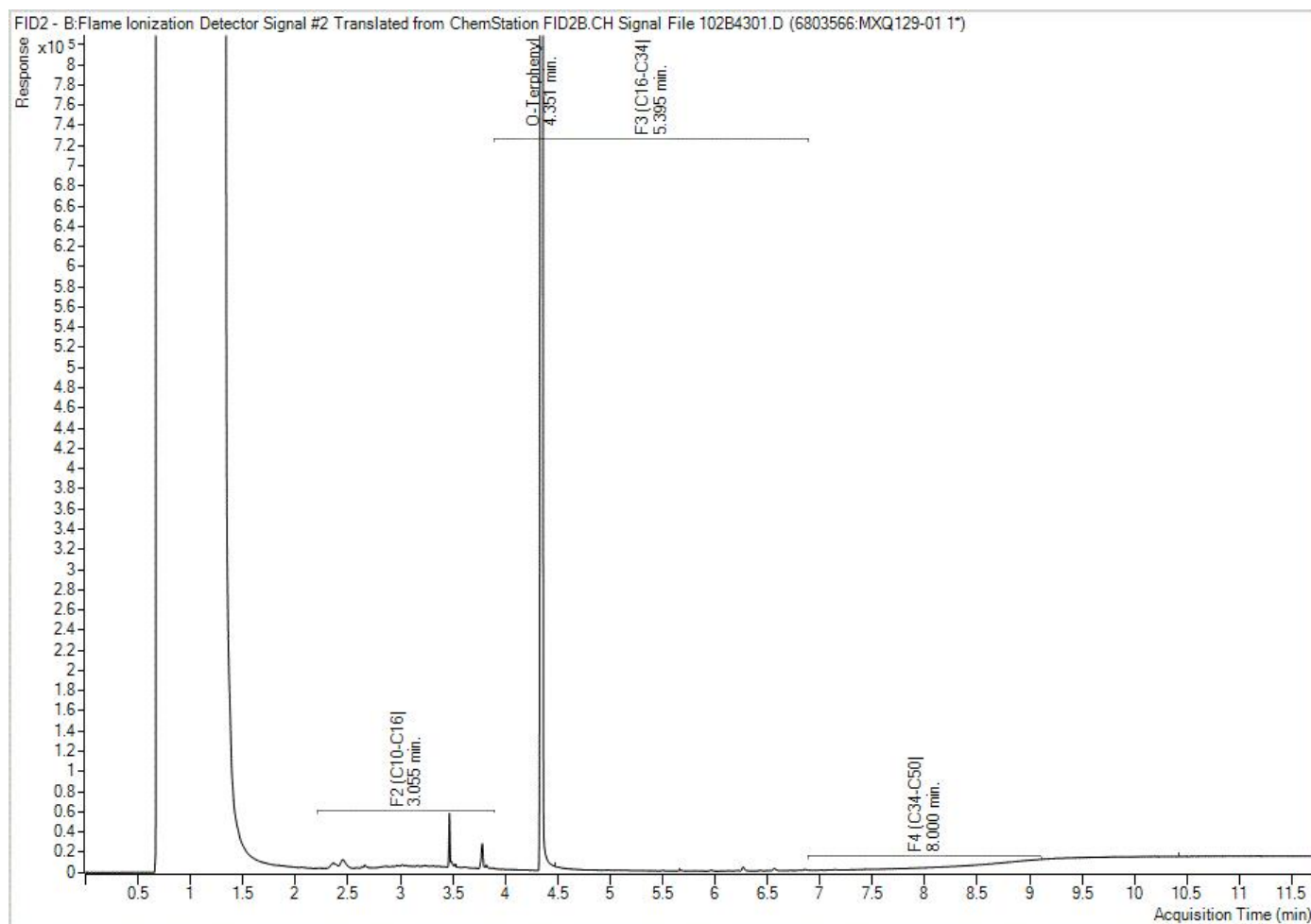
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



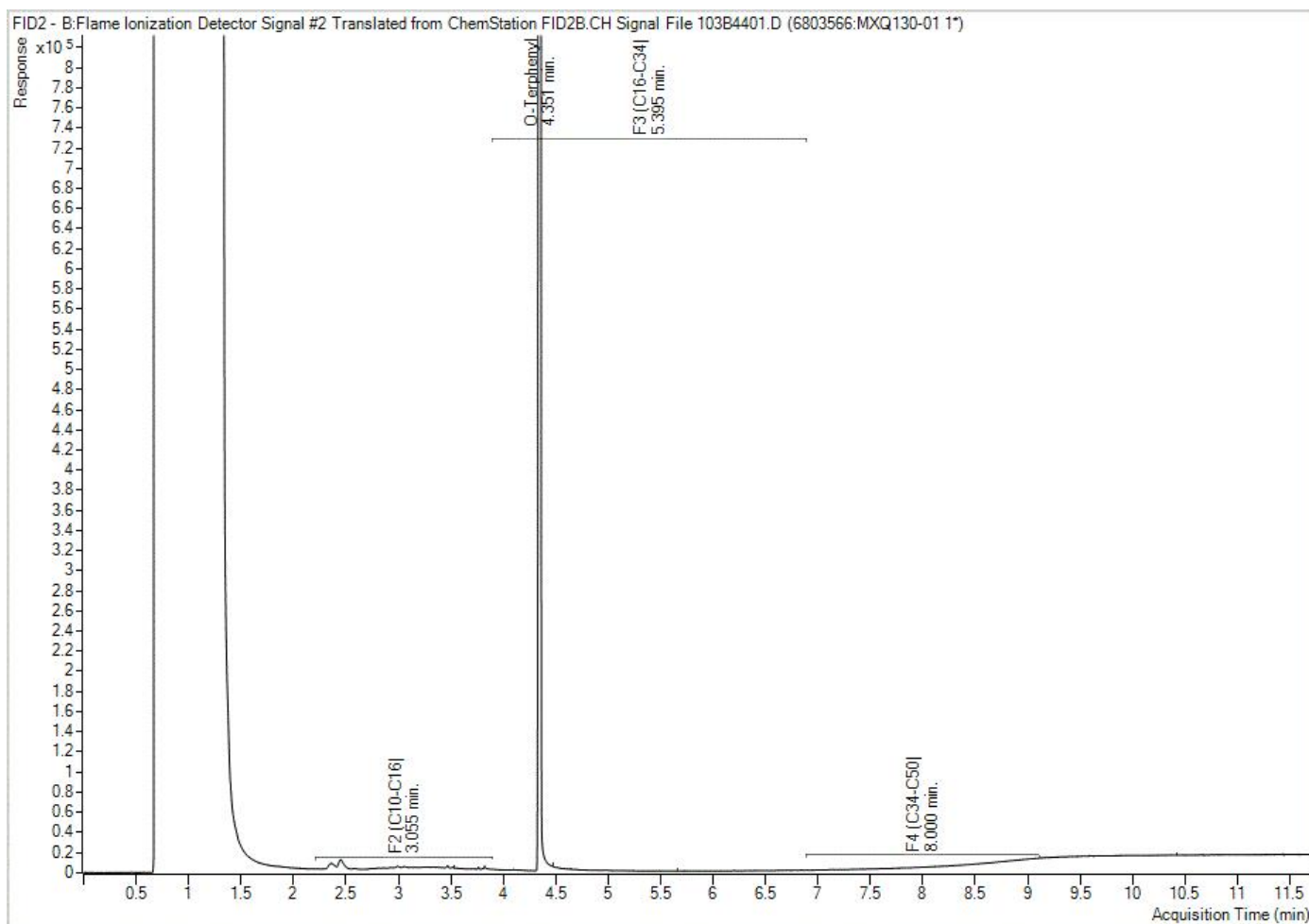
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



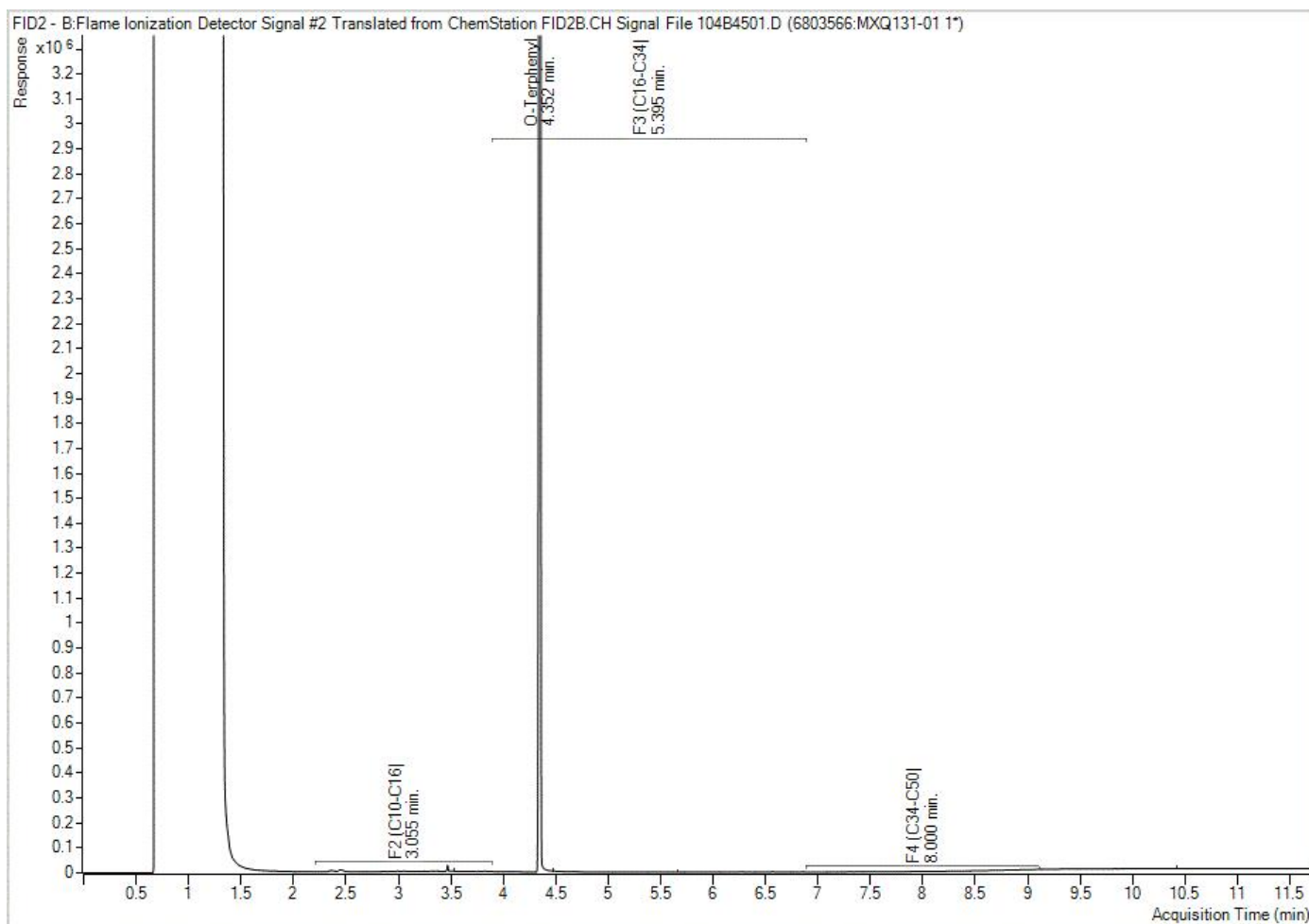
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



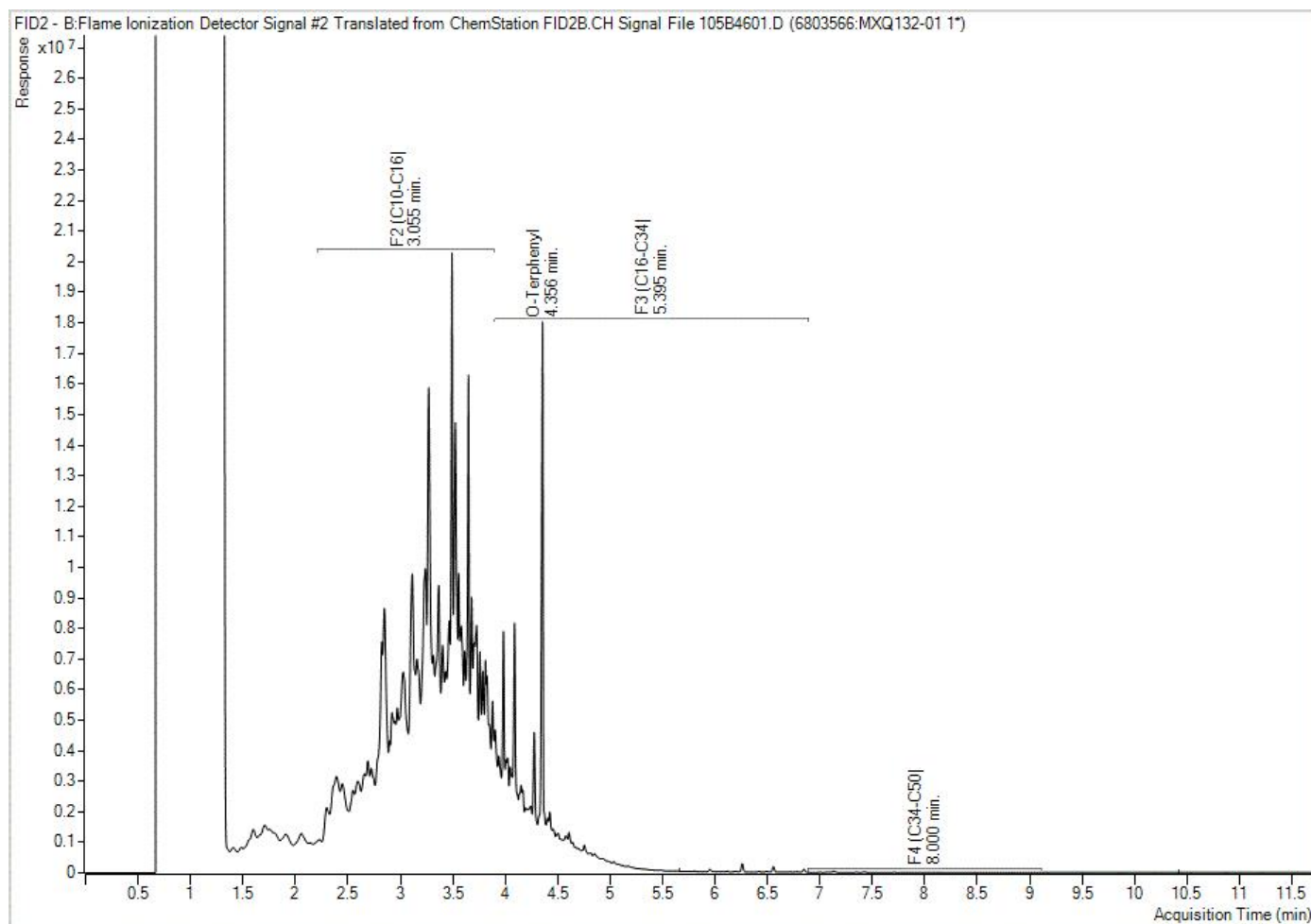
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



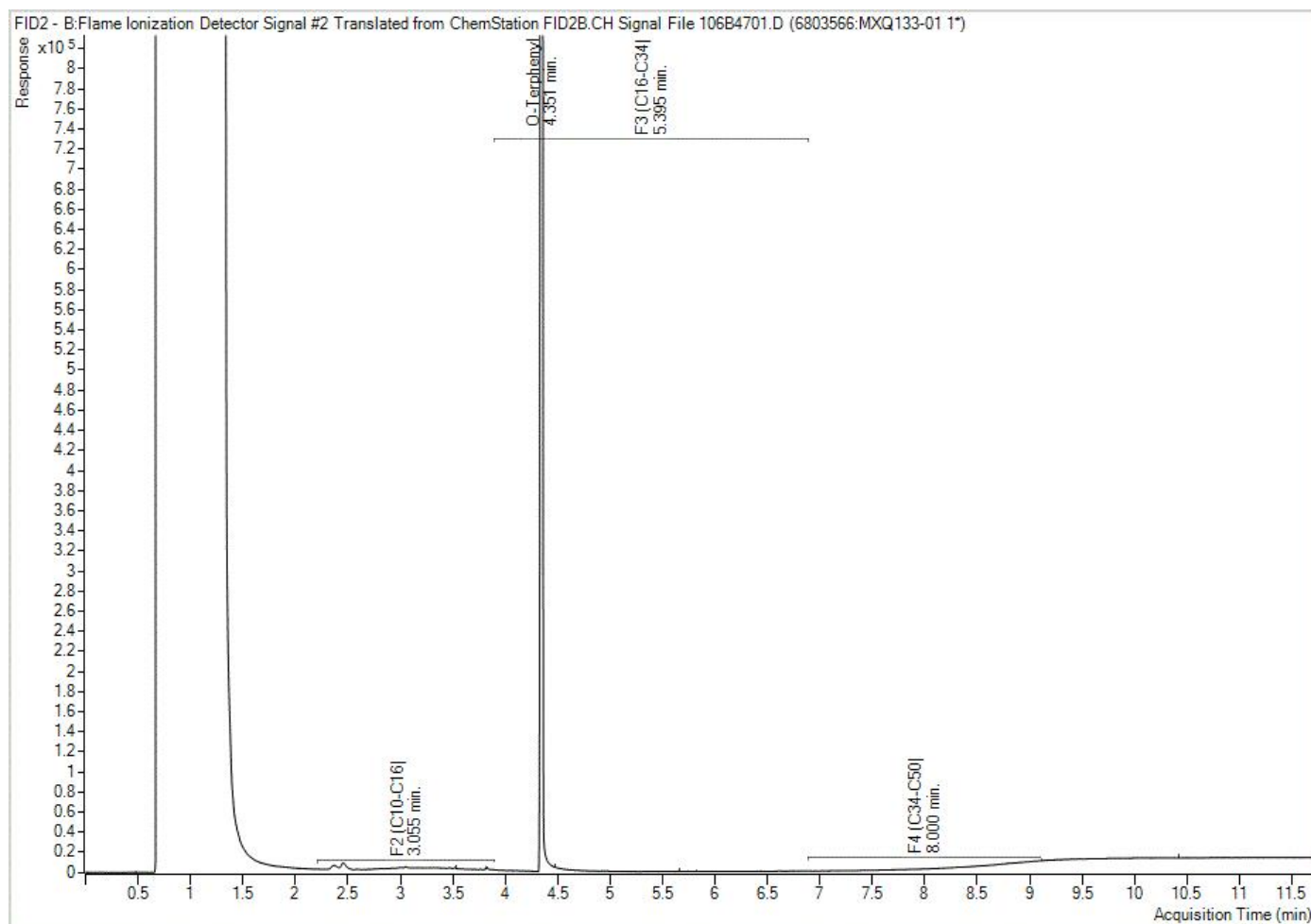
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



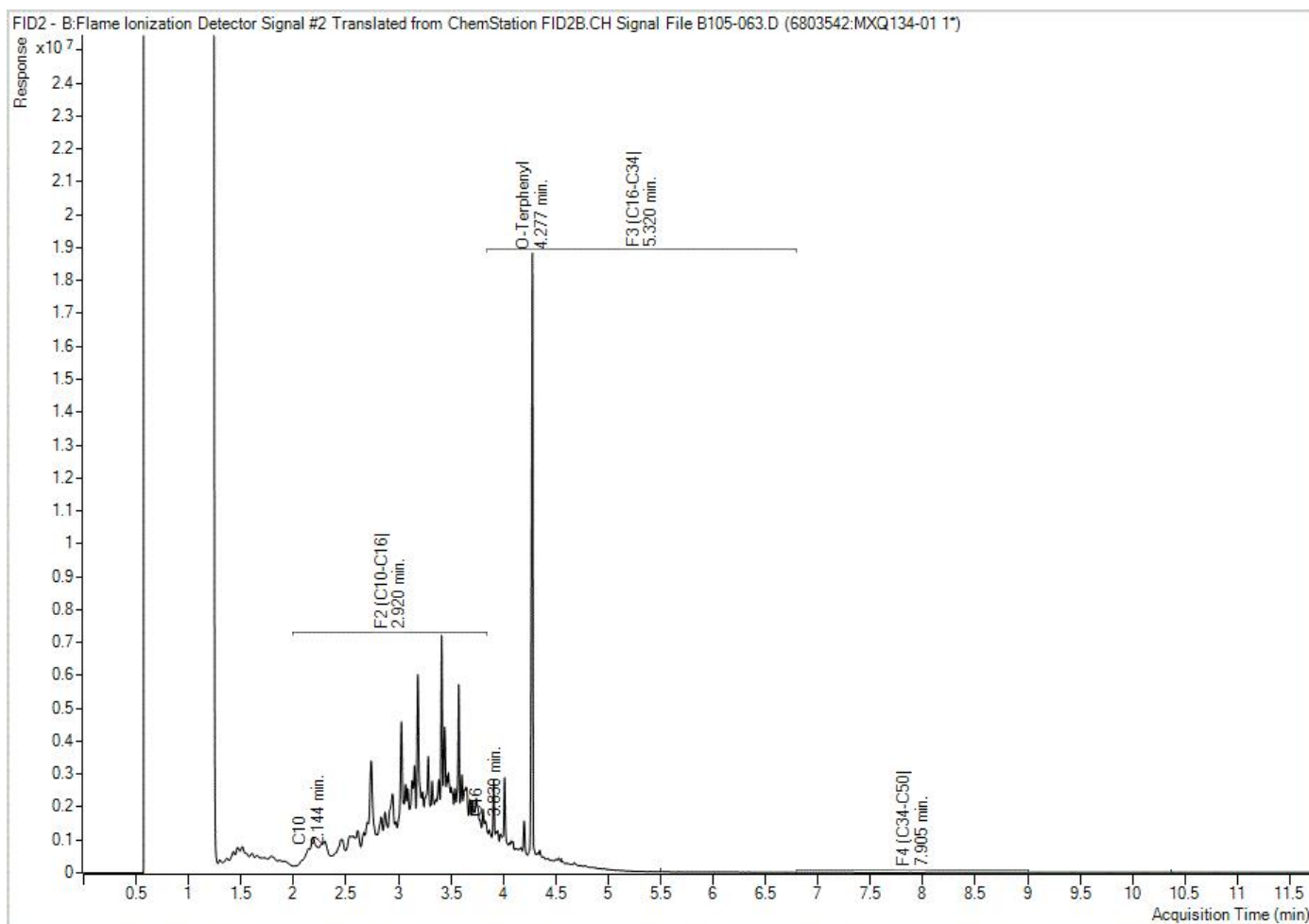
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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 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 #: 220089
Site Location: 370 WILLIAMS ST WIARTON
Your C.O.C. #: na

Attention: Amanda Eriksen

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2020/06/30
Report #: R6229774
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F6424

Received: 2020/06/24, 09:26

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Methylnaphthalene Sum	5	N/A	2020/06/28	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron	5	2020/06/26	2020/06/27	CAM SOP-00408	R153 Ana. Prot. 2011
Free (WAD) Cyanide	5	2020/06/26	2020/06/29	CAM SOP-00457	OMOE E3015 m
Conductivity	5	2020/06/29	2020/06/29	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1)	5	2020/06/26	2020/06/29	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	1	N/A	2020/06/29	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	1	2020/06/26	2020/06/28	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	5	2020/06/26	2020/06/26	CAM SOP-00447	EPA 6020B m
Moisture	6	N/A	2020/06/25	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	5	2020/06/26	2020/06/27	CAM SOP-00318	EPA 8270D m
pH CaCl2 EXTRACT	5	2020/06/29	2020/06/29	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR)	5	N/A	2020/06/30	CAM SOP-00102	EPA 6010C

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs 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 BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs 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.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.



Your Project #: 220089
Site Location: 370 WILLIAMS ST WIARTON
Your C.O.C. #: na

Attention: Amanda Eriksen

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2020/06/30
Report #: R6229774
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F6424

Received: 2020/06/24, 09:26

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) Soils are reported on a dry weight basis unless otherwise specified.

(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.

Ashton Gibson, Project Manager
Email: Ashton.Gibson@bvlabs.com
Phone# (905)817-5765

=====

This report has been generated and distributed using a secure automated process.

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BUREAU
VERITAS

BV Labs Job #: C0F6424

Report Date: 2020/06/30

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAMS ST WIARTON

Sampler Initials: AE

O.REG 153 METALS & INORGANICS PKG (SOIL)

BV Labs ID		MYI653			MYI654			MYI654		
Sampling Date		2020/06/23			2020/06/23			2020/06/23		
COC Number		na			na			na		
	UNITS	TH-4	RDL	QC Batch	TH-1	RDL	QC Batch	TH-1 Lab-Dup	RDL	QC Batch

Calculated Parameters

Sodium Adsorption Ratio	N/A	5.3		6803925	0.46		6804931			
-------------------------	-----	-----	--	---------	------	--	---------	--	--	--

Inorganics

Conductivity	mS/cm	0.62	0.002	6810242	0.26	0.002	6810242			
Available (CaCl ₂) pH	pH	7.38		6810495	7.09		6810495			
WAD Cyanide (Free)	ug/g	0.04	0.04	6808808	0.01	0.01	6808808	<0.01	0.01	6808808
Chromium (VI)	ug/g	<0.90 (1)	0.90	6806989	<0.18	0.18	6806989			

Metals

Hot Water Ext. Boron (B)	ug/g	1.3	0.050	6807418	1.1	0.050	6807418			
Acid Extractable Antimony (Sb)	ug/g	0.74	0.20	6807592	2.2	0.20	6807592			
Acid Extractable Arsenic (As)	ug/g	6.6	1.0	6807592	6.1	1.0	6807592			
Acid Extractable Barium (Ba)	ug/g	78	0.50	6807592	75	0.50	6807592			
Acid Extractable Beryllium (Be)	ug/g	0.33	0.20	6807592	0.43	0.20	6807592			
Acid Extractable Boron (B)	ug/g	8.1	5.0	6807592	11	5.0	6807592			
Acid Extractable Cadmium (Cd)	ug/g	0.23	0.10	6807592	0.26	0.10	6807592			
Acid Extractable Chromium (Cr)	ug/g	9.7	1.0	6807592	8.2	1.0	6807592			
Acid Extractable Cobalt (Co)	ug/g	3.7	0.10	6807592	4.0	0.10	6807592			
Acid Extractable Copper (Cu)	ug/g	24	0.50	6807592	52	0.50	6807592			
Acid Extractable Lead (Pb)	ug/g	200	1.0	6807592	200	1.0	6807592			
Acid Extractable Molybdenum (Mo)	ug/g	0.71	0.50	6807592	1.1	0.50	6807592			
Acid Extractable Nickel (Ni)	ug/g	8.2	0.50	6807592	19	0.50	6807592			
Acid Extractable Selenium (Se)	ug/g	0.70	0.50	6807592	0.71	0.50	6807592			
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6807592	0.64	0.20	6807592			
Acid Extractable Thallium (Tl)	ug/g	0.13	0.050	6807592	0.11	0.050	6807592			
Acid Extractable Uranium (U)	ug/g	0.39	0.050	6807592	0.45	0.050	6807592			
Acid Extractable Vanadium (V)	ug/g	12	5.0	6807592	12	5.0	6807592			
Acid Extractable Zinc (Zn)	ug/g	100	5.0	6807592	120	5.0	6807592			
Acid Extractable Mercury (Hg)	ug/g	0.093	0.050	6807592	0.24	0.050	6807592			

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) Due to sample matrix, sample required dilution. The detection limits were adjusted accordingly

BUREAU
VERITAS

BV Labs Job #: C0F6424

Report Date: 2020/06/30

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAMS ST WIARTON

Sampler Initials: AE

O.REG 153 METALS & INORGANICS PKG (SOIL)

BV Labs ID		MYI655			MYI655		MYI656		
Sampling Date		2020/06/23			2020/06/23		2020/06/23		
COC Number		na			na		na		
	UNITS	TH-3	RDL	QC Batch	TH-3 Lab-Dup	QC Batch	TH-6	RDL	QC Batch

Calculated Parameters

Sodium Adsorption Ratio	N/A	0.20		6804931			0.61		6804931
-------------------------	-----	------	--	---------	--	--	------	--	---------

Inorganics

Conductivity	mS/cm	0.27	0.002	6810242			0.51	0.002	6810242
Available (CaCl ₂) pH	pH	7.46		6810495	7.50	6810495	8.85		6810495
WAD Cyanide (Free)	ug/g	<0.01	0.01	6808808			<0.01	0.01	6808808
Chromium (VI)	ug/g	<0.18	0.18	6806989			<0.18	0.18	6806989

Metals

Hot Water Ext. Boron (B)	ug/g	0.23	0.050	6807418			0.82	0.050	6807418
Acid Extractable Antimony (Sb)	ug/g	1.3	0.20	6807592			0.39	0.20	6807592
Acid Extractable Arsenic (As)	ug/g	11	1.0	6807592			6.8	1.0	6807592
Acid Extractable Barium (Ba)	ug/g	120	0.50	6807592			470	0.50	6807592
Acid Extractable Beryllium (Be)	ug/g	0.93	0.20	6807592			<0.20	0.20	6807592
Acid Extractable Boron (B)	ug/g	9.9	5.0	6807592			15	5.0	6807592
Acid Extractable Cadmium (Cd)	ug/g	0.19	0.10	6807592			0.56	0.10	6807592
Acid Extractable Chromium (Cr)	ug/g	13	1.0	6807592			11	1.0	6807592
Acid Extractable Cobalt (Co)	ug/g	8.2	0.10	6807592			3.3	0.10	6807592
Acid Extractable Copper (Cu)	ug/g	100	0.50	6807592			39	0.50	6807592
Acid Extractable Lead (Pb)	ug/g	60	1.0	6807592			820	1.0	6807592
Acid Extractable Molybdenum (Mo)	ug/g	2.6	0.50	6807592			<0.50	0.50	6807592
Acid Extractable Nickel (Ni)	ug/g	21	0.50	6807592			5.3	0.50	6807592
Acid Extractable Selenium (Se)	ug/g	1.0	0.50	6807592			<0.50	0.50	6807592
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6807592			<0.20	0.20	6807592
Acid Extractable Thallium (Tl)	ug/g	0.33	0.050	6807592			<0.050	0.050	6807592
Acid Extractable Uranium (U)	ug/g	0.64	0.050	6807592			0.45	0.050	6807592
Acid Extractable Vanadium (V)	ug/g	26	5.0	6807592			13	5.0	6807592
Acid Extractable Zinc (Zn)	ug/g	76	5.0	6807592			450	5.0	6807592
Acid Extractable Mercury (Hg)	ug/g	0.28	0.050	6807592			<0.050	0.050	6807592

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

**O.REG 153 METALS & INORGANICS PKG (SOIL)**

BV Labs ID		MYI658		
Sampling Date		2020/06/23		
COC Number		na		
	UNITS	TH-5	RDL	QC Batch
Calculated Parameters				
Sodium Adsorption Ratio	N/A	4.1		6803925
Inorganics				
Conductivity	mS/cm	0.24	0.002	6810242
Available (CaCl ₂) pH	pH	7.75		6810495
WAD Cyanide (Free)	ug/g	<0.01	0.01	6807738
Chromium (VI)	ug/g	<0.18	0.18	6806989
Metals				
Hot Water Ext. Boron (B)	ug/g	0.45	0.050	6807418
Acid Extractable Antimony (Sb)	ug/g	1.6	0.20	6807592
Acid Extractable Arsenic (As)	ug/g	8.6	1.0	6807592
Acid Extractable Barium (Ba)	ug/g	46	0.50	6807592
Acid Extractable Beryllium (Be)	ug/g	0.56	0.20	6807592
Acid Extractable Boron (B)	ug/g	12	5.0	6807592
Acid Extractable Cadmium (Cd)	ug/g	0.14	0.10	6807592
Acid Extractable Chromium (Cr)	ug/g	9.0	1.0	6807592
Acid Extractable Cobalt (Co)	ug/g	5.4	0.10	6807592
Acid Extractable Copper (Cu)	ug/g	44	0.50	6807592
Acid Extractable Lead (Pb)	ug/g	55	1.0	6807592
Acid Extractable Molybdenum (Mo)	ug/g	2.3	0.50	6807592
Acid Extractable Nickel (Ni)	ug/g	15	0.50	6807592
Acid Extractable Selenium (Se)	ug/g	0.58	0.50	6807592
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6807592
Acid Extractable Thallium (Tl)	ug/g	0.20	0.050	6807592
Acid Extractable Uranium (U)	ug/g	0.89	0.050	6807592
Acid Extractable Vanadium (V)	ug/g	19	5.0	6807592
Acid Extractable Zinc (Zn)	ug/g	45	5.0	6807592
Acid Extractable Mercury (Hg)	ug/g	0.083	0.050	6807592
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

BUREAU
VERITAS

BV Labs Job #: C0F6424

Report Date: 2020/06/30

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAMS ST WIARTON

Sampler Initials: AE

O.REG 153 PAHS (SOIL)

BV Labs ID		MYI653			MYI654		MYI655		MYI656		
Sampling Date		2020/06/23			2020/06/23		2020/06/23		2020/06/23		
COC Number		na			na		na		na		
	UNITS	TH-4	RDL	QC Batch	TH-1	RDL	TH-3	RDL	TH-6	RDL	QC Batch
Inorganics											
Moisture	%	30	1.0	6805354	12	1.0	15	1.0	18	1.0	6805457
Calculated Parameters											
Methylnaphthalene, 2-(1-)	ug/g	0.44	0.071	6803956	0.42	0.0071	0.37	0.071	<0.0071	0.0071	6804934
Polyaromatic Hydrocarbons											
Acenaphthene	ug/g	0.53	0.050	6808206	0.46	0.0050	0.097	0.050	<0.0050	0.0050	6808206
Acenaphthylene	ug/g	0.57	0.050	6808206	0.24	0.0050	0.068	0.050	<0.0050	0.0050	6808206
Anthracene	ug/g	1.5	0.050	6808206	0.96	0.0050	0.18	0.050	<0.0050	0.0050	6808206
Benzo(a)anthracene	ug/g	6.1	0.050	6808206	2.5	0.0050	0.60	0.050	<0.0050	0.0050	6808206
Benzo(a)pyrene	ug/g	6.2	0.050	6808206	2.4	0.0050	0.60	0.050	<0.0050	0.0050	6808206
Benzo(b/j)fluoranthene	ug/g	7.5	0.050	6808206	3.1	0.0050	0.82	0.050	0.013	0.0050	6808206
Benzo(g,h,i)perylene	ug/g	3.8	0.050	6808206	1.4	0.0050	0.42	0.050	0.0074	0.0050	6808206
Benzo(k)fluoranthene	ug/g	2.7	0.050	6808206	1.1	0.0050	0.30	0.050	<0.0050	0.0050	6808206
Chrysene	ug/g	5.1	0.050	6808206	2.1	0.0050	0.53	0.050	0.0060	0.0050	6808206
Dibenzo(a,h)anthracene	ug/g	0.93	0.050	6808206	0.39	0.0050	0.097	0.050	<0.0050	0.0050	6808206
Fluoranthene	ug/g	13	0.050	6808206	5.9	0.0050	1.3	0.050	0.0098	0.0050	6808206
Fluorene	ug/g	0.58	0.050	6808206	0.45	0.0050	0.090	0.050	<0.0050	0.0050	6808206
Indeno(1,2,3-cd)pyrene	ug/g	3.8	0.050	6808206	1.6	0.0050	0.43	0.050	0.0066	0.0050	6808206
1-Methylnaphthalene	ug/g	0.21	0.050	6808206	0.20	0.0050	0.19	0.050	<0.0050	0.0050	6808206
2-Methylnaphthalene	ug/g	0.23	0.050	6808206	0.21	0.0050	0.19	0.050	<0.0050	0.0050	6808206
Naphthalene	ug/g	0.37	0.050	6808206	0.14	0.0050	0.12	0.050	0.0064	0.0050	6808206
Phenanthrene	ug/g	6.5	0.050	6808206	3.8	0.0050	0.96	0.050	0.010	0.0050	6808206
Pyrene	ug/g	11	0.050	6808206	4.7	0.0050	1.1	0.050	0.043	0.0050	6808206
Surrogate Recovery (%)											
D10-Anthracene	%	107		6808206	97		95		94		6808206
D14-Terphenyl (FS)	%	105		6808206	101		91		97		6808206
D8-Acenaphthylene	%	99		6808206	93		95		97		6808206
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											



BUREAU
VERITAS

BV Labs Job #: C0F6424
Report Date: 2020/06/30

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAMS ST WIARTON
Sampler Initials: AE

O.REG 153 PAHS (SOIL)

BV Labs ID		MYI658		
Sampling Date		2020/06/23		
COC Number		na		
	UNITS	TH-5	RDL	QC Batch
Inorganics				
Moisture	%	10	1.0	6805457
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	0.50	0.0071	6803956
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	0.020	0.0050	6808206
Acenaphthylene	ug/g	0.018	0.0050	6808206
Anthracene	ug/g	0.030	0.0050	6808206
Benzo(a)anthracene	ug/g	0.059	0.0050	6808206
Benzo(a)pyrene	ug/g	0.054	0.0050	6808206
Benzo(b/j)fluoranthene	ug/g	0.090	0.0050	6808206
Benzo(g,h,i)perylene	ug/g	0.054	0.0050	6808206
Benzo(k)fluoranthene	ug/g	0.024	0.0050	6808206
Chrysene	ug/g	0.066	0.0050	6808206
Dibenzo(a,h)anthracene	ug/g	0.011	0.0050	6808206
Fluoranthene	ug/g	0.090	0.0050	6808206
Fluorene	ug/g	0.016	0.0050	6808206
Indeno(1,2,3-cd)pyrene	ug/g	0.041	0.0050	6808206
1-Methylnaphthalene	ug/g	0.25	0.0050	6808206
2-Methylnaphthalene	ug/g	0.25	0.0050	6808206
Naphthalene	ug/g	0.14	0.0050	6808206
Phenanthrene	ug/g	0.28	0.0050	6808206
Pyrene	ug/g	0.096	0.0050	6808206
Surrogate Recovery (%)				
D10-Anthracene	%	83		6808206
D14-Terphenyl (FS)	%	88		6808206
D8-Acenaphthylene	%	89		6808206
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

**O.REG 153 PHCS, BTEX/F1-F4 (SOIL)**

BV Labs ID		MYI657		
Sampling Date		2020/06/23		
COC Number		na		
	UNITS	TH-2A	RDL	QC Batch
Inorganics				
Moisture	%	17	1.0	6805354
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.10	0.10	6809359
Toluene	ug/g	<0.10	0.10	6809359
Ethylbenzene	ug/g	<0.10	0.10	6809359
o-Xylene	ug/g	<0.10	0.10	6809359
p+m-Xylene	ug/g	<0.20	0.20	6809359
Total Xylenes	ug/g	<0.20	0.20	6809359
F1 (C6-C10)	ug/g	390	50	6809359
F1 (C6-C10) - BTEX	ug/g	390	50	6809359
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	2500	10	6806847
F3 (C16-C34 Hydrocarbons)	ug/g	880	50	6806847
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	6806847
Reached Baseline at C50	ug/g	Yes		6806847
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	98		6809359
4-Bromofluorobenzene	%	101		6809359
D10-o-Xylene	%	109		6809359
D4-1,2-Dichloroethane	%	98		6809359
o-Terphenyl	%	90		6806847
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



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VERITAS

BV Labs Job #: C0F6424
Report Date: 2020/06/30

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAMS ST WIARTON
Sampler Initials: AE

TEST SUMMARY

BV Labs ID: MYI653
Sample ID: TH-4
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6803956	N/A	2020/06/28	Automated Statchk
Hot Water Extractable Boron	ICP	6807418	2020/06/26	2020/06/27	Archana Patel
Free (WAD) Cyanide	TECH	6808808	2020/06/26	2020/06/29	Gnana Thomas
Conductivity	AT	6810242	2020/06/29	2020/06/29	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	6806989	2020/06/26	2020/06/29	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6807592	2020/06/26	2020/06/26	Daniel Teclu
Moisture	BAL	6805354	N/A	2020/06/25	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6808206	2020/06/26	2020/06/27	Jett Wu
pH CaCl2 EXTRACT	AT	6810495	2020/06/29	2020/06/29	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	6803925	N/A	2020/06/30	Automated Statchk

BV Labs ID: MYI654
Sample ID: TH-1
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6804934	N/A	2020/06/28	Automated Statchk
Hot Water Extractable Boron	ICP	6807418	2020/06/26	2020/06/27	Archana Patel
Free (WAD) Cyanide	TECH	6808808	2020/06/26	2020/06/29	Gnana Thomas
Conductivity	AT	6810242	2020/06/29	2020/06/29	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	6806989	2020/06/26	2020/06/29	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6807592	2020/06/26	2020/06/26	Daniel Teclu
Moisture	BAL	6805457	N/A	2020/06/25	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6808206	2020/06/26	2020/06/27	Jett Wu
pH CaCl2 EXTRACT	AT	6810495	2020/06/29	2020/06/29	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	6804931	N/A	2020/06/30	Automated Statchk

BV Labs ID: MYI654 Dup
Sample ID: TH-1
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	6808808	2020/06/26	2020/06/29	Gnana Thomas

BV Labs ID: MYI655
Sample ID: TH-3
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6804934	N/A	2020/06/28	Automated Statchk
Hot Water Extractable Boron	ICP	6807418	2020/06/26	2020/06/27	Archana Patel
Free (WAD) Cyanide	TECH	6808808	2020/06/26	2020/06/29	Gnana Thomas
Conductivity	AT	6810242	2020/06/29	2020/06/29	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	6806989	2020/06/26	2020/06/29	Violeta Porcila



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BV Labs Job #: C0F6424
Report Date: 2020/06/30

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAMS ST WIARTON
Sampler Initials: AE

TEST SUMMARY

BV Labs ID: MYI655
Sample ID: TH-3
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6807592	2020/06/26	2020/06/26	Daniel Teclu
Moisture	BAL	6805457	N/A	2020/06/25	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6808206	2020/06/26	2020/06/27	Jett Wu
pH CaCl2 EXTRACT	AT	6810495	2020/06/29	2020/06/29	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	6804931	N/A	2020/06/30	Automated Statchk

BV Labs ID: MYI655 Dup
Sample ID: TH-3
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6810495	2020/06/29	2020/06/29	Neil Dassanayake

BV Labs ID: MYI656
Sample ID: TH-6
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6804934	N/A	2020/06/28	Automated Statchk
Hot Water Extractable Boron	ICP	6807418	2020/06/26	2020/06/27	Archana Patel
Free (WAD) Cyanide	TECH	6808808	2020/06/26	2020/06/29	Gnana Thomas
Conductivity	AT	6810242	2020/06/29	2020/06/29	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	6806989	2020/06/26	2020/06/29	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6807592	2020/06/26	2020/06/26	Daniel Teclu
Moisture	BAL	6805457	N/A	2020/06/25	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6808206	2020/06/26	2020/06/27	Jett Wu
pH CaCl2 EXTRACT	AT	6810495	2020/06/29	2020/06/29	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	6804931	N/A	2020/06/30	Automated Statchk

BV Labs ID: MYI657
Sample ID: TH-2A
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6809359	N/A	2020/06/29	Joe Paino
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6806847	2020/06/26	2020/06/28	Prabhjot Gulati
Moisture	BAL	6805354	N/A	2020/06/25	Chun Yan

BV Labs ID: MYI658
Sample ID: TH-5
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6803956	N/A	2020/06/28	Automated Statchk
Hot Water Extractable Boron	ICP	6807418	2020/06/26	2020/06/27	Archana Patel



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BV Labs Job #: C0F6424
Report Date: 2020/06/30

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAMS ST WIARTON
Sampler Initials: AE

TEST SUMMARY

BV Labs ID: MYI658
Sample ID: TH-5
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	6807738	2020/06/26	2020/06/29	Gnana Thomas
Conductivity	AT	6810242	2020/06/29	2020/06/29	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	6806989	2020/06/26	2020/06/29	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6807592	2020/06/26	2020/06/26	Daniel Teclu
Moisture	BAL	6805457	N/A	2020/06/25	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6808206	2020/06/26	2020/06/27	Jett Wu
pH CaCl2 EXTRACT	AT	6810495	2020/06/29	2020/06/29	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	6803925	N/A	2020/06/30	Automated Statchk



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BV Labs Job #: C0F6424
Report Date: 2020/06/30

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAMS ST WIARTON
Sampler Initials: AE

GENERAL COMMENTS

Sample MYI653 [TH-4] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample MYI655 [TH-3] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample MYI657 [TH-2A] : F1/ BTEX analysis: Due to matrix interferences, sample required dilution. Reporting limits were adjusted accordingly

Results relate only to the items tested.

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VERITAS

BV Labs Job #: C0F6424

Report Date: 2020/06/30

QUALITY ASSURANCE REPORT

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAMS ST WIARTON

Sampler Initials: AE

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6806847	o-Terphenyl	2020/06/28	86	60 - 130	88	60 - 130	92	%		
6808206	D10-Anthracene	2020/06/27	97	50 - 130	98	50 - 130	103	%		
6808206	D14-Terphenyl (FS)	2020/06/27	100	50 - 130	96	50 - 130	98	%		
6808206	D8-Acenaphthylene	2020/06/27	97	50 - 130	98	50 - 130	101	%		
6809359	1,4-Difluorobenzene	2020/06/27	95	60 - 140	93	60 - 140	95	%		
6809359	4-Bromofluorobenzene	2020/06/27	105	60 - 140	105	60 - 140	105	%		
6809359	D10-o-Xylene	2020/06/27	96	60 - 140	96	60 - 140	101	%		
6809359	D4-1,2-Dichloroethane	2020/06/27	96	60 - 140	97	60 - 140	99	%		
6805354	Moisture	2020/06/25							3.0	20
6805457	Moisture	2020/06/25							0.62	20
6806847	F2 (C10-C16 Hydrocarbons)	2020/06/28	88	50 - 130	88	80 - 120	<10	ug/g	NC	30
6806847	F3 (C16-C34 Hydrocarbons)	2020/06/28	91	50 - 130	90	80 - 120	<50	ug/g	NC	30
6806847	F4 (C34-C50 Hydrocarbons)	2020/06/28	92	50 - 130	90	80 - 120	<50	ug/g	NC	30
6806989	Chromium (VI)	2020/06/29	78	70 - 130	100	80 - 120	<0.18	ug/g	NC	35
6807418	Hot Water Ext. Boron (B)	2020/06/27	108	75 - 125	102	75 - 125	<0.050	ug/g	7.6	40
6807592	Acid Extractable Antimony (Sb)	2020/06/26	82	75 - 125	102	80 - 120	<0.20	ug/g	9.0	30
6807592	Acid Extractable Arsenic (As)	2020/06/26	91	75 - 125	103	80 - 120	<1.0	ug/g	4.3	30
6807592	Acid Extractable Barium (Ba)	2020/06/26	NC	75 - 125	100	80 - 120	<0.50	ug/g	6.6	30
6807592	Acid Extractable Beryllium (Be)	2020/06/26	95	75 - 125	104	80 - 120	<0.20	ug/g	3.6	30
6807592	Acid Extractable Boron (B)	2020/06/26	81	75 - 125	99	80 - 120	<5.0	ug/g	2.3	30
6807592	Acid Extractable Cadmium (Cd)	2020/06/26	93	75 - 125	99	80 - 120	<0.10	ug/g	21	30
6807592	Acid Extractable Chromium (Cr)	2020/06/26	88	75 - 125	102	80 - 120	<1.0	ug/g	8.5	30
6807592	Acid Extractable Cobalt (Co)	2020/06/26	90	75 - 125	100	80 - 120	<0.10	ug/g	5.5	30
6807592	Acid Extractable Copper (Cu)	2020/06/26	NC	75 - 125	97	80 - 120	<0.50	ug/g	6.9	30
6807592	Acid Extractable Lead (Pb)	2020/06/26	83	75 - 125	97	80 - 120	<1.0	ug/g	6.6	30
6807592	Acid Extractable Mercury (Hg)	2020/06/26	78	75 - 125	87	80 - 120	<0.050	ug/g	NC	30
6807592	Acid Extractable Molybdenum (Mo)	2020/06/26	89	75 - 125	99	80 - 120	<0.50	ug/g	23	30
6807592	Acid Extractable Nickel (Ni)	2020/06/26	85	75 - 125	98	80 - 120	<0.50	ug/g	6.6	30
6807592	Acid Extractable Selenium (Se)	2020/06/26	92	75 - 125	101	80 - 120	<0.50	ug/g	23	30
6807592	Acid Extractable Silver (Ag)	2020/06/26	93	75 - 125	99	80 - 120	<0.20	ug/g	2.3	30
6807592	Acid Extractable Thallium (Tl)	2020/06/26	89	75 - 125	97	80 - 120	<0.050	ug/g	16	30

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BV Labs Job #: C0F6424

Report Date: 2020/06/30

QUALITY ASSURANCE REPORT(CONT'D)

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAMS ST WIARTON

Sampler Initials: AE

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6807592	Acid Extractable Uranium (U)	2020/06/26	96	75 - 125	104	80 - 120	<0.050	ug/g	7.4	30
6807592	Acid Extractable Vanadium (V)	2020/06/26	NC	75 - 125	103	80 - 120	<5.0	ug/g	7.8	30
6807592	Acid Extractable Zinc (Zn)	2020/06/26	NC	75 - 125	105	80 - 120	<5.0	ug/g	13	30
6807738	WAD Cyanide (Free)	2020/06/29	100	75 - 125	94	80 - 120	<0.01	ug/g	0.56	35
6808206	1-Methylnaphthalene	2020/06/27	98	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
6808206	2-Methylnaphthalene	2020/06/27	98	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
6808206	Acenaphthene	2020/06/27	96	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
6808206	Acenaphthylene	2020/06/27	91	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
6808206	Anthracene	2020/06/27	95	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
6808206	Benzo(a)anthracene	2020/06/27	101	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
6808206	Benzo(a)pyrene	2020/06/27	98	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
6808206	Benzo(b,j)fluoranthene	2020/06/27	98	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
6808206	Benzo(g,h,i)perylene	2020/06/27	99	50 - 130	99	50 - 130	<0.0050	ug/g	18	40
6808206	Benzo(k)fluoranthene	2020/06/27	94	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
6808206	Chrysene	2020/06/27	102	50 - 130	105	50 - 130	<0.0050	ug/g	NC	40
6808206	Dibenzo(a,h)anthracene	2020/06/27	103	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
6808206	Fluoranthene	2020/06/27	104	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
6808206	Fluorene	2020/06/27	99	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
6808206	Indeno(1,2,3-cd)pyrene	2020/06/27	98	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
6808206	Naphthalene	2020/06/27	85	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
6808206	Phenanthrene	2020/06/27	97	50 - 130	101	50 - 130	<0.0050	ug/g	23	40
6808206	Pyrene	2020/06/27	103	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
6808808	WAD Cyanide (Free)	2020/06/29	90	75 - 125	97	80 - 120	<0.01	ug/g	4.9	35
6809359	Benzene	2020/06/27	91	60 - 140	90	60 - 140	<0.020	ug/g	NC	50
6809359	Ethylbenzene	2020/06/27	107	60 - 140	105	60 - 140	<0.020	ug/g	NC	50
6809359	F1 (C6-C10) - BTEX	2020/06/27					<10	ug/g	NC	30
6809359	F1 (C6-C10)	2020/06/27	90	60 - 140	94	80 - 120	<10	ug/g	NC	30
6809359	o-Xylene	2020/06/27	104	60 - 140	104	60 - 140	<0.020	ug/g	NC	50
6809359	p+m-Xylene	2020/06/27	104	60 - 140	103	60 - 140	<0.040	ug/g	NC	50
6809359	Toluene	2020/06/27	93	60 - 140	91	60 - 140	<0.020	ug/g	NC	50
6809359	Total Xylenes	2020/06/27					<0.040	ug/g	NC	50



BUREAU
VERITAS

BV Labs Job #: C0F6424

Report Date: 2020/06/30

QUALITY ASSURANCE REPORT(CONT'D)

GM BluePlan Engineering Limited

Client Project #: 220089

Site Location: 370 WILLIAMS ST WIARTON

Sampler Initials: AE

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6810242	Conductivity	2020/06/29			103	90 - 110	<0.002	mS/cm	0.45	10
6810495	Available (CaCl ₂) pH	2020/06/29			100	97 - 103			0.51	N/A

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.

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 $\leq 2 \times$ RDL).



BUREAU
VERITAS

BV Labs Job #: C0F6424
Report Date: 2020/06/30

GM BluePlan Engineering Limited
Client Project #: 220089
Site Location: 370 WILLIAMS ST WIARTON
Sampler Initials: AE

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.

CHAIN OF CUSTODY RECORD

Page 1 1

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required	
Company Name: GM BluePlan		Company Name:		Quotation #:		<input checked="" type="checkbox"/> Regular TAT (5-7 days) Most analyses	
Contact Name: Amanda Eriksen, Al Bringleon		Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS	
Address: 1260 2nd Ave E Owen Sound ON N4K2J3		Address:		Project #: 220089		Rush TAT (Surcharges will be applied)	
Phone: 519-376-1805 Fax:		Phone: Fax:		Site Location: 370 Williams St Warton		<input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days	
Email: amanda.eriksen@gmblueplan.ca, al.bringleon@gmblueplan.ca		Email:		Site #:		Date Required:	
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY				Site Location Province: ON		Rush Confirmation #:	
Regulation 153		Other Regulations		Analysis Requested		LABORATORY USE ONLY	
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/ Fine <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input checked="" type="checkbox"/> Table 3 <input type="checkbox"/> Agri/ Other <input type="checkbox"/> Table _____ FOR RSC (PLEASE CIRCLE) Y / N		<input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> PWQO <input type="checkbox"/> Region _____ <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> REG 558 (MIN. 3 DAY TAT REQUIRED) <input type="checkbox"/> REG 406 Table _____		# OF CONTAINERS SUBMITTED FIELD FILTERED (CIRCLE) Metals / Hg / CrVI BTEX / PHC F1 PHCs F2 - F4 VOCs REG 153 METALS & INORGANICS REG 153 ICPMS METALS REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B) PHAS		CUSTODY SEAL Y / N Present Intact COOLING MEDIA PRESENT: Y / N COMMENTS	
Include Criteria on Certificate of Analysis: Y / N SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS							
SAMPLE IDENTIFICATION		DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI
1	TH-4	6/23/2020		Soil	2		
2	TH-1				2		
3	TH-3				2		
4	TH-6				2		
5	TH-2a				2		
6	TH-5				2		
7							
8							
9							
10							
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Amanda Eriksen		6/23/2020		<i>Puroator</i>		2020/06/24	09:26
<i>AL EL</i>				<i>Aritha Sukumar</i>			
				<i>Aritha Sukumar</i>			

24-Jun-20 09:26

Ashton Gibson



C0F6424

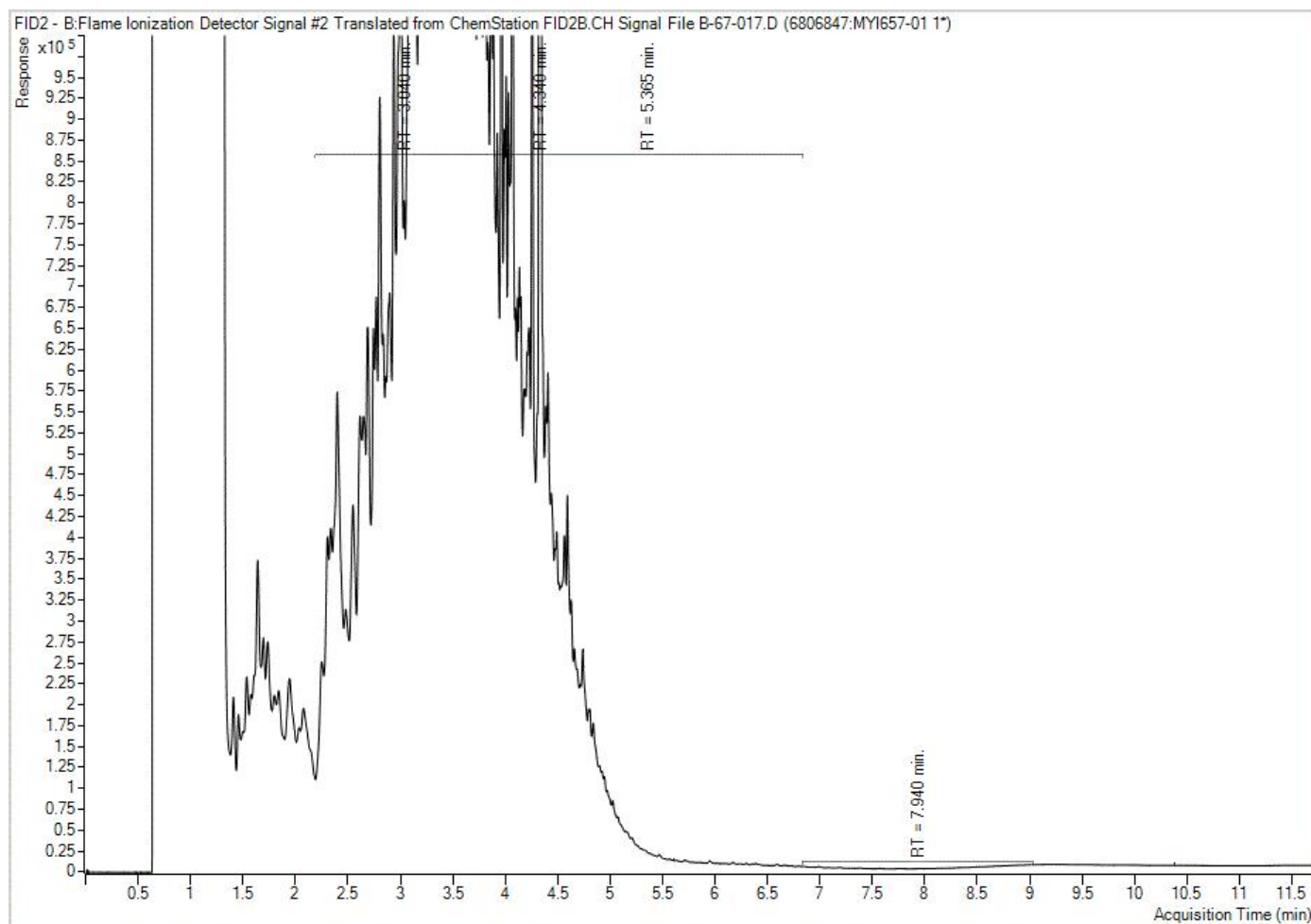
GK1

ENV-624

BV Labs Job #: C0F6424
Report Date: 2020/06/30
BV Labs Sample: MY1657

GM BluePlan Engineering Limited
Client Project #: 220089
Project name: 370 WILLIAMS ST WIARTON
Client ID: TH-2A

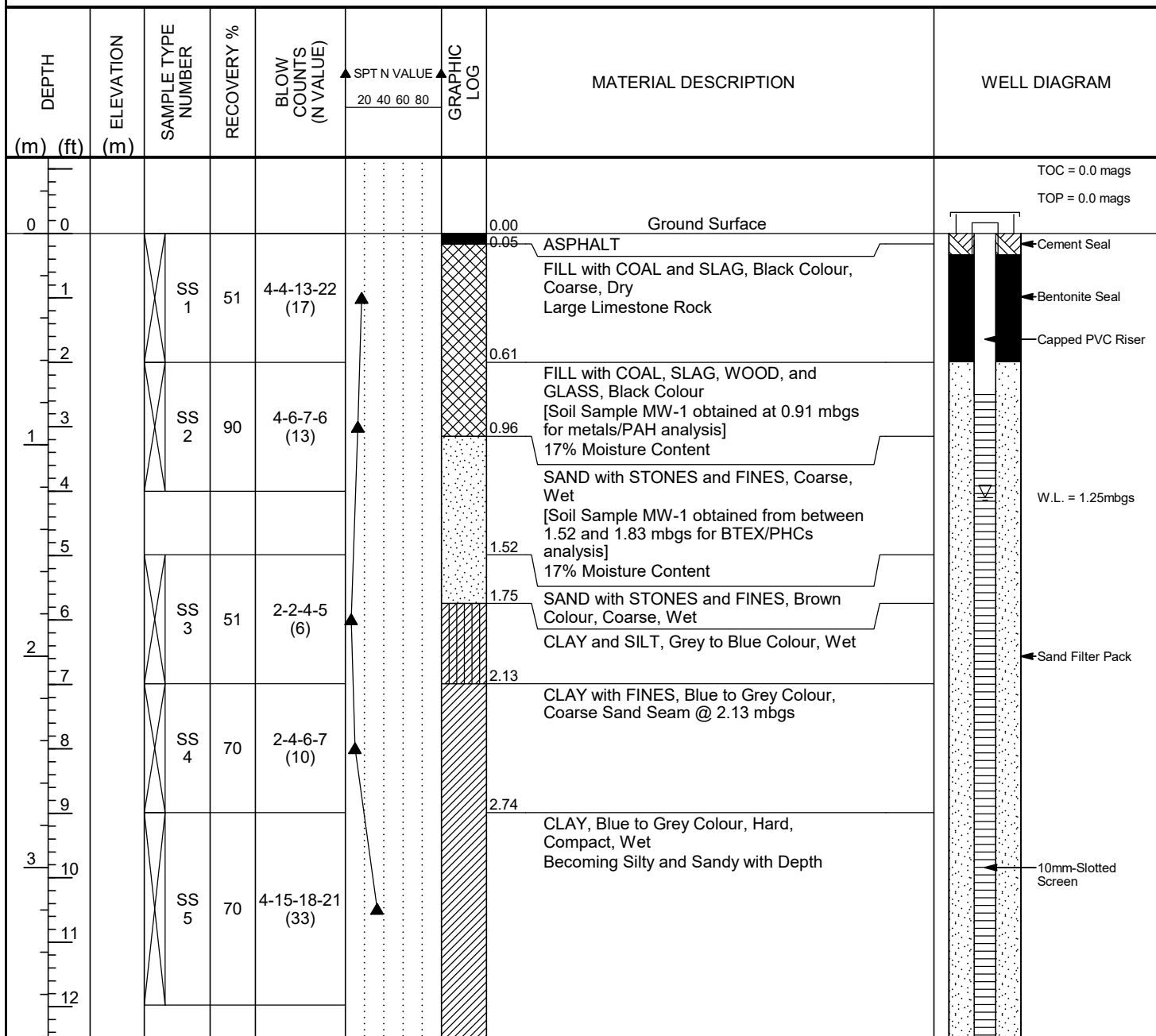
Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

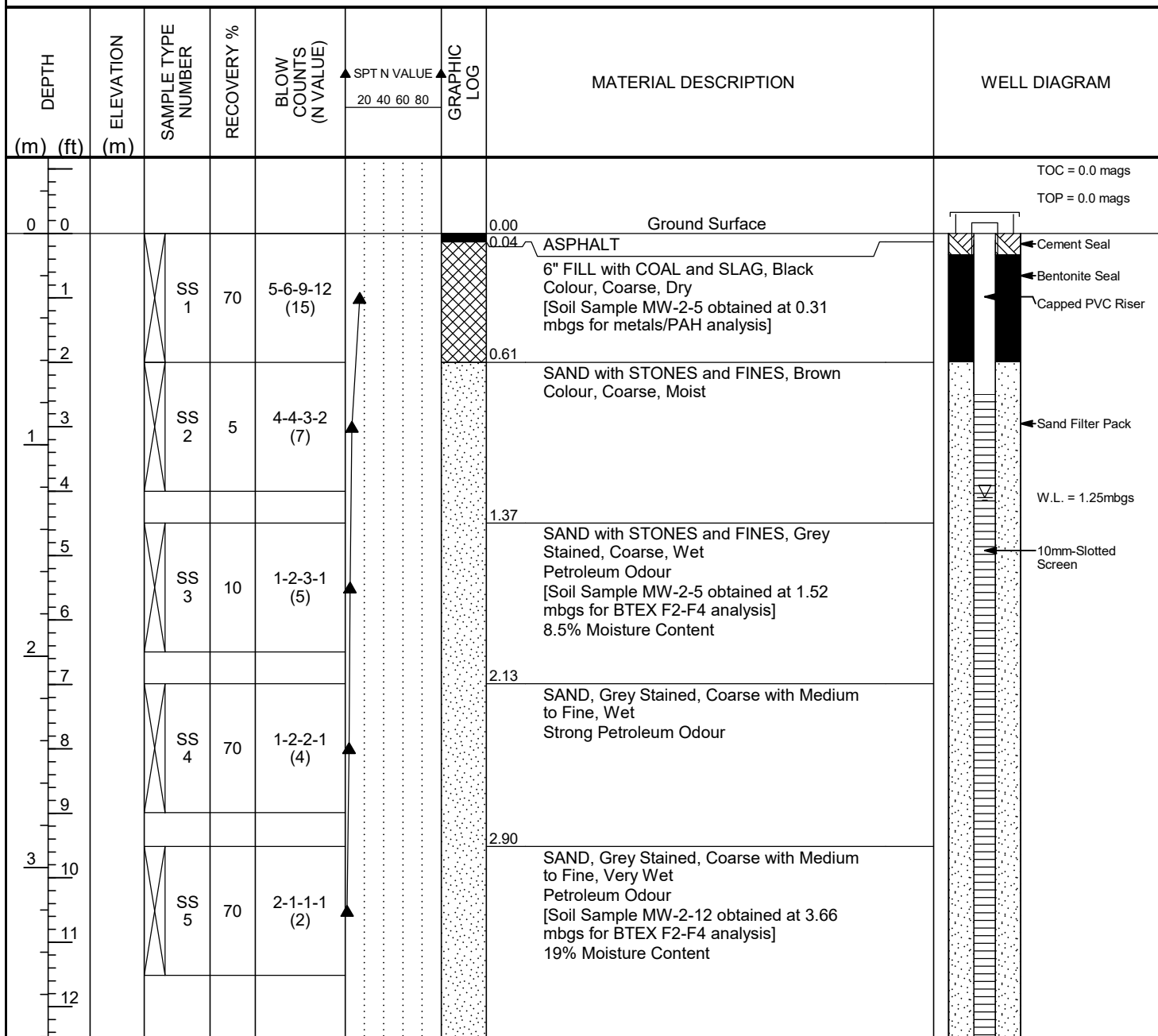
APPENDIX C: BOREHOLE AND TESTHOLE LOGS

CLIENT Town of South Bruce Peninsula	PROJECT NAME Phase Two ESA
PROJECT NUMBER 220089	PROJECT LOCATION 370 William Street, Wiarton
DATE COMPLETED 18-June-2020	CONTRACTOR Aardvark Drilling Inc.
LOGGED BY KC	METHOD Hollow Stem Auger
WELL CONSTRUCTION 2" PVC, 10mm screen	NOTES



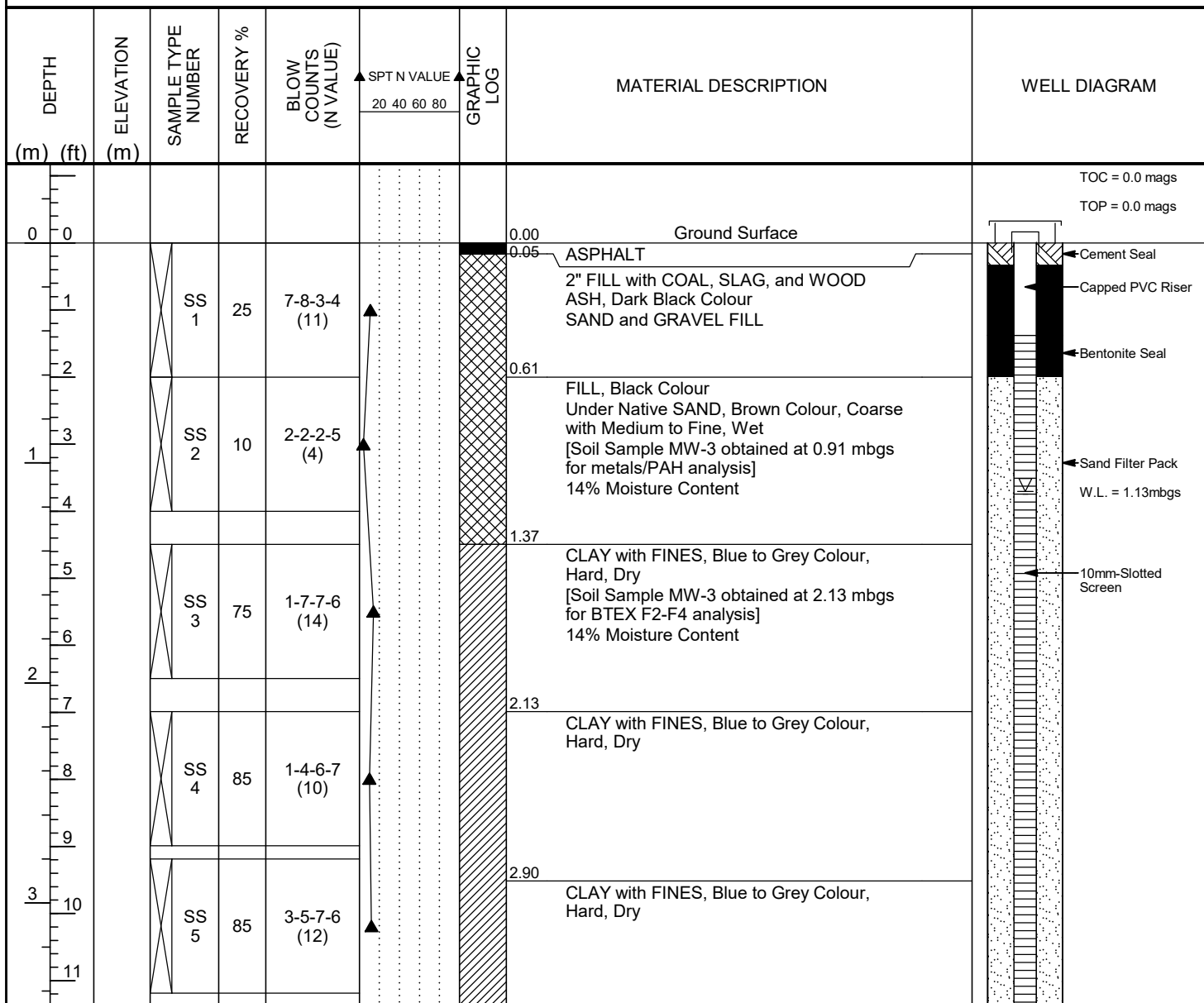
Borehole Terminated at 3.81 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Wiarton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Hollow Stem Auger</u>
WELL CONSTRUCTION <u>2" PVC, 10mm screen</u>	NOTES _____



Borehole Terminated at 3.81 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Wiarton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Hollow Stem Auger</u>
WELL CONSTRUCTION <u>2" PVC, 10mm screen</u>	NOTES _____



Borehole Terminated at 3.47 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Wiarton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Excavator</u>
WELL CONSTRUCTION _____	NOTES _____

DEPTH		ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
(m)	(ft)	(m)			
					Ground Surface
				0.00	ASPHALT
				0.08	
0.5					GRAVEL FILL, Loose, Dry
1.0					
				0.34	
				0.38	FILL with SLAG, COAL, WOOD, and GLASS, Black Colour, Loose, Dry
1.5					SAND with STONES, Brown
0.5					

Borehole Terminated at 0.56 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Warton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Excavator</u>
WELL CONSTRUCTION _____	NOTES _____

DEPTH		ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
(m)	(ft)	(m)			
					Ground Surface
				0.00	ASPHALT
				0.08	
0.5					GRAVEL FILL, Brown Colour, Loose, Dry
1.0					
1.5					
2.0				0.61	FILL, Black Colour
2.5					
3.0				0.91	SAND, Brown Colour, Moist
3.5				0.99	CLAY, Grey Colour, Moist
4.0					

Borehole Terminated at 1.27 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Warton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Excavator</u>
WELL CONSTRUCTION _____	NOTES _____

DEPTH		ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
(m)	(ft)	(m)			
					Ground Surface
				0.00	ASPHALT
				0.08	
0.5					GRAVEL FILL
1.0				0.30	FILL, Black Colour
1.5					
2.0				0.71	SAND, Brown Colour, Becoming Wet
2.5					
3.0					
3.5					
4.0					
4.5					
5.0				1.47	SAND, Grey Stained Strong Petroleum Odour

Borehole Terminated at 1.60 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Wiarton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Excavator</u>
WELL CONSTRUCTION _____	NOTES _____

DEPTH		ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
(m)	(ft)	(m)			
					Ground Surface
				0.00	GRAVEL FILL
				0.10	
0.5				0.18	FILL, Black Colour
					SAND, Brown Colour, Moist Detectable Petroleum Odour
1.0					
1.5					
2.0					
2.5					
3.0					
3.5					
4.0				1.22	SAND, Grey Stained Strong Petroleum Odour

Borehole Terminated at 1.35 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Wiarton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Excavator</u>
WELL CONSTRUCTION _____	NOTES _____

DEPTH		ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
(m)	(ft)	(m)			
					Ground Surface
				0.00	ASPHALT
				0.08	
					GRAVEL FILL
0.5				0.25	
					FILL, Black Colour
1.0				0.36	
					SAND, Brown Colour, Moist
1.5				0.56	
					CLAY, Grey Colour, Moist
2.0					

Borehole Terminated at 0.61 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Warton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Excavator</u>
WELL CONSTRUCTION _____	NOTES _____

DEPTH		ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
(m)	(ft)	(m)			
					Ground Surface
				0.00	ASPHALT
				0.08	
0.5					GRAVEL FILL
1.0					
1.5					
2.0					
2.5				0.66	FILL with LARGE WOOD CHUNKS, Black Colour
3.0					
1.0				0.97	SAND, Brown Colour, Moist

Borehole Terminated at 1.04 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Wiarton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Excavator</u>
WELL CONSTRUCTION _____	NOTES _____

DEPTH		ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
(m)	(ft)	(m)			
					Ground Surface
				0.00	ASPHALT
				0.08	
					GRAVEL FILL
0.5				0.23	
					CLAY FILL
1.0				0.30	
					FILL, Black Colour
1.5					
0.5				0.53	
					SAND, Brown Colour
2.0					
2.5					
3.0					
1.0					

Borehole Terminated at 1.02 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Wiarton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Excavator</u>
WELL CONSTRUCTION _____	NOTES _____

DEPTH		ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
(m)	(ft)	(m)			
					Ground Surface
				0.00	ASPHALT
				0.08	
0.5					GRAVEL FILL
1.0					
1.5				0.41	FILL with ASH and BRICK, Black Colour
0.5					
2.0				0.58	SAND, Brown Colour

Borehole Terminated at 0.76 m.

CLIENT <u>Town of South Bruce Peninsula</u>	PROJECT NAME <u>Phase Two ESA</u>
PROJECT NUMBER <u>220089</u>	PROJECT LOCATION <u>370 William Street, Warton</u>
DATE COMPLETED <u>18-June-2020</u>	CONTRACTOR <u>Aardvark Drilling Inc.</u>
LOGGED BY <u>KC</u>	METHOD <u>Excavator</u>
WELL CONSTRUCTION _____	NOTES _____

DEPTH		ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION
(m)	(ft)	(m)			
					Ground Surface
				0.00	ASPHALT
				0.08	
0.5					GRAVEL FILL
1.0					
1.5				0.41	FILL, Black Colour
2.0					
2.5				0.79	CLAY, Grey Colour

Borehole Terminated at 0.91 m.