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Phase I - Environmental Site Assessment and Remediation Program

Former Appletex Mill
116-122 Old Mill Lane
Appleton, Ontario

Prepared For

Carlgate Development Inc.

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Paterson Group Inc.
Consulting Engineers
28 Concourse Gate - Unit 1
Ottawa (Nepean), Ontario
Canada K2E 7T7

Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

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EXECUTIVE SUMMARY

Assessment

A Phase I - Environmental Site Assessment was carried out for the property addressed as 116-122 Old Mill Lane, in the Village of Appleton, Ontario. The purpose of this environmental assessment was to research the past and current use of the site and adjacent properties and identify any environmental concerns with the potential to impact the subject property.

The historical information obtained indicated that the subject site was first developed with the former building structures prior to the 1950's. The former Appletex Mill operations occupied the subject buildings prior to their demolition circa 2007. Several reports prepared for the site were reviewed during the course of this investigation, including a Phase II - Environmental Site Assessment prepared by Paterson in 2008. The Phase II - ESA identified concentrations of petroleum hydrocarbons in the soil and groundwater and metals in the soil which were present above the selected MOE Table 2 standards.

Following the historical research, periodic site inspections were conducted throughout the course of the remediation program to assess existing and potential areas of concern. Two aboveground fuel storage tanks were observed on the subject site. The presence of metals impacted fill material was observed in various locations on the site. PHC impacted surface water and groundwater were identified in the area of the former heating plant on the northern portion of the subject site.

Based on the findings of the historical review and the site inspection, the following areas of potential environmental concern were identified for the subject site:

- ❑ The presence of aboveground fuel storage tanks on the northern portion of the property and southwest of the former mill building.
- ❑ The former use of the site as an industrial facility.
- ❑ The identified presence of metals impacted fill.
- ❑ The identified presence of petroleum hydrocarbons impacted surface and groundwater.

An environmental remediation program, which addressed the aforementioned environmental concerns, was completed for the site during redevelopment of the subject property.

Overburden material, which was observed to have been impacted based on odour, staining or visual characteristics, was excavated, stockpiled and sent to the Waste Management landfill. Clean fill was segregated and stockpiled for use as fill material.
All soil was removed to down to the bedrock surface in the area of the petroleum hydrocarbon remediation excavation. Soil excavations conducted for metals remediation activities were conducted in the shallow surface fill material and were terminated in the native soil.

The volume of impacted soil, bedrock and concrete that was impacted with petroleum hydrocarbons and was delivered to the Waste Management landfill site was approximately 1,740 metric tonnes. The volume of soil that was impacted with metals and was delivered to the Waste Management landfill site was approximately 136 metric tonnes. Copies of the weigh scale receipts have been obtained by Paterson for our files. Approximately 33,828 L of impacted water was pumped and removed from the site during the remediation program by Veolia Environmental Services for off site treatment and disposal.

Confirmatory soil samples were collected from the overburden soil on the walls of the petroleum hydrocarbon remediation excavation to confirm the quality of the overburden soil remaining on the site. Grab samples were collected in select locations to confirm the removal of metals impacted soil. The soil samples were submitted for analytical testing of a combination of metals, benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHCs). The soil analytical results are in compliance with the selected MOE Table 2 residential land use standards as well as the Table 1 background standards.

Groundwater samples were recovered from pooled water which had accumulated within the excavation. The groundwater samples were submitted for analytical testing of benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHCs). The groundwater analytical results are in compliance with the selected MOE Table 2 standards.

Based on our field observations and the analytical test results, it is our opinion that no further investigation, or remediation, are required for the subject property at this time.

Recommendations

Given the past industrial use of the site, it is possible that additional pockets of contamination are present on the site. If additional impacted soil and/or groundwater is encountered during the course of site redevelopment, it is recommended that a member of this firm be present at the time of the removal of the impacted soil and/or groundwater in order to provide direction and to obtain confirmatory samples upon the completion of the remediation program.

If any soil is to be removed from the property during the course of future development, it must be disposed of at a registered landfill facility if it fails to meet the MOE Table 1 (background level) criteria. It should be noted that the test results obtained during the course this investigation and the previous Phase II - ESA conducted for the subject property identified concentrations of petroleum hydrocarbons, polycyclic aromatic hydrocarbons, metals and/or benzene, ethylbenzene, toluene, xylenes in excess of the MOE background standards.

1.0 INTRODUCTION

At the request of Mr. Paul Dulmage, Paterson Group (Paterson) conducted a Phase I - Environmental Site Assessment (ESA) and Remediation Program of the property known as the former Appletex Mill located at 116 - 122 Old Mill Lane in the Village of Appleton, Ontario.

This report has been prepared specifically and solely for the above noted project which is described herein. It contains all of our findings and results of the environmental conditions at this site.

2.0 SITE INFORMATION

Address:	116-122 Old Mill Lane, Appleton, Ontario.
Location:	Located on the west end of Old Mill Lane, south of the Mississippi River in the Village of Appleton, Ontario. Refer to Figure 1 - Key Plan in the Appendix for the site location.
Latitude and Longitude:	45º 10' 53" N, 76º 07' 42" W

Site Description:

Configuration:	Irregular
Legal Description:	West ½ Part of Lot 4, Concession 10, Township of Ramsay, County of Lanark.
Current Use:	The subject site is currently vacant.
Services:	The subject property is located in a privately serviced area.

3.0 SCOPE OF WORK

The scope of work for this Phase I - Environmental Site Assessment was as follows:

- ❑ Investigate the existing conditions present at the subject site by carrying out a field study and historical review in accordance with CSA Z768-01.
- ❑ Present the results of our findings in a comprehensive report.
- ❑ Provide a preliminary environmental site evaluation based on our findings.
- ❑ Provide guidance and supervision of an environmental remediation program.

4.0 METHOD OF INVESTIGATION

4.1 Historical Research

The methodology for the Phase I - Environmental Site Assessment program was carried out in two segments. The first consisted of a historical review which included a brief research of the past use of the site. This portion of the program was carried out by Paterson personnel from the Environmental Division. The following is a list of the key information sources reviewed by our firm.

Federal Records

- ❑ Air photos at the Energy Mines and Resources Air Photo Library.
- ❑ National Archives.
- ❑ Maps and photographs (Geological Survey of Canada surficial and subsurface mapping).
- ❑ PCB Waste Storage Site Inventory.

Provincial Records

- ❑ MOE document titled “Waste Disposal Site Inventory in Ontario”.
- ❑ MOE Brownfields Environmental Site Registry.
- ❑ MOE Freedom of Information Search.
- ❑ Office of Technical Standards and Safety Authority, Fuels Safety Branch.

Municipal Records

- ❑ Mississippi Valley Conservation Authority.

Local Sources

- ❑ Other local and site environmental assessments/investigations.

4.2 Field Assessment

The second segment of the Phase I - ESA consisted of a site visit which included a cursory assessment of the environmental conditions of the subject property. A preliminary field assessment was carried out over the interim of the first stage of the remediation program in April of 2007. The most recent field assessment was carried out on June 14, 2010, by personnel from the Environmental Division.

As part of the field assessment, the site and existing structures were inspected for signs of the following:

- ❑ Evidence of previous or existing fuel storage tanks.
- ❑ On-site use or storage of hazardous materials.
- ❑ On-site handling or disposal of liquid or solid waste materials.
- ❑ Above-ground piping systems, including pumps, valves and joints.
- ❑ Truck or rail loading or unloading areas.
- ❑ Electrical conduits, abandoned pipelines or pumping stations.
- ❑ Remnants of old buildings.
- ❑ Signs of surficial contamination (ie. staining, distressed vegetation).
- ❑ Unnaturally discoloured, ponded or flowing waters.
- ❑ Surficial drainage, wetlands, natural waterways or watercourses through the property (ie. ditches, creeks, ponds, poor drainage).
- ❑ Any evidence of potable water supply wells or groundwater monitoring wells (such as leak detection monitoring wells for underground storage tank systems, or abandoned systems).
- ❑ Any abnormal odours associated with the site, whether from on-site or off-site sources.
- ❑ The presence of any recent soil disturbances such as soil removal, filling, tilling, grading, etc.
- ❑ Asbestos containing materials (ACM).
- ❑ Urea formaldehyde foam insulation (UFFI).
- ❑ PCB containing products.
- ❑ Ozone depleting substances (ODS).
- ❑ Lead-containing materials.
- ❑ Current use of neighbouring properties.

4.3 Historical Review

Air Photo Research

Historical air photos from the National Air Photo Library were reviewed. Based on the review, the following observations have been made:

1959 The subject site has been developed with the mill building structure on the northern portion of the site. Several access roadways appear to have been constructed around the building and to the southwest portion of the property. Some soil disturbances/fill placement were observed on the southwest portion of the property. The properties to the east and southeast of the site, west of the Mississippi River are occupied by residential dwellings. Surrounding properties to the northwest, west and southwest are vacant treed land. A bay of the Mississippi River is present to the north of the site.

1973 A lagoon is present on the west portion of the site. The area of soil disturbance appears to have been expanded on the southwest portion of the site. No other significant changes have been made to the subject site or surrounding properties.

1981 No significant changes have been made to the subject site or surrounding properties.

1994 There are now three (3) lagoons on the west portion of the site, separated by berms. No evidence of soil disturbances are evident on the southwest portion of the site. No other significant changes have been made to the subject site or surrounding properties.

2008 (Google Earth Aerial Imagery) No significant changes have been made to the subject site or surrounding properties.

Laser copies of some of the aerial photographs listed above are included in the Appendix.

National Archives

City Directories and Fire Insurance Plans (FIPs) were not available in the general area of the subject site.

Geological Survey of Canada

A search of the Urban Geology of the National Capital Area was conducted electronically for the site on August 6, 2010. Bedrock in the area of the site consists of dolomite of the Oxford Formation. The bedrock is overlain by Paleozoic Rocks of Paleozoic Bedrock. The drift thickness on the site is expected to range between 0 and 1 m.

PCB Inventory

A search of national PCB waste storage sites was conducted. No PCB waste storage sites are located within 1 km of the subject property.

Ontario Ministry of Environment (MOE)

The Ontario Ministry of Environment document entitled “Waste Disposal Site Inventory in Ontario, 1991" was reviewed as part of the historical research. This document includes all recorded active and closed waste disposal sites, industrial manufactured gas plants and coal tar distillation plants in the Province of Ontario. No active or closed waste disposal sites were identified within a 1 km radius of the subject site.

A requisition form was sent to the MOE requesting a search into regulatory infractions, legal undertakings against the property, spill occurrences, existing waste generator numbers, and waste registrations at the subject property and neighbouring sites. A response from the MOE is expected within the next 60 days.

The MOE search is not considered to be an exhaustive search, and is subject to any matters that an examination of the site and neighbouring lands may reveal. A copy of the MOE response letter will be forwarded to Mr. Paul Dulmage, should it reveal any concerns with respect to the subject site.

A search of the MOE brownfields environmental site registry was conducted electronically on August 6, 2010. No Record of Site Conditions (RSC) have been filed for any properties within 1 km of the subject site.

Technical Standards and Safety Authority (TSSA)

The TSSA, Fuels Safety Branch in Toronto, was contacted to enquire about underground storage tanks (USTs) and historical spills or incidents for the subject property and neighbouring sites. There were no records found for the subject site or adjacent properties in the TSSA registry.

Previous Reports

In 1992 a Phase I Environmental Audit was conducted on the subject site by Dames & Moore, Canada (DMC). Following a historical review and subsequent site visit it was concluded that "*substantial environmental liabilities are associated with the Appletex Site*". Environmental concerns identified included the discharge of chemicals into the lagoons, the illegal dumping of debris and waste materials, abandoned bunker and fuel oil aboveground storage tanks (ASTs), improper storage of chemicals and the presence of PCB containing equipment. A subsurface investigation was subsequently recommended along with the removal of chemicals, ASTs and buried waste from the subject site.

During the investigation DMC collected water and sediment samples from the lagoons. The water samples were analysed for BOD, COD, total nitrogen, phosphate, total organic carbon and other parameters. Mercury was detected above the applicable provincial water quality objectives (PWQO) in Lagoon 3. The remaining water and sediment parameters, with the exception of pH, were in compliance with applicable standards.

In 1993, the MOE conducted a water analysis on the subject site. Water samples from the lagoons were collected and analysed for inorganic parameters. Lead, aluminum and strontium were found in concentrations exceeding the PWQO and/or the ODWO in all three (3) lagoons. Hardness, DOC, copper, zinc and iron were found in excess of the applicable objectives in one or two of the lagoons. The MOE also issued an order in 1993 to secure the abandoned premises, remove stored wastes and to conduct studies to decommission the lagoons.

In 1994, Water and Earth Sciences Associates (WESA) was commissioned to conduct an environmental investigation on the subject property. The investigation consisted of the placement of fourteen (14) test pits, and three (3) boreholes with monitoring wells to assess the areas of potential environmental concern identified in the previous Phase I-ESA. A total of eight (8) soil samples from the test pits were submitted for analytical testing for a combination of metals, total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and xylenes (BTEX). Chromium VI was found in excess of the standards applicable at that time in one soil sample (TP3) recovered from the waste disposal area. The remaining analysed concentrations were below the MOEE 1989 Clean-Up guidelines for a low sensitivity site. Three (3) groundwater samples obtained from the monitoring wells installed by WESA were submitted for general chemistry parameters. The results were compared to the applicable Ontario Drinking Water Objectives (ODWO). Three (3) parameter concentrations were identified in the groundwater samples, in excess of the ODWO. A waste classification survey was also conducted.

The report concluded that "*several issues related to potential environmental concern*" were present on the subject site including:

- ❑ Residual chemicals and waste in and around the buildings
- ❑ Wastewater and sludge from the lagoons
- ❑ Miscellaneous solid waste disposed on the property and
- ❑ Groundwater.

Following the WESA investigation, the majority of the chemicals stored on site, with the exception of polychlorinated biphenyls (PCBs) and ASTs, were removed from the property. In November of 1994 a fire broke out in the former mill and due to the presence of PCBs, adjacent residences were evacuated. Following the fire, all PCB-containing equipment was removed from the site to and placed at a secure, registered storage facility.

In March 2007, the MOE was alerted to an oil spill that had occurred on the subject site and continued into the Mississippi River. The spill was from a former bunker oil AST located near the Mill. Provincial orders to contain and remediate the impacted soil and groundwater were issued by the MOE. Paterson was commissioned to supervise the remediation program which was conducted in April and May of 2007.

In November 2007, two (2) of the lagoons located on the western portion of the site were breached, releasing the water and sediment into the adjacent provincially significant wetland. Another Provincial Officers Order was issued for the reinstatement of the lagoon walls.

In June of 2008, the MOE collected sediment samples from the area immediately west of the lagoons in order to determine if the released sediment had an impact on the adjacent sensitive area. The analytical test results indicated that concentrations of various parameters present in the lagoons above the Lowest Effective Level (LEL), and, in one sample, manganese exceeded an SEL (Severe Effect Level).

In June of 2009, Paterson conducted a Phase II ESA on the Former Appletex Mill property, addressed 116-122 Old Mill Lane in the Village of Appleton, Ontario. Metal parameters, in excess of the Table 2 standards were detected in the soil samples from three (3) of the twenty (20) test pits. PHCs were also detected in excess of the Table 2 standards in one (1) of the test pits.

A total of six (6) groundwater samples, obtained during two (2) sampling events, were submitted for analytical testing of a combination of metals, PHCs and VOCs. Petroleum hydrocarbon free product was observed in two of the monitoring wells located in the area of the former remediation. Analytical testing identified elevated levels of petroleum hydrocarbons, in excess of all MOE standards, in two of the monitoring wells. The remaining detected parameters were in compliance with the Table 2 standards for a potable groundwater condition.

4.4 Site

The site inspection was performed on June 14, 2010.

The subject site is located south of The Mississippi River and northwest of the Old Mill Lane and Wilson Street intersection in the Village of Appleton, Ontario. The site had been cleared of all structures and was under development for residential land use. In general, the topography of the majority of the site was relatively flat. The west portion of the site slopes downward to the west, where the lagoons are located; the west portion of the site is at grade with the neighbouring wetland to the west of the site. The northern most area of the site slopes steeply downward to the north towards the Mississippi River. Site drainage consists of infiltration and runoff to the Mississippi River. Metals impacted fill material was being excavated and stockpiled at the time of the site inspection. The sediment from the lagoons was also being excavated and stockpiled at the time of the inspection. No other environmental concerns were identified on the subject site.

Potential Environmental Concerns

- **Fuels and Chemical Storage**

  No aboveground storage tanks or signs of underground storage tanks (USTs) were observed on the subject site at the time of the assessment. No other chemcials, spills, or odours were observed on the property at the time of the assessment.

- **Waste Management**

  The site is currently vacant, as such, no waste is currently being produced or stored on the site.

- **PCBs**

  A previously prepared report indicated that six (6) drums of PCB containing equipment were removed from the site circa 1994 and were transferred to an approved PCB storage site. No concerns with PCBs were noted on the exterior of the property during the assessment.

4.5 Former Buildings

At the time of this assessment, the site had been cleared of all buildings. According to previous reports, the main structure (the former Appletex Mill) was located near the approximate centre of the site. A storage shed was located to the west of the main structure, while a heating plant and pump house were located further to the north of the main building, south of the Mississippi River. A concrete bunker, which housed a heating oil AST was also present to the north of the main structure. The former mill buildings were constructed prior to 1959 and were heated with heating oil fired boilers prior to their demolition.

As previously noted, no signs of underground storage tanks (USTs) or ASTs or chemical use or storage were observed on the exterior of the site during the assessment. Previous reports identified the presence of two (2) 45,000 L Bunker “C” fuel ASTs on the subject site. The approximate locations of these former ASTs, as well as the former buildings, are illustrated on Drawing PE1114-5 - Site Plan in Appendix 2 of this report. According to a chemical inventory conducted prior to the demolition of the former Appletex plant building, the following chemicals were identified on site: formaldehyde, hydraulic oil, red dye, hydrogen peroxide, motor oil, xylene, hydrochloric acid, waste oil and various other process chemicals.

4.6 Adjacent Properties

Land use adjacent to the subject site is as follows:

- North - The Mississippi River;
- South - vacant land followed by residential dwellings;
- East - Residential dwellings followed by the Mississippi River;
- West - Provincially significant wetland.

The risk of environmental impact from the current use of the neighbouring properties upon the subject site was considered to be negligible. Land use adjacent to the subject site is illustrated on Drawing No. PE1114-5 - Site Plan in Appendix 2.

4.7 Assessment - Phase I

The purpose of the Phase I-ESA was to research the past and current uses of the subject property and neighbouring sites in order to identify areas of environmental concern which have the potential to have impacted the subject site.

The historical information obtained indicated that the subject site was first developed with the former building structures prior to the 1950's. The former Appletex Mill operations occupied the subject buildings prior to their demolition circa 2007. Provincial orders were filed for the site regarding a fuel oil release and a lagoon breach to the adjacent wetland and Mississippi River. Several reports prepared for the site were reviewed during the course of this investigation, including a Phase II - Environmental Site Assessment prepared by Paterson in 2008. The Phase II - ESA identified concentrations of petroleum hydrocarbons in the soil and groundwater and metals in the soil which were present above the selected MOE Table 2 standards.

Following the historical research, periodic site inspections were conducted throughout the course of the remediation program to assess existing and potential areas of concern. Two aboveground fuel storage tanks were observed on the subject site. The presence of metals impacted fill material was observed in various locations on the site. PHC impacted surface water and groundwater were identified in the area of the former heating plant on the northern portion of the subject site.

Based on the findings of the historical review and the site inspection, the following areas of environmental concern were identified for the subject site:

- ❑ The presence of aboveground fuel storage tanks on the northern portion of the property and southwest of the former mill building.
- ❑ The former use of the site as an industrial facility.
- ❑ The identified presence of metals impacted fill.
- ❑ The identified presence of petroleum hydrocarbons impacted surface and groundwater.

An environmental remediation program, which addressed the aforementioned environmental concerns, was completed for the site during redevelopment of the subject property.

5.0 ENVIRONMENTAL REMEDIATION PROGRAM

Paterson personnel were on site to assess the overburden soil, bedrock and concrete material as it was excavated over the interim of April 13, 2007 to October 8, 2010. Thomas Cavanaugh Construction Limited were responsible for the excavation and transportation of the impacted materials to Waste Management Ottawa Landfill in Carp, Ontario. The landfill is an Ontario Ministry of Environment (MOE) registered landfill.

The volume of impacted soil, bedrock and concrete that was impacted with petroleum hydrocarbons and was delivered to the Waste Management landfill site was approximately 1,740 metric tonnes. The volume of soil that was impacted with metals and was delivered to the Waste Management landfill site was approximately 136 metric tonnes. Copies of the weigh scale receipts have been obtained by Paterson for our files. Approximately 33,828 L of impacted water was pumped and removed from the site during the remediation program by Veolia Environmental Services for off site treatment and disposal.

The areas of environmental remediation are discussed in the following sections.

5.1 Excavation

Overburden Soil

Overburden material, which was observed to have been impacted based on odour, staining or visual characteristics, was excavated, stockpiled and sent to the Waste Management landfill. Clean fill was segregated and stockpiled for use as fill material.

All soil was removed to down to the bedrock surface in the area of the petroleum hydrocarbon remediation excavation. Soil excavations conducted for metals remediation activities were conducted in the shallow surface fill material and were terminated in the native soil.

Confirmatory samples were collected from the overburden soil on the walls of the petroleum hydrocarbon remediation excavation to confirm the quality of the overburden soil remaining on the site. Grab samples were collected in select locations to confirm the removal of metals impacted soil.

Soil Sampling Protocol

Soil sampling protocols were followed using the MOE document titled "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", dated May 1996.

The grab samples were recovered by hand, using protective gloves (changed after each sample). The samples were placed into plastic bags. If significant contamination was encountered, the samples were placed into glass jars. Sampling equipment was washed in soapy water after each sample to prevent cross contamination of the samples. Samples were stored in coolers to reduce analyte volatilization during transportation.

Soil Sample Headspace Analysis

A gastech calibrated to hexane were used to measure the combustible vapour concentrations in the headspace of the soil samples recovered from the boreholes. The technical protocol was obtained from Appendix C of the MOE document titled "Interim Guidelines for the Remediation of Petroleum Contamination at Operating Retail and Private Fuel Outlets in Ontario", dated March 1992.

The soil samples recovered from the boreholes were placed immediately into airtight plastic bags with nominal headspace. All lumps of soil inside the bags were broken by hand, and the soil was allowed to come to room temperature prior to conducting the vapour survey, ensuring consistency of readings between samples.

To measure the soil vapours, the analyser probe was inserted into the nominal headspace above the soil sample. The sample was agitated/manipulated gently as the measurement was taken. The peak reading registered within the first 15 seconds was recorded as the vapour measurement. The parts per million (ppm) scale was used to measure concentrations of organic/combustible vapours.

The combustible vapour readings for most samples ranged from 0 to 250 ppm. These readings are not considered to be representative of elevated concentrations of volatile substances, such as gasoline. However, it should be noted that the combustible vapour results cannot be used to identify the presence of heavier petroleum hydrocarbons.

5.2 Petroleum Hydrocarbons Remediation

In March of 2007, the MOE was alerted to an oil spill that had occurred on the subject site and continued into the Mississippi River. The source of the spill was a former bunker oil AST located on the north portion of the site near the Mill, and south of the Mississippi River. Paterson was first present on the site in April of 2007 to respond to the fuel oil spill at the site. The fuel spill had entered the Mississippi River to the north of the property and was observed by the residents of the adjacent properties.

A hydrocarbon sheen was observed on the water surface adjacent to the north shoreline. Floating containment booms were placed approximately 10 m off of the shoreline in the area of the AST bunker. Absorbent pads were placed between the shoreline and the containment booms to collect free product which was present on the water surface. A silt fence and bails of straw were placed along the slope of the shoreline to provide erosion control and to prevent surface contamination from flowing into the River. Tarpaulins were placed over the bunker, tank containment area and surrounding ground surface.

A large sump pit was excavated along the slope of the embankment between the shoreline of the River and the former oil tank bunker. The goal of this sump pit was to intercept the petroleum hydrocarbon impacted groundwater which had been observed to be entering the Mississippi River. The water infiltrating into this sump pit was observed to contain a heavy sheen and a strong odour. After some time had accumulated, a layer of free product was observed on the water surface in this pit. Absorbent pads were placed in this pit to accumulate free product floating on the water surface. The pads were replaced regularly, while the water was also pumped out of this pit on several occasions using a hydrovac truck.

The hydrocarbon sheen was observed to have crossed the containment booms on several occasions, at the start of the work day. Veolia Environmental Services (Veolia) was contacted to replace the absorbent pads and containment booms. The hydrocarbon sheen which was present on the water surface was skimmed using a hydro-vac truck operated by Veolia.

The concrete bunker was demolished and excavated using a hydraulic shovel. Some soil was present in the bunker and had a strong petroleum hydrocarbon odour and staining. The thickness of the concrete slab at the base of the bunker was observed to be approximately 10 cm and was heavily stained. The concrete slab was underlain by bedrock.

An excavation was conducted to the west of the pump house. Two cast iron pipes were observed entering the pump house, the pipes were removed and inspected and were found to contain oily water. An aboveground storage tank was present to the west of the pump house. Approximately 0.15 m of liquid was present in this AST and was subsequently pumped out using a hydro-vac truck.

The excavation was advanced down to the bedrock surface. The shallow bedrock, which was generally loose and fractured, was removed where it appeared to be impacted. Water which accumulated in the excavation was covered with a layer of hydrocarbon free product. A hydro-vac truck was used to pump the water and free product which accumulated in the excavation.

The former pump house building was demolished. A sump pit was dug in the interior of the former building footprint. A concrete culvert was present below the former building and was determined to be discharging into the River; the culvert was plugged with imported clay to prevent further discharge. The water which had accumulated in this sump pit was observed to have been impacted with hydrocarbons. The water level in the sump was observed to be below the River level, hence, it was concluded that the oil had been contained.

The pooled water in the excavations and sump pits was skimmed using a hydro-vac truck on several occasions until the water infiltrating into these locations were observed to be free of free product, odours and sheen. The discharge into the Mississippi River was also considered to be contained as no further sheen was observed near the shoreline following the completion of this phase of the remediation program. A representative from the MOE conducted a follow-up site visit and concluded that the spill work order had been satisfied and the file was closed.

5.3 Interceptor Trench

Groundwater samples were collected from the monitoring wells installed to the south of the remediation excavation detailed above, and were submitted for laboratory analysis of benzene, toluene, ethylbenzene and xylenes (BTEX) as well as petroleum hydrocarbons (PHCs). Significant concentrations of the F2 and F3 ranges of PHCs (greater than 50,000 µg/L vs. the MOE Table 2 standard of 1,000 µg/L) were detected in the groundwater sample from this monitoring well. An alternative remediation approach was required for the water in this area since the groundwater table is present approximately 7 m below the bedrock surface.

An interceptor trench, which also acted as a collector trench was constructed along the crest of the slope and extended to a depth of 1 m below the long term low groundwater level. The trench was advanced to a depth of approximately 10 m below surface grade and had dimensions of approximately 8 m (north-south) by 60 m (east-west). Any petroleum hydrocarbon contamination in the fissures of the bedrock was removed along during the excavation of the rock.

There was no free product observed on the water in the base of the trench and no odours or sheen was observed on the water. Furthermore, the groundwater infiltrating into the trench was also observed along the rock face and did not appear to significantly impacted with PHCs. Groundwater samples were collected from the pooled water in the trench in the approximate area of MW2-08 and are discussed in the following section of this report.

Prior to the commencement of collection trench, Paterson conducted a pre-blast survey on the three (3) adjacent residential dwellings (100 Old Mill Lane, 104 Old Mill Lane and 116 Old Mill Lane). The pre-blast survey was be conducted prior to the commencement of any blasting operations and on-site bedrock removal. Groundwater samples were obtained from the potable groundwater wells at the above noted residences and were submitted for analytical testing. The groundwater samples were analysed for the parameters included in the Subdivision Package.

5.4 Groundwater

Three (3) of the five (5) groundwater monitoring wells, which were screened in bedrock in the area of the petroleum hydrocarbons remediation excavation, had elevated concentrations of PHCs. As a result, an interceptor trench was excavated in the bedrock during the course of the remediation program. The goal of this trench was to determine if the groundwater was impacted beyond the areas identified in the monitoring wells, and if possible to create a hydraulic gradient which would draw groundwater and associated petroleum hydrocarbons into the trench for collection and removal. Groundwater samples were collected from the trench on two occasions and submitted for laboratory analysis. No sheen and/or odour was observed in the pooled groundwater from the interceptor trench at the time of sampling. Additionally, the bedrock walls of the interceptor trench were inspected for signs of PHC contamination. No indication of contaminants were observed on the water infiltrating into the trench from the bedrock trench walls. The absence of PHC impacted groundwater in this interceptor trench confirms that environmental contaminants identified in the groundwater monitoring wells, have not significantly migrated through the solid layers of rock and that the water table has not been significantly impacted. It is suspected that PHC impacts may be present

within the fissures in the bedrock, however, are not widespread across the site.

Groundwater Sampling Protocol

The groundwater samples were taken using dedicated rigid bailers. Samples were stored in bottles prepared by Paracel Laboratories and stored in coolers to reduce analyte volatilization during transportation. No visual sheen or odours were noted with respect to the pooled water in the excavation prior to sampling.

5.5 Lagoon Breach and Remediation

The MOE was contacted by residents of the neighbouring properties with respect to a breach of the lagoons. The MOE issued a work order to reinstate the lagoons.

Care was taken to prevent unnecessary impact and disruption to the area west of the lagoons, which is within a regulated area by the MVC and is understood to be a provincially significant wetland.
The erosion and sediment control measures consisted of installing a silt curtain between the collection pit and the waters edge of the Mississippi River. An additional silt curtain was placed approximately 2 to 3 m away from the water edge of the wetlands located around the perimeter of the lagoons during backfilling the lagoon with the excavated material from the collector pit. Bails of straw were placed and secured up gradient of the property boundary to trap any sediment.

Prior to backfilling the lagoons, the water within the lagoons was pumped over the surface until the lagoons were dry. The impacted sediment within the lagoon bottoms was excavated using a hydraulic shovel and was stockpiled on the site. Analytical testing of these stockpiles indicated that this material exceeds the selected MOE Table 2 soil standards for the site, and hence, the sediment was taken to an approved waste disposal facility.

The backfill of the lagoons was conducted using suitable excavated blast rock at the selected depths (coarser material at the bottom and better graded material as the backfill approached the surface). The blast rock was placed in approximate 300 mm lifts and compacted with vibratory equipment.

After dewatering and in-fill of the lagoons was underway, the disturbed lagoon berms were reinstated to match the previous profile. Soil used to form the temporary settling pond berms was re-used to shape the berms of the lagoon. The excavation bottom in the area of the settling pond was excavated at the same elevation as the existing wetland to permit water access. The reinstated portion of the berms facing the wetland was seeded with clover and will eventually re-naturalize. The MOE performed an inspection of the site following the reinstatement of the berms; a letter from the MOE was received indicating they are satisfied with this portion of the remediation activities.

5.6 Metals Remediation

Several of the test pits which were conducted as part of the Phase II - ESA completed at the site by Paterson in June of 2009, indicated the presence of metals impacted fill material in three (3) test pit locations to the west of the former Mill building. This material was visibly distinguishable from the underlying native glacial till, as it contained metallic beads, previously encountered at several other industrial sites.

These three areas were excavated to approximately 0.5 to 1.0 m below the surface grade. The material from these excavations was subsequently stockpiled and sent off-site to an approved waste disposal facility. Paterson was not present on-site during the excavation activities, however, Paterson conducted a follow-up site visit following off-site disposal of this material and visually confirmed that there were no indications that any metals impacted soil remained on the site.

5.7 Analytical Testing

Remediation Standards

By default, the site is considered a sensitive site based on the site condition located within 30 m of a watercourse and within 30 m of a Provincially significant wetland. Sites which are characterised as sensitive are compared to the MOE Table 1: Full Depth Background Site Condition Standards. However, it is understood that the site will be redeveloped with residential dwellings outside of the 30 m setback distance. Under the residential development envelope, the standards for the subject property would be obtained from Table 2 of the document entitled “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act”, prepared by the Ontario Ministry of Environment (MOE), March 9, 2004. The MOE Table 1 Standards are also included. The MOE Table 1 standards are based on the following considerations.

- ❑ Coarse grained soil conditions.
- ❑ Surface soil and groundwater conditions.
- ❑ Potable groundwater situation.
- ❑ Residential land use.

In July of 2009, the MOE drafted amendments to the 2004 Standards which are scheduled to be implemented on July 1, 2011. The impending 2009 MOE Standards are discussed for comparison purposes.

Paracel Laboratories (Paracel), of Ottawa, performed the laboratory analyses for this project. Paracel is a member of the Standards Council of Canada/Canadian Association for Environmental Analytical Laboratories (SCC/CAEAL). Paracel is accredited and certified by SCC/CAEAL for specific tests registered with the association.

Analytical Test Results

Soil

Soil samples were recovered from the remaining walls from the petroleum hydrocarbon remediation on the northern portion of the site and were submitted for analytical testing of benzene, toluene, ethylbenzene and xylenes (BTEX), and/or petroleum hydrocarbons (PHCs). Two grab samples were collected from the fill material in this area and were submitted for metals. The results of the analytical testing and the selected remediation standards are presented in Table 1 and Table 2. The laboratory certificates of analysis are appended to this report.

Table 1
Analytical Test Results - Soil
BTEX and PHCs (Fractions 1 to 4)

Parameter	MDL (ug/g)	Soil Samples (ug/g)					Residential Land Use (Coarse Grained) (ug/g)	
		E1	E4	E11	W22	TP1	MOE Table 1	MOE Table 2
Benzene	0.002	-	-	nd	nd	-	0.002	0.24
Ethylbenzene	0.002	-	-	nd	nd	-	0.002	0.28
Toluene	0.002	-	-	nd	nd	-	0.002	2.1
Xylenes (total)	0.002	-	-	nd	nd	-	0.002	25
F1 PHCs (C_6-C_{10})	20	nd	nd	nd	nd	nd	N/V	30
F2 PHCs (C_{10}-C_{16})	10	nd	nd	nd	nd	nd	N/V	150
F3 PHCs (C_{16}-C_{34})	10	nd	nd	nd	nd	nd	N/V	400
F4 PHCs (C_{34}-C_{50})	10	nd	nd	nd	nd	nd	N/V	2,800

Notes:
- MDL - Method Detection Limit;
- nd - Not Detected (< MDL)
- - - Not Tested
- N/V - No Value Derived

No detectable BTEX or PHC concentrations were identified in the analysed soil sample. All of the BTEX and PHC test results are in compliance with the selected 2004 MOE Table 2 standards as well as the background Table 1 standards. The analytical test results also meet the impending 2009 MOE Standards.

Table 2
Analytical Test Results - Soil
Metals

Parameter	MDL (µg/g)	Soil Samples (µg/g)		Table 1 All Other Types of Property Use Standards (µg/g)	Table 2 Standards Residential / Parkland / Institutional Property Use (µg/g)
		S1	S2		
Lead	50	nd	nd	120	200

Notes:
- MDL - Method Detection Limit
- nd - not detected above the MDL

None of the soil samples submitted for analysis of lead had detectable concentrations. The lead analytical test results are in compliance with the selected MOE Table 2 standards. It can be noted that the soil sample results are also in compliance with the available MOE Table 1 standards.

Groundwater

Groundwater samples were recovered from pooled groundwater which had accumulated within the interceptor trench during two (2) sampling events. The groundwater samples were submitted for analytical testing of benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHCs). The results of the analytical testing are presented in Table 3. The laboratory certificates of analysis are appended to this report.

Table 3
Analytical Test Results - Groundwater
BTEX and PHCs (Fractions 1 to 4)

Parameter	MDL (ug/L)	Groundwater Samples (ug/L) April 21, 2010		Residential Land Use (ug/L)	
		EX1-GW1 14-06-10	T1 21-04-10	MOE Table 1	MOE Table 2
Benzene	0.5	nd	nd	5	5
Ethylbenzene	0.5	nd	nd	2.4	2.4
Toluene	0.5	nd	nd	0.8	24
Xylenes (total)	0.5	nd	nd	72	300
F1 PHCs (C_6-C_{10})	200	nd	nd	N/V	1,000
F2 PHCs (C_{10}-C_{16})	100	nd	nd	N/V	
F3 PHCs (C_{16}-C_{34})	100	nd	nd	N/V	1,000
F4 PHCs (C_{34}-C_{50})	100	nd	nd	N/V	

Notes:
- MDL - Method Detection Limit;
- nd - Not Detected (< MDL)
- N/V - No Value Derived
- **Bold** - Value exceeds selected MOE Table 2 Standard

All of the groundwater sample results are in compliance with the selected MOE Table 2 standards. All of the groundwater samples are also in compliance with the MOE Table 1 standards. Additionally, the groundwater samples meet the impending MOE standards.

5.8 Assessment - Environmental Remediation Program

An environmental remediation program, which addressed the environmental concerns identified in the Phase I - Environmental Site Assessment as well as MOE orders, was completed for the subject property.

Four (4) phases of environmental remediation were conducted on the subject property to address the identified areas of impacted soil and/or groundwater, and are detailed below.

Petroleum Hydrocarbons Remediation

Floating containment booms were placed off of the shoreline to contain the PHC release and absorbent pads were placed at the shoreline to collect free product which was present on the water surface. A silt fence and bails of straw were placed along the slope of the shoreline to provide erosion control and sediment control. An excavation was advanced to bedrock in the area of the former heating plant and bunker oil AST. The water in the excavation and within the containment area in the Mississippi River, was skimmed using a hydro-vac truck operated by Veolia Environmental Services to remove any free product and hydrocarbon sheen. Following the completion of the excavation and repeated pumping and skimming of the water surface, no further impacts were observed to be emanating from the site. A representative from the MOE conducted a follow-up site visit and concluded that the spill work order had been satisfied and the file was closed.

Interceptor Trench

Groundwater monitoring wells installed in the area of the PHC remediation excavation identified concentrations of PHCs in the groundwater in excess of all of the MOE standards. An interceptor trench was constructed in the area identified to be impacted with PHCs. Any petroleum hydrocarbon contamination which may have been present in the fissures of the bedrock was removed along during the excavation of the rock. Upon excavation of the trench, the following conditions were noted. There was no free product observed on the water in the base of the trench and no odours or sheen was observed on the water. Furthermore, the groundwater infiltrating into the trench was also observed along the rock face and did not appear to be impacted with PHCs. The absence of PHC impacted groundwater in this interceptor trench confirms that environmental contaminants identified in the groundwater monitoring wells, have not significantly migrated through the solid layers of rock and that the water table has not been significantly impacted. It is suspected that PHC impacts may be present within the fissures in the bedrock elsewhere, however, are not widespread across the site.

Lagoon Breach and Remediation

Erosion and sediment control measures were instituted and consisted of installing a silt curtain placed approximately 2 to 3 m away from the water edge of the wetlands located around the perimeter of the lagoons. The water within the lagoons was pumped over the surface into a temporary settling pond until the lagoons were dry. The impacted sediment within the lagoons was excavated using a hydraulic shovel; this sediment was subsequently sent to an approved waste disposal facility.

Backfilling of the lagoons was conducted using suitable excavated blast rock from the interceptor trench and soil from the temporary settling pond. The breached lagoon berms were reinstated to match the pre-existing profiles. Soil used to form the temporary settling pond berms was re-used to shape the berms of the lagoon. The MOE performed an inspection of the site following the reinstatement of the berms; a letter from the MOE was received indicating they are satisfied with this portion of the remediation activities.

Metals Remediation

Three areas were excavated to approximately 0.5 to 1.0 m below the surface grade to address the presence of metals impacted fill material to the west of the former Mill building. This material was visibly distinguishable from the underlying native glacial till, as it contained metallic beads, previously encountered at several other industrial sites. The material from these excavations was subsequently stockpiled and sent off-site to an approved waste disposal facility.

Soil and Groundwater Disposal

The volume of impacted soil, bedrock and concrete that was impacted with petroleum hydrocarbons and was delivered to the Waste Management landfill site was approximately 1,740 metric tonnes. The volume of soil that was impacted with metals and was delivered to the Waste Management landfill site was approximately 136 metric tonnes. Copies of the weigh scale receipts have been obtained by Paterson for our files. Approximately 33,828 L of impacted water was pumped and removed from the site during the remediation program by Veolia Environmental Services for off site treatment and disposal.

6.0 ASSESSMENT AND CONCLUSION

6.1 Assessment

A Phase I - Environmental Site Assessment was carried out for the property addressed as 116-122 Old Mill Lane, in the Village of Appleton, Ontario. The purpose of this environmental assessment was to research the past and current use of the site and adjacent properties and identify any environmental concerns with the potential to impact the subject property.

The historical information obtained indicated that the subject site was first developed with the former building structures prior to the 1950's. The former Appletex Mill operations occupied the subject buildings prior to their demolition circa 2007. Several reports prepared for the site were reviewed during the course of this investigation, including a Phase II - Environmental Site Assessment prepared by Paterson in 2008. The Phase II - ESA identified concentrations of petroleum hydrocarbons in the soil and groundwater and metals in the soil which were present above the selected MOE Table 2 standards.

Following the historical research, periodic site inspections were conducted throughout the course of the remediation program to assess existing and potential areas of concern. Two aboveground fuel storage tanks were observed on the subject site. The presence of metals impacted fill material was observed in various locations on the site. PHC impacted surface water and groundwater were identified in the area of the former heating plant on the northern portion of the subject site.

Based on the findings of the historical review and the site inspection, the following areas of potential environmental concern were identified for the subject site:

- ❑ The presence of aboveground fuel storage tanks on the northern portion of the property and southwest of the former mill building.
- ❑ The former use of the site as an industrial facility.
- ❑ The identified presence of metals impacted fill.
- ❑ The identified presence of petroleum hydrocarbons impacted surface and groundwater.

An environmental remediation program, which addressed the aforementioned environmental concerns, was completed for the site during redevelopment of the subject property.

Overburden material, which was observed to have been impacted based on odour, staining or visual characteristics, was excavated, stockpiled and sent to the Waste Management landfill. Clean fill was segregated and stockpiled for use as fill material.

All soil was removed to down to the bedrock surface in the area of the petroleum hydrocarbon remediation excavation. Soil excavations conducted for metals remediation activities were conducted in the shallow surface fill material and were terminated in the native soil.

The volume of impacted soil, bedrock and concrete that was impacted with petroleum hydrocarbons and was delivered to the Waste Management landfill site was approximately 1,740 metric tonnes. The volume of soil that was impacted with metals and was delivered to the Waste Management landfill site was approximately 136 metric tonnes. Copies of the weigh scale receipts have been obtained by Paterson for our files. Approximately 33,828 L of impacted water was pumped and removed from the site during the remediation program by Veolia Environmental Services for off site treatment and disposal.

Confirmatory soil samples were collected from the overburden soil on the walls of the petroleum hydrocarbon remediation excavation to confirm the quality of the overburden soil remaining on the site. Grab samples were collected in select locations to confirm the removal of metals impacted soil. The soil samples were submitted for analytical testing of a combination of metals, benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHCs). The soil analytical results are in compliance with the selected MOE Table 2 residential land use standards as well as the Table 1 background standards.

Groundwater samples were recovered from pooled water which had accumulated within the excavation. The groundwater samples were submitted for analytical testing of benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHCs). The groundwater analytical results are in compliance with the selected MOE Table 2 standards.

Based on our field observations and the analytical test results, it is our opinion that no further investigation, or remediation, are required for the subject property at this time.

6.2 Recommendations

Given the past industrial use of the site, it is possible that additional pockets of contamination are present on the site. If additional impacted soil and/or groundwater is encountered during the course of site redevelopment, it is recommended that a member of this firm be present at the time of the removal of the impacted soil and/or groundwater in order to provide direction and to obtain confirmatory samples upon the completion of the remediation program.

If any soil is to be removed from the property during the course of future development, it must be disposed of at a registered landfill facility if it fails to meet the MOE Table 1 (background level) criteria. It should be noted that the test results obtained during the course this investigation and the previous Phase II - ESA conducted for the subject property identified concentrations of petroleum hydrocarbons, polycyclic aromatic hydrocarbons, metals and/or benzene, ethylbenzene, toluene, xylenes in excess of the MOE background standards.

7.0 STATEMENT OF LIMITATIONS

The Phase I - Environmental Site Assessment portion of this report has been prepared in general accordance with the agreed scope-of-work and the requirements of CSA Z768-01. The conclusions presented herein are based on information gathered from a limited historical review and field inspection program. The findings of the Phase I - ESA are based on a review of readily available geological, historical and regulatory information and a cursory review made at the time of the field assessment. The historical research relies on information supplied by others, such as, local, provincial and federal agencies and was limited within the scope-of-work, time and budget of the project herein.

Should any conditions be encountered at the subject site and/or historical information that differ from our findings, we request that we be notified immediately in order to allow for a reassessment.

This report was prepared for the sole use of Carlgate Development Inc. and Paul Dulmage. Permission and notification from Carlgate Development Inc., Paul Dulmage and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.

Luke Lopers, B.A.Sc.

Carlos P. Da Silva, P. Eng.

Report Distribution:

- ❑ Carlgate Development Inc. (3 copies)
- ❑ Paterson Group Inc. (1 copy)

APPENDIX 1

LABORATORY CERTIFICATES OF ANALYSIS

DRAWING: PE1114-6 - SITE REMEDIATION PLAN

PARACEL LABORATORIES LTD.

300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
p: (613) 731-9577
f: (613) 731-9064
e: paracel@paracellabs.com
www.paracellabs.com

Certificate of Analysis

Paterson Group Consulting Engineers

28 Concourse Gate, Unit 1
Nepean, ON K2E 7T7
Attn: Dena Comley

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 5367
Project: PE1114
Custody: 32211

Report Date: 27-Apr-2007
Order Date: 25-Apr-2007
Order #: 7170062

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

Paracel ID	Client ID
7170062-01	W19
7170062-02	W22

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

PARACEL LABORATORIES LTD.

Order #: 7170062

Certificate of Analysis

Report Date: 27-Apr-2007

Order Date:25-Apr-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5367 Project Description: PE1114

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
CCME PHC F1	CWS Tier 1 - P&T GC-FID	25-Apr-07	26-Apr-07
CCME PHC F1 + BTEX	CWS Tier 1 - P&T GC-MS/FID	25-Apr-07	26-Apr-07
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	25-Apr-07	27-Apr-07
Solids, Dry Weight	Gravimetric, calculation	25-Apr-07	26-Apr-07

PARACEL LABORATORIES LTD.

Order #: 7170062

Certificate of Analysis

Report Date: 27-Apr-2007
Order Date:25-Apr-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5367 Project Description: PE1114

	Client ID:	W19	W22	-	-
	Sample Date:	24-Apr-07	24-Apr-07	-	-
	Sample ID:	7170062-01	7170062-02	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	85.3	91.7	-	-
Organics					
Benzene	0.03 ug/g dry	-	<0.03	-	-
Ethylbenzene	0.05 ug/g dry	-	<0.05	-	-
Toluene	0.05 ug/g dry	-	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	-	<0.05	-	-
o-Xylene	0.05 ug/g dry	-	<0.05	-	-
Toluene-d8	Surrogate	-	104%	-	-
F1 PHCs (C6-C10)	20 ug/g dry	<20	-	-	-
F1 PHCs (C6-C10)	20.0 ug/g dry	-	<20.0	-	-
F2 PHCs (C10-C16)	10 ug/g dry	1880	<10	-	-
F3 PHCs (C16-C34)	10 ug/g dry	1570	<10	-	-
F4 PHCs (C34-C50)	10 ug/g dry	<10	<10	-	-

Certificate of Analysis

Report Date: 27-Apr-2007
Order Date:25-Apr-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5367 Project Description: PE1114

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Organics									
Benzene	ND	0.03	ug/g wet						
Ethylbenzene	ND	0.05	ug/g wet						
Toluene	ND	0.05	ug/g wet						
m,p-Xylenes	ND	0.05	ug/g wet						
o-Xylene	ND	0.05	ug/g wet						
Surrogate: Toluene-d8	*8.83*		*ug/g wet*		*110*	*76-118*			
F1 PHCs (C6-C10)	ND	20	ug/g wet						
F1 PHCs (C6-C10)	ND	20.0	ug/g wet						
F2 PHCs (C10-C16)	ND	10	ug/g wet						
F3 PHCs (C16-C34)	ND	10	ug/g wet						
F4 PHCs (C34-C50)	ND	10	ug/g wet						

Certificate of Analysis

Report Date: 27-Apr-2007
Order Date:25-Apr-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5367 Project Description: PE1114

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Organics									
Benzene	ND	0.03	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				34	
Toluene	ND	0.05	ug/g dry	ND				32	
m,p-Xylenes	ND	0.05	ug/g dry	ND				35	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*10.3*		*ug/g dry*		*105*	*76-118*			
F1 PHCs (C6-C10)	ND	20	ug/g dry	ND				32	
F1 PHCs (C6-C10)	ND	20.0	ug/g dry	ND				32	
F2 PHCs (C10-C16)	2230	10	ug/g dry	1420			44.4	50	
F3 PHCs (C16-C34)	6470	10	ug/g dry	5230			21.2	50	
F4 PHCs (C34-C50)	1860	10	ug/g dry	1480			22.8	50	

Certificate of Analysis

Report Date: 27-Apr-2007
Order Date:25-Apr-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5367 Project Description: PE1114

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Organics									
Benzene	0.373	0.03	ug/g wet	ND	101	55-141			
Ethylbenzene	3.89	0.05	ug/g wet	ND	104	61-139			
Toluene	15.1	0.05	ug/g wet	ND	96.2	54-136			
m,p-Xylenes	13.3	0.05	ug/g wet	ND	104	61-139			
o-Xylene	5.02	0.05	ug/g wet	ND	99.8	60-142			
Surrogate: Toluene-d8	*9.09*		*ug/g wet*		*114*	*76-118*			
F1 PHCs (C6-C10)	105	20	ug/g wet	ND	105	68-117			
F1 PHCs (C6-C10)	105	20.0	ug/g wet	ND	105	68-117			
F2 PHCs (C10-C16)	76	10	ug/g wet	ND	95.0	61-129			
F3 PHCs (C16-C34)	156	10	ug/g wet	ND	78.0	61-129			
F4 PHCs (C34-C50)	74	10	ug/g wet	ND	61.7	61-129			

Certificate of Analysis

Report Date: 27-Apr-2007

Order Date:25-Apr-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5367 Project Description: PE1114

Sample Data Revisions

None

Work Order Revisions

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

PARACEL Laboratories Ltd.

Environmental & Indoor Air Quality

300-2319 St. Laurent Blvd., Ottawa, ON K1G 4J8
Tel: (613) 731-9577 Fax: (613) 731-9064
Toll Free: (800) 749-1947 email: paracel@paracellabs.com

Chain of Custody Record
№ 32211
Pg. __ of __

Contact: Dena Comley
Company: Paterson Group
Address: 1-28 Concourse Gate

Tel: 726-7381 Fax: 726-6344

Project Ref: PE1114
PO #: 5367
Quote #: ☐Not Quoted
Email:
Preservative to be added by Paracel? ☐Yes ☐No

REPORTING REQUIREMENTS
[ ] Hard Copy [ ] Email – PDF
[ ] FAX [ ] Email - spreadsheet

TURN AROUND TIME
[ ] 1-day [ ] 2-day [ ] Regular

REGULATORY/GUIDELINE REQUIREMENTS

Matrix Types: S–Soil/Sed GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer A-Air O-Other

Paracel Order # 7170062	Sample Identification	Matrix	# Bottles	Date Sampled d/m/y	Analysis Required: PHC(F1-F4)	Analysis Required: BTEX
1	W19	Soil	1	24/04/07	✓	
2	W22	↓	1	↓	✓	✓
3						
4						
5						
6						
7						
8						
9						
10						

Comments:
#971

Relinquished by:
Date: Time:

Received by: Rose S
Date: Apr 25/07 Time: 10:23

Verified by: DBloom
Date: Apr 25/07 Time: 10:54

PARACEL LABORATORIES LTD.

300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
p: (613) 731-9577
f: (613) 731-9064
e: paracel@paracellabs.com
www.paracellabs.com

Certificate of Analysis

Paterson Group Consulting Engineers

28 Concourse Gate, Unit 1
Nepean, ON K2E 7T7
Attn: Eric Leveque

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 5449
Project: PE1114
Custody: 37406

Report Date: 2-May-2007
Order Date: 1-May-2007
Order #: 7180067

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

Paracel ID	Client ID
7180067-01	WS1
7180067-02	WS2

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 02-May-2007

Order Date:1-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5449 Project Description: PE1114

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
CCME PHC F1	CWS Tier 1 - P&T GC-FID	1-May-07	2-May-07
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	2-May-07	2-May-07

PARACEL LABORATORIES LTD.

Order #: 7180067

Certificate of Analysis

Report Date: 02-May-2007

Order Date:1-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5449 Project Description: PE1114

	Client ID:	WS1	WS2	-	-
	Sample Date:	01-May-07	01-May-07	-	-
	Sample ID:	7180067-01	7180067-02	-	-
	MDL/Units	Water	Water	-	-
Organics					
F1 PHCs (C6-C10)	200 ug/L	<200	300	-	-
F2 PHCs (C10-C16)	100 ug/L	15400 [2]	1110000 [2]	-	-
F3 PHCs (C16-C34)	100 ug/L	11800 [2]	774000 [2]	-	-
F4 PHCs (C34-C50)	100 ug/L	<100 [2]	<10000 [1] [2]	-	-

Certificate of Analysis

Report Date: 02-May-2007

Order Date:1-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5449 Project Description: PE1114

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Organics									
F1 PHCs (C6-C10)	ND	200	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						

Certificate of Analysis

Report Date: 02-May-2007

Order Date:1-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5449 Project Description: PE1114

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Organics									
F1 PHCs (C6-C10)	ND	200	ug/L	ND				32	

Certificate of Analysis

Report Date: 02-May-2007

Order Date:1-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5449 Project Description: PE1114

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Organics									
F1 PHCs (C6-C10)	1770	200	ug/L	ND	88.5	68-117			
F2 PHCs (C10-C16)	1500	100	ug/L	ND	93.8	61-129			
F3 PHCs (C16-C34)	3700	100	ug/L	ND	92.5	61-129			
F4 PHCs (C34-C50)	1980	100	ug/L	ND	82.5	61-129			

Certificate of Analysis

Report Date: 02-May-2007

Order Date:1-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5449 Project Description: PE1114

Sample and QC Qualifiers Notes

1- GEN07 : Elevated detection limit because of dilution required due to high target analyte concentration.

2- ORG03 : Free product was observed in the sample container.

Sample Data Revisions

None

Work Order Revisions

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

PARACEL Laboratories Ltd.
Environmental & Indoor Air Quality

300-2319 St. Laurent Blvd., Ottawa, ON K1G 4J8
Tel: (613) 731-9577 Fax: (613) 731-9064
Toll Free: (800) 749-1947 email: paracel@paracellabs.com

Chain of Custody Record

№ 37406

Pg. 1 of 1

Contact: ERIC LEVIESQUE
Company: Peterson group
Address: 28 Concourse Gate Unit 1
Ottawa, Ontario
Tel (613)-226-7381 Fax: (613)-226-6344

Project Ref: PE 1114
PO #: 5449
Quote #: ☐Not Quoted
Email:
Preservative to be added by Paracel? ☐Yes ☐No

REPORTING REQUIREMENTS
[ ] Hard Copy [ ] Email – PDF
[ ] FAX [ ] Email - spreadsheet

TURN AROUND TIME
[ ] 1-day [ ] 2-day [ ] Regular

REGULATORY/GUIDELINE REQUIREMENTS

Matrix Types: S–Soil/Sed GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer A-Air O-Other

Paracel Order # 7180067	Sample Identification	Matrix	# Bottles	Date Sampled d/m/y	Analysis Required: PHC's (F1-F4)
1	WS1	W	1	May 1 2007	✓
2	WS2	W	1	"	✓
3					
4					
5					
6					
7					
8					
9					
10					

Comments: ~~Dissolved Metals~~ RUSH!! WS2 Rec'd in 1 litre Ag bottle (OK) NO FI SUBMITTED. SUBSAMPLED IN OFFICE.

Relinquished by: [signature] Date: May 1/07 Time: 3:35 pm

Received by: [signature] Date: May 1/07 Time: 17:11

Verified by: [signature] Date: May 2, 07 Time: 7:18 AM

PARACEL LABORATORIES LTD.

300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
p: (613) 731-9577
f: (613) 731-9064
e: paracel@paracellabs.com
www.paracellabs.com

Certificate of Analysis

Paterson Group Consulting Engineers

28 Concourse Gate, Unit 1
Nepean, ON K2E 7T7
Attn: Dena Comley

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 5266
Project: PE1114
Custody: 34635

Report Date: 3-May-2007
Order Date: 2-May-2007
Order #: 7180098

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

Paracel ID	Client ID
7180098-01	E1
7180098-02	E4

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

PARACEL LABORATORIES LTD.

Order #: 7180098

Certificate of Analysis

Report Date: 03-May-2007

Order Date:2-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5266 Project Description: PE1114

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
CCME PHC F1	CWS Tier 1 - P&T GC-FID	2-May-07	3-May-07
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	2-May-07	3-May-07
Solids, Dry Weight	Gravimetric, calculation	2-May-07	3-May-07

PARACEL LABORATORIES LTD.

Order #: 7180098

Certificate of Analysis

Report Date: 03-May-2007

Order Date:2-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5266

Project Description: PE1114

	Client ID:	E1	E4	-	-
	Sample Date:	02-May-07	02-May-07	-	-
	Sample ID:	7180098-01	7180098-02	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	72.7	86.6	-	-
Organics					
F1 PHCs (C6-C10)	20 ug/g dry	<20	<20	-	-
F2 PHCs (C10-C16)	10 ug/g dry	<10	<10	-	-
F3 PHCs (C16-C34)	10 ug/g dry	<10	<10	-	-
F4 PHCs (C34-C50)	10 ug/g dry	<10	<10	-	-

Certificate of Analysis

Report Date: 03-May-2007

Order Date:2-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5266 Project Description: PE1114

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Organics									
F1 PHCs (C6-C10)	ND	20	ug/g						
F2 PHCs (C10-C16)	ND	10	ug/g						
F3 PHCs (C16-C34)	ND	10	ug/g						
F4 PHCs (C34-C50)	ND	10	ug/g						

Certificate of Analysis

Report Date: 03-May-2007

Order Date:2-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5266 Project Description: PE1114

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Organics									
F1 PHCs (C6-C10)	ND	20	ug/g dry	ND				32	
F2 PHCs (C10-C16)	ND	10	ug/g dry	ND				50	
F3 PHCs (C16-C34)	ND	10	ug/g dry	ND				50	
F4 PHCs (C34-C50)	ND	10	ug/g dry	ND				50	

Certificate of Analysis

Report Date: 03-May-2007

Order Date:2-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5266 Project Description: PE1114

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Organics									
F1 PHCs (C6-C10)	100	20	ug/g	ND	100	68-117			
F2 PHCs (C10-C16)	84	10	ug/g	ND	105	61-129			
F3 PHCs (C16-C34)	189	10	ug/g	ND	94.5	61-129			
F4 PHCs (C34-C50)	89	10	ug/g	ND	74.2	61-129			

Certificate of Analysis

Report Date: 03-May-2007

Order Date:2-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5266 Project Description: PE1114

Sample Data Revisions

None

Work Order Revisions

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

PARACEL Laboratories Ltd.

Environmental & Indoor Air Quality

300-2319 St. Laurent Blvd., Ottawa, ON K1G 4J8
Tel: (613) 731-9577 Fax: (613) 731-9064
Toll Free: (800) 749-1947 email: paracel@paracellabs.com

Chain of Custody Record
№ 34635
Pg. __ of __

Contact: Dena Comley
Company: Paterson Group
Address: 1-28 Concourse Gate
Ottawa Ont
Tel: 613 226 7381 Fax: 613 226 6344

Project Ref: PE1114
PO #: 5266
Quote #: ☐Not Quoted
Email:
Preservative to be added by Paracel? ☐Yes ☐No

REPORTING REQUIREMENTS
[X] Hard Copy [X] Email – PDF
[ ] FAX [ ] Email - spreadsheet

TURN AROUND TIME
[X] 1-day [ ] 2-day [ ] Regular

REGULATORY/GUIDELINE REQUIREMENTS
MOE Tab 6.7

Matrix Types: S–Soil/Sed GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer A-Air O-Other

Paracel Order # 7180098

	Sample Identification	Matrix	# Bottles	Date Sampled d/m/y	PHC (F1-F4)													
1	E1	Soil	1	2/05/07	✓													
2	E4	↓	1	2/05/07	✓													
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments: * 1 Day Rush *

Relinquished by: KM
Date: May 2/07 Time: 5:06

Received by:
Date: May 2 07 Time: 17:06

Verified by:
Date: May 2/07 Time: 17:07

PARACEL LABORATORIES LTD.

300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
p: (613) 731-9577
f: (613) 731-9064
e: paracel@paracellabs.com
www.paracellabs.com

Certificate of Analysis

Paterson Group Consulting Engineers

28 Concourse Gate, Unit 1
Nepean, ON K2E 7T7
Attn: Dena Comley

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 5365
Project: PE1114
Custody: 38474

Report Date: 14-May-2007
Order Date: 4-May-2007
Order #: 7180164

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

Paracel ID	Client ID
7180164-01	Fill 2
7180164-02	E11
7180164-03	W26

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

PARACEL LABORATORIES LTD.

Order #: 7180164

Certificate of Analysis

Report Date: 14-May-2007

Order Date:4-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5365 Project Description: PE1114

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	11-May-07	11-May-07
BTEX, low level	EPA 8260 - P&T GC-MS, low level	4-May-07	7-May-07
CCME PHC F1	CWS Tier 1 - P&T GC-FID	4-May-07	6-May-07
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	4-May-07	6-May-07
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	11-May-07	11-May-07
Mercury	EPA 7471A - CVAA, digestion	11-May-07	11-May-07
Metals	EPA 6020 - Digestion - ICP-MS	11-May-07	11-May-07
Solids, Dry Weight	Gravimetric, calculation	5-May-07	7-May-07

PARACEL LABORATORIES LTD.

Order #: 7180164

Certificate of Analysis

Report Date: 14-May-2007

Order Date:4-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5365

Project Description: PE1114

	Client ID:	Fill 2	E11	W26	-
	Sample Date:	03-May-07	03-May-07	03-May-07	-
	Sample ID:	7180164-01	7180164-02	7180164-03	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	89.4	79.2	90.6	-
Metals					
Antimony	1 ug/g dry	3	-	-	-
Arsenic	1 ug/g dry	12	-	-	-
Barium	10 ug/g dry	295	-	-	-
Beryllium	0.5 ug/g dry	0.6	-	-	-
Cadmium	0.5 ug/g dry	2.6	-	-	-
Boron, available	0.5 ug/g dry	3.1	-	-	-
Chromium	5 ug/g dry	27	-	-	-
Chromium (VI)	0.4 ug/g dry	<0.4	-	-	-
Cobalt	5 ug/g dry	9	-	-	-
Copper	5 ug/g dry	96	-	-	-
Iron	200 ug/g dry	27000	-	-	-
Lead	1 ug/g dry	242	-	-	-
Mercury	0.1 ug/g dry	0.1	-	-	-
Molybdenum	1 ug/g dry	2	-	-	-
Nickel	5 ug/g dry	155	-	-	-
Selenium	1 ug/g dry	2	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1 ug/g dry	<1	-	-	-
Vanadium	10 ug/g dry	1890	-	-	-
Zinc	20 ug/g dry	303	-	-	-
Volatiles					
Benzene	0.002 ug/g dry	-	-	<0.002	-
Ethylbenzene	0.002 ug/g dry	-	-	<0.002	-
Toluene	0.002 ug/g dry	-	-	<0.002	-
m,p-Xylenes	0.002 ug/g dry	-	-	<0.002	-
o-Xylene	0.002 ug/g dry	-	-	0.005	-
Toluene-d8	Surrogate	-	-	109%	-
Organics					
F1 PHCs (C6-C10)	20 ug/g dry	-	<20	<20	-
F2 PHCs (C10-C16)	10 ug/g dry	-	<10	1430	-
F3 PHCs (C16-C34)	10 ug/g dry	-	<10	1170	-
F4 PHCs (C34-C50)	10 ug/g dry	-	<10	<10	-

Certificate of Analysis

Report Date: 14-May-2007

Order Date:4-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5365 Project Description: PE1114

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1	ug/g						
Arsenic	ND	1	ug/g						
Barium	ND	10	ug/g						
Beryllium	ND	0.5	ug/g						
Cadmium	ND	0.5	ug/g						
Boron, available	ND	0.5	ug/g						
Chromium (VI)	ND	0.4	ug/g						
Chromium	ND	5	ug/g						
Cobalt	ND	5	ug/g						
Copper	ND	5	ug/g						
Iron	ND	200	ug/g						
Lead	ND	1	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1	ug/g						
Nickel	ND	5	ug/g						
Selenium	ND	1	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1	ug/g						
Vanadium	ND	10	ug/g						
Zinc	ND	20	ug/g						
Organics									
F1 PHCs (C6-C10)	ND	20	ug/g						
F2 PHCs (C10-C16)	ND	10	ug/g						
F3 PHCs (C16-C34)	ND	10	ug/g						
F4 PHCs (C34-C50)	ND	10	ug/g						
Volatiles									
Benzene	ND	0.002	ug/g						
Ethylbenzene	ND	0.002	ug/g						
Toluene	ND	0.002	ug/g						
m,p-Xylenes	ND	0.002	ug/g						
o-Xylene	ND	0.002	ug/g						
Surrogate: Toluene-d8	*0.160*		*ug/g*		*118*	*76-118*			

Certificate of Analysis

Report Date: 14-May-2007

Order Date:4-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5365 Project Description: PE1114

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	4.8	1	ug/g dry	2.7			56.0	26	QR-01
Arsenic	10.1	1	ug/g dry	10.5			3.88	35	
Barium	937	10	ug/g dry	944			0.744	34	
Beryllium	0.50	0.5	ug/g dry	0.52			3.92	25	
Cadmium	0.88	0.5	ug/g dry	0.88			0.00	33	
Boron, available	2.85	0.5	ug/g dry	3.11			8.72	35	
Chromium (VI)	ND	0.4	ug/g dry	ND				35	
Chromium	39.0	5	ug/g dry	38.9			0.257	32	
Cobalt	7.4	5	ug/g dry	7.4			0.00	32	
Copper	101	5	ug/g dry	105			3.88	32	
Iron	18500	200	ug/g dry	18200			1.63	32	
Lead	1320	10	ug/g dry	1330			0.755	44	
Mercury	0.464	0.1	ug/g dry	0.491			5.65	35	
Molybdenum	2.4	1	ug/g dry	2.0			18.2	29	
Nickel	19.4	5	ug/g dry	20.0			3.05	29	
Selenium	2.2	1	ug/g dry	1.8			20.0	28	
Silver	0.50	0.3	ug/g dry	0.49			2.02	28	
Thallium	ND	1	ug/g dry	ND				27	
Vanadium	28.7	10	ug/g dry	28.8			0.348	27	
Zinc	840	200	ug/g dry	841			0.119	27	
Organics									
F1 PHCs (C6-C10)	ND	20	ug/g dry	ND				32	
F2 PHCs (C10-C16)	925	10	ug/g dry	935			1.08	50	
F3 PHCs (C16-C34)	6230	10	ug/g dry	8860			34.9	50	
F4 PHCs (C34-C50)	497	10	ug/g dry	1520			101	50	QR-04
Volatiles									
Benzene	ND	0.002	ug/g dry	ND				50	
Ethylbenzene	ND	0.002	ug/g dry	ND				34	
Toluene	ND	0.002	ug/g dry	ND				32	
m,p-Xylenes	ND	0.002	ug/g dry	ND				35	
o-Xylene	ND	0.002	ug/g dry	ND				50	
Surrogate: Toluene-d8	*0.188*		*ug/g dry*	*ND*	*117*	*76-118*			

Certificate of Analysis

Report Date: 14-May-2007

Order Date:4-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5365 Project Description: PE1114

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	48.8		ug/L	ND	97.6	80-120			
Arsenic	49.0		ug/L	ND	98.0	80-120			
Barium	51.3		ug/L	ND	103	80-120			
Beryllium	47.6		ug/L	ND	95.2	80-120			
Cadmium	50.7		ug/L	ND	101	80-120			
Boron, available	4.96	0.5	ug/g	ND	99.2	70-122			
Chromium (VI)	5.0	0.4	ug/g	ND	100	89-123			
Chromium	50.5		ug/L	ND	101	80-120			
Cobalt	50.7		ug/L	ND	101	80-120			
Copper	48.9		ug/L	ND	97.8	80-120			
Iron	1040		ug/L	ND	104	80-120			
Lead	53.0		ug/L	ND	106	80-120			
Mercury	1.39	0.1	ug/g	ND	92.7	72-128			
Molybdenum	50.0		ug/L	ND	100	80-120			
Nickel	48.9		ug/L	ND	97.8	80-120			
Selenium	49.4		ug/L	ND	98.8	80-120			
Silver	50.5		ug/L	ND	101	80-120			
Thallium	55.0		ug/L	ND	110	80-120			
Vanadium	51.3		ug/L	ND	103	80-120			
Zinc	59.9		ug/L	ND	120	80-120			
Organics									
F1 PHCs (C6-C10)	105	20	ug/g	ND	105	68-117			
F2 PHCs (C10-C16)	82	10	ug/g	ND	102	61-129			
F3 PHCs (C16-C34)	174	10	ug/g	ND	87.0	61-129			
F4 PHCs (C34-C50)	89	10	ug/g	ND	74.2	61-129			
Volatiles									
Benzene	0.0698	0.002	ug/g	ND	103	55-141			
Ethylbenzene	0.0799	0.002	ug/g	ND	118	61-139			
Toluene	0.0757	0.002	ug/g	ND	111	54-136			
m,p-Xylenes	0.149	0.002	ug/g	ND	110	61-139			
o-Xylene	0.0749	0.002	ug/g	ND	110	60-142			
Surrogate: Toluene-d8	*0.145*		*ug/g*		*107*	*76-118*			

PARACEL LABORATORIES LTD.

Order #: 7180164

Certificate of Analysis

Report Date: 14-May-2007

Order Date:4-May-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5365 Project Description: PE1114

Sample and QC Qualifiers Notes

1- QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

2- QR-04 : Duplicate results exceeds RSD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

CCME PHC additional information:

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

- F1 range corrected for BTEX.

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

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

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

PARACEL Laboratories Ltd.
Environmental & Indoor Air Quality

300-2319 St. Laurent Blvd., Ottawa, ON K1G 4J8
Tel: (613) 731-9577 Fax: (613) 731-9064
Toll Free: (800) 749-1947 email: paracel@paracellabs.com

Chain of Custody Record
№ 38474
Pg. 1 of 1

Contact: Jenna Comley
Company: Pinchin Environmental
Address: 1-28 Concourse Gate
Tel: 226 7386 Fax: 226 6344

Project Ref: PE1114
PO #: 5365
Quote #: ☐Not Quoted
Email:
Preservative to be added by Paracel? ☐Yes ☐No

REPORTING REQUIREMENTS
[✓] Hard Copy [ ] Email – PDF
[ ] FAX [ ] Email - spreadsheet

TURN AROUND TIME
[ ] 1-day [ ] 2-day [✓] Regular

REGULATORY/GUIDELINE REQUIREMENTS
MOE Table 1

Matrix Types: S–Soil/Sed GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer A-Air O-Other

	Sample Information				Analysis Required													
Paracel Order # 7180164	Sample Identification	Matrix	# Bottles	Date Sampled d/m/y	Metals	PHC F1-F4	BTEX											
1	Fill 2	Soil	1	3/05/07	✓													
2	E11	↓	1	↓		✓												
3	W26	↓	1	↓		✓	✓											
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Relinquished by:
Date: Time:

Received by:
Date: Time:

Verified by: C. Ranieri
Date: May 04/07 Time: 3:40

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300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com
www.paracellabs.com
OTTAWA ◉ NIAGARA FALLS ◉ MISSISSAUGA ◉ SARNIA

Certificate of Analysis

Paterson Group Consulting Engineers

28 Concourse Gate, Unit 1
Nepean, ON K2E 7T7
Attn: Dena Comley

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 6531
Project: PE1114
Custody: 42762

Report Date: 29-Aug-2008
Order Date: 28-Aug-2008
Order #: 0835133

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

Paracel ID	Client ID
0835133-01	S1
0835133-02	S2

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

PARACEL LABORATORIES LTD.

Order #: 0835133

Certificate of Analysis

Report Date: 29-Aug-2008

Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals	EPA 6020 - Digestion, ICP-MS	29-Aug-08	29-Aug-08

PARACEL LABORATORIES LTD.

Order #: 0835133

Certificate of Analysis

Report Date: 29-Aug-2008
Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

Lead

Matrix: Paint
Sample Date: 28-Aug-08

Paracel ID	Client ID	Units	MDL	Result
0835133-01	S1	ug/g	50	<50
0835133-02	S2	ug/g	50	<50

Certificate of Analysis

Report Date: 29-Aug-2008
Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Lead	ND	50	ug/g						

Certificate of Analysis

Report Date: 29-Aug-2008
Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Lead	1890	50	ug/g	1970			4.5	44	

Certificate of Analysis

Report Date: 29-Aug-2008
Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Lead	47.2		ug/L	ND	94.4	80-120			

Certificate of Analysis

Report Date: 29-Aug-2008

Order Date:28-Aug-2008

Client: **Paterson Group Consulting Engineers**

Client PO: 6531 Project Description: PE1114

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

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Chain of Custody Record

№ 42762

Pg. 1 of 1

Contact: Dina Lumley
Company: Paterson Group
Address: 1-28 Concourse Gate

Tel: 613-226-7381 Fax: 613-226-6344

Project Ref: PE1114
PO #: 6531
Quote #: ☐ Not Quoted
Email: dlumley@patersongroup.ca
Preservative to be added by Paracel? ☐ Yes ☐ No

Reporting Options
Electronic: [ ] signed PDF [ ] spreadsheet
Other:
Turn Around Time: [ ] 1-day [ ] 2-day [ ] ~~Regular~~
Regulatory/Guideline Requirements

Matrix Types: S–Soil/Sed GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer A–Air O–Other RDW–Regulated Drinking Water

Sample Information					Analysis Required													
Paracel Order #	Sample Identification	Matrix	# Bottles	Date Sampled dd/mm/yy	Metals	VOC's	PHC's	Lead	General Chem									
08 35132 - soil 08 35133 - paint																		
1	Lagoon 1	Sed	1	28/08/08	✓	✓			✓									
2	Lagoon 2	↓	↓	↓	✓		✓		✓									
3	Lagoon 3	↓			✓	✓			✓									
4	MW3 556	S			✓		✓											
5	S1	Paint						✓										
6	S2	↓	↓	↓				✓										
7	MOE General Chemistry																	
8																		
9																		
10																		

Comments:

Relinquished by:
Date: Time:

Received by: John Ur 1048
Date: 28/8/08 Time: 1:32

Verified by:
Date: Aug 28, 08 Time: 2:44

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Certificate of Analysis

Paterson Group Consulting Engineers

28 Concourse Gate, Unit 1
Nepean, ON K2E 7T7
Attn: Mark D'Arcy

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 9632
Project: PE1114
Custody: 74378

Report Date: 27-Apr-2010
Order Date: 21-Apr-2010

Order #: 1017105

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

Paracel ID	Client ID
1017105-01	MW2-08
1017105-02	TI

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

PARACEL LABORATORIES LTD.

Order #: 1017105

Certificate of Analysis

Report Date: 27-Apr-2010
Order Date:21-Apr-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9632 Project Description: PE1114

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX	EPA 624 - P&T GC-MS	22-Apr-10	23-Apr-10
CCME PHC F1	CWS Tier 1 - P&T GC-FID	22-Apr-10	23-Apr-10
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	23-Apr-10	25-Apr-10

PARACEL LABORATORIES LTD.

Order #: 1017105

Certificate of Analysis

Report Date: 27-Apr-2010
Order Date:21-Apr-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9632 Project Description: PE1114

Client ID:		MW2-08	TI	-	-
Sample Date:		21-Apr-10	21-Apr-10	-	-
Sample ID:		1017105-01	1017105-02	-	-
	MDL/Units	Water	Water	-	-
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	-
Toluene	0.5 ug/L	<0.5	<0.5	-	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	0.7	<0.5	-	-
Xylenes, total	1.0 ug/L	<1.0	<1.0	-	-
Toluene-d8	Surrogate	99.0%	98.1%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	200 ug/L	<200	<200	-	-
F2 PHCs (C10-C16)	100 ug/L	72600	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	51000	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	-	-
F1 + F2 PHCs	300 ug/L	72600	<300	-	-
F3 + F4 PHCs	200 ug/L	51000	<200	-	-

Certificate of Analysis

Report Date: 27-Apr-2010
Order Date:21-Apr-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9632 Project Description: PE1114

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	200	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	1.0	ug/L						
Surrogate: Toluene-d8	*79.4*		*ug/L*		*99.3*	*76-118*			

Certificate of Analysis

Report Date: 27-Apr-2010
Order Date:21-Apr-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9632 Project Description: PE1114

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	200	ug/L	ND				32	
Volatiles									
Benzene	ND	0.5	ug/L	ND				20	
Ethylbenzene	ND	0.5	ug/L	ND				35	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				34	
o-Xylene	ND	0.5	ug/L	ND				32	
Surrogate: Toluene-d8	*78.6*		*ug/L*	*ND*	*98.2*	*76-118*			

Certificate of Analysis

Report Date: 27-Apr-2010
Order Date:21-Apr-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9632 Project Description: PE1114

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1970	200	ug/L	ND	98.5	68-117			
F2 PHCs (C10-C16)	1730	100	ug/L	ND	108	61-129			
F3 PHCs (C16-C34)	4260	100	ug/L	ND	107	61-129			
F4 PHCs (C34-C50)	2780	100	ug/L	ND	116	61-129			
Volatiles									
Benzene	31.1	0.5	ug/L	ND	77.8	55-141			
Ethylbenzene	33.0	0.5	ug/L	ND	82.6	61-139			
Toluene	37.2	0.5	ug/L	ND	93.1	54-136			
m,p-Xylenes	78.2	0.5	ug/L	ND	97.7	61-139			
o-Xylene	39.4	0.5	ug/L	ND	98.6	60-142			
Surrogate: Toluene-d8	*81.2*		*ug/L*		*102*	*76-118*			

Certificate of Analysis

Report Date: 27-Apr-2010
Order Date:21-Apr-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9632 Project Description: PE1114

Sample and QC Qualifiers Notes

None

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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f: 613-731-9064
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Chain of Custody
(lab use only)

Nº 74378

Reg. Drinking Water

Client Name: Paterson Group	Project Ref: PE1114	Waterworks Name:	Page 1 of 1
Contact Name: Mark D'Arcy	Quote #	Waterworks Number:	Sample Taken by:
Address: 28 Concourse Gate	PO # 9632	Address:	Print Name: D. Storie
	E-mail Address:	After hours Contact:	Signature: DS
Telephone: 613-226-7381	Fax:	Public Health Unit:	TAT: [ ] 1-day [ ] 2-day [x] Reg.

Matrix Types: S–Soil/Sed. GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer DW-Drinking Water RDW-Regulated Drinking Water P- Paint A-Air O-Other

Samples submitted under: (Indicate **ONLY** one)
☐ O. Reg 153 (511) Table ___ ☐ O. Reg 170/03 ☐ O. Reg 318/08 ☐ Private well
☐ CCME ____ ☐ O. Reg 243/07 ☐ O. Reg 319/08 ☐ Other: _____

Type of **DW** Sample: **R** = Raw; **T** = Treated; **D** = Distribution
Location Types: **S** = Surface Water; **G** = Ground Water

Paracel Order Number: 1017105

	Sample ID / Location Name	Matrix	Air Volume	Type of Sample	# of Containers	Sample Taken: Date	Sample Taken: Time	Free / Combined Chlorine Residual mg/L	Required Analyses: PHCs (C6-F4)	Required Analyses: BTEX							
1	MW2-08	GW	✓	✓	3	04/21/10	10:30am		✓	✓							
2	T1	GW	✓	✓	3	"	"		✓	✓							
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments: J.K

Preservation Verification: pH _____ Temperature ____
Verified by: _____

Relinquished By (Print & Sign): Derek Storie DS

Date/Time:

Lab Use Only:

Received By Driver/Depot:	Received at Lab: 2:00	Verified By:
Date/Time:	Date/Time: APR. 21/10	Date/Time: Apr 24/10 16:03

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Certificate of Analysis

Paterson Group Consulting Engineers
28 Concourse Gate, Unit 1
Nepean, ON K2E 7T7
Attn: Richard Groniger

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 9651
Project: PE1114
Custody: 71531

Report Date: 18-Jun-2010
Order Date: 14-Jun-2010
Order #: 1025061

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

Paracel ID	Client ID
1025061-01	EX1-GW1

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

PARACEL LABORATORIES LTD.

Order #: 1025061

Certificate of Analysis

Report Date: 18-Jun-2010
Order Date:14-Jun-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9651 Project Description: PE1114

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX	EPA 624 - P&T GC-MS	16-Jun-10	17-Jun-10
CCME PHC F1	CWS Tier 1 - P&T GC-FID	16-Jun-10	17-Jun-10
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	15-Jun-10	15-Jun-10

PARACEL LABORATORIES LTD.

Order #: 1025061

Certificate of Analysis

Report Date: 18-Jun-2010
Order Date:14-Jun-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9651 Project Description: PE1114

Client ID:		EX1-GW1	-	-	-
Sample Date:		14-Jun-10	-	-	-
Sample ID:		1025061-01	-	-	-
	MDL/Units	Water	-	-	-
Volatiles					
Benzene	0.5 ug/L	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-
Toluene	0.5 ug/L	<0.5	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-
Xylenes, total	1.0 ug/L	<1.0	-	-	-
Toluene-d8	Surrogate	108%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	200 ug/L	<200	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-
F1 + F2 PHCs	300 ug/L	<300	-	-	-
F3 + F4 PHCs	200 ug/L	<200	-	-	-

Certificate of Analysis

Report Date: 18-Jun-2010
Order Date:14-Jun-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9651 Project Description: PE1114

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	200	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	1.0	ug/L						
Surrogate: Toluene-d8	*82.8*		*ug/L*		*104*	*76-118*			

Certificate of Analysis

Report Date: 18-Jun-2010
Order Date:14-Jun-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9651 Project Description: PE1114

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	200	ug/L	ND				32	
Volatiles									
Benzene	ND	0.5	ug/L	ND				20	
Ethylbenzene	ND	0.5	ug/L	ND				35	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				34	
o-Xylene	ND	0.5	ug/L	ND				32	
Surrogate: Toluene-d8	*83.1*		*ug/L*	*ND*	*104*	*76-118*			

Certificate of Analysis

Report Date: 18-Jun-2010
Order Date:14-Jun-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9651 Project Description: PE1114

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	2040	200	ug/L	ND	102	68-117			
F2 PHCs (C10-C16)	1470	100	ug/L	ND	92.1	61-129			
F3 PHCs (C16-C34)	3500	100	ug/L	ND	87.5	61-129			
F4 PHCs (C34-C50)	2340	100	ug/L	ND	97.5	61-129			
Volatiles									
Benzene	29.0	0.5	ug/L	ND	72.6	55-141			
Ethylbenzene	37.5	0.5	ug/L	ND	93.8	61-139			
Toluene	33.8	0.5	ug/L	ND	84.4	54-136			
m,p-Xylenes	72.4	0.5	ug/L	ND	90.5	61-139			
o-Xylene	37.2	0.5	ug/L	ND	92.9	60-142			
Surrogate: Toluene-d8	*88.1*		*ug/L*		*110*	*76-118*			

Certificate of Analysis

Report Date: 18-Jun-2010
Order Date:14-Jun-2010

Client: **Paterson Group Consulting Engineers**
Client PO: 9651 Project Description: PE1114

Sample and QC Qualifiers Notes

None

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Chain of Custody
(lab use only)

Nº 71531

Reg. Drinking Water

Client Name: PATERSON GROUP.	Project Ref: PE1114	Waterworks Name:	Page 1 of 1
Contact Name: RICHARD GRONIGER	Quote #	Waterworks Number:	Sample Taken by:
Address: 28 CONCOURSE GATE UNIT 1, OTTAWA. ON K2E, 7T7	PO # 9651	Address:	Print Name: R. GRONIGER.
Telephone: 226-7381	E-mail Address: rgroniger@patersongroup.ca	After hours Contact:	Signature:
	Fax: 226-7381/226-6344.	Public Health Unit:	TAT: [ ] 1-day [ ] 2-day [X] Reg.

Matrix Types: S–Soil/Sed. GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer DW-Drinking Water RDW-Regulated Drinking Water P- Paint A-Air O-Other

Samples submitted under: (Indicate **ONLY** one)
☐ O. Reg 153 (511) Table ___ ☐ O. Reg 170/03 ☐ O. Reg 318/08 ☐ Private well
☐ CCME ____ ☐ O. Reg 243/07 ☐ O. Reg 319/08 ☐ Other: _____

Type of DW Sample: R = Raw; T = Treated; D = Distribution
Location Types: S = Surface Water; G = Ground Water

Paracel Order Number: 1025061

	Sample ID / Location Name	Matrix	Air Volume	Type of Sample	# of Containers	Sample Taken Date	Sample Taken Time	Free / Combined Chlorine Residual mg/L	PHC F1-F4	BTEX									Required Analyses
1	EX1 - GW1	GW			3	JUNE 14/10	9:30AM.												MOE TABLE I
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments: J.C

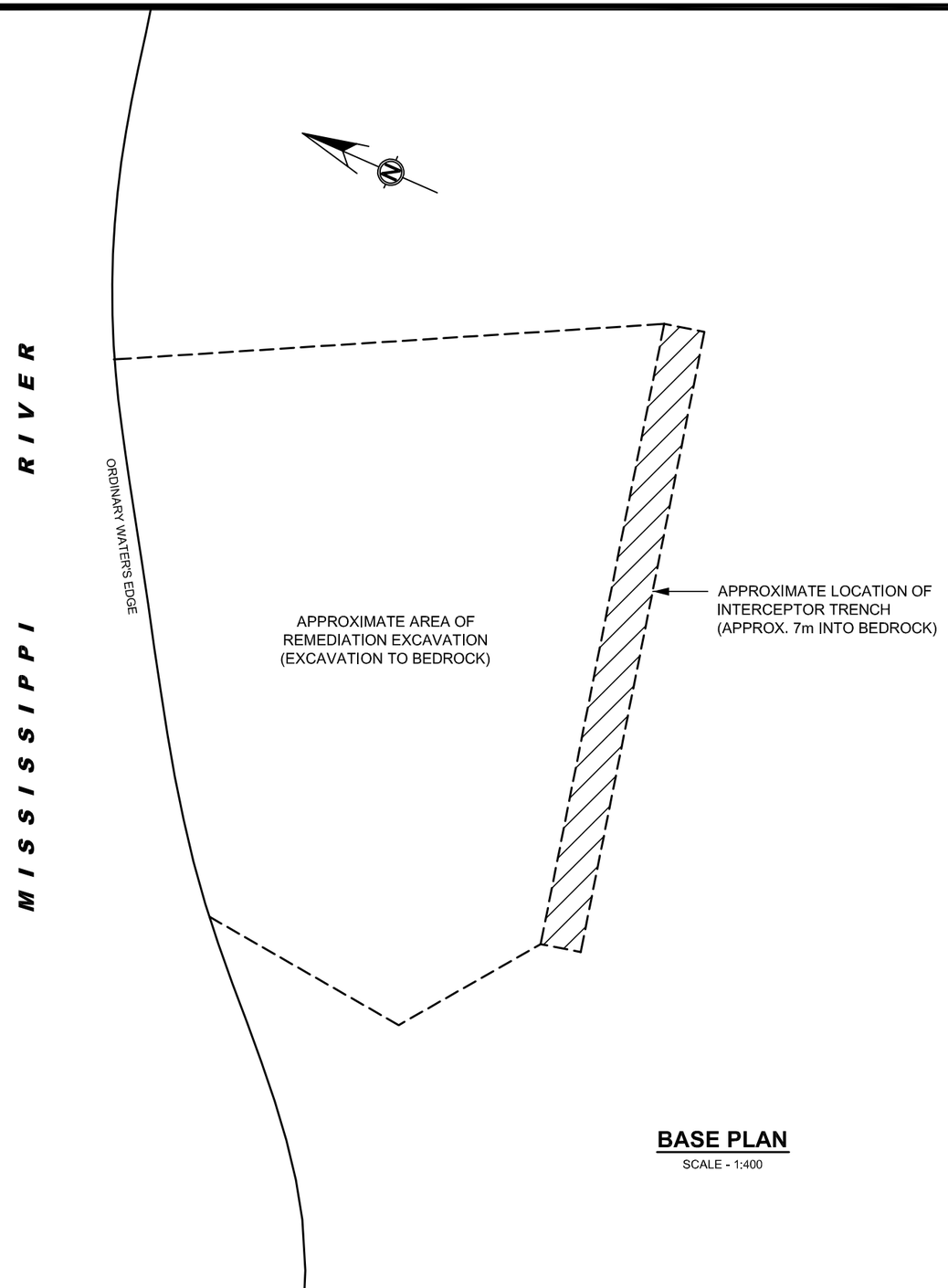
Preservation Verification: pH _____ Temperature ____
Verified by: _____

Relinquished By (Print & Sign): R.GRONIGER

Date/Time: JUNE 14/2010 12:00pm.

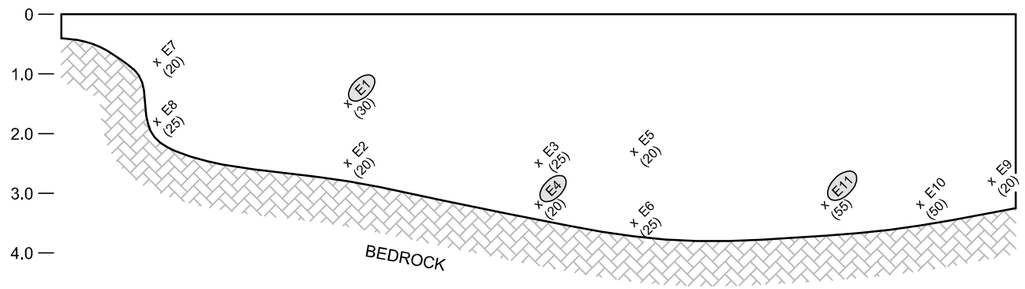
Lab Use Only:

Received By Driver/Depot:	Received at Lab:	Verified By:
Date/Time: JUNE 14/10 2:15	Date/Time: June 14, 10 3:00	Date/Time: June 14/10 3:04

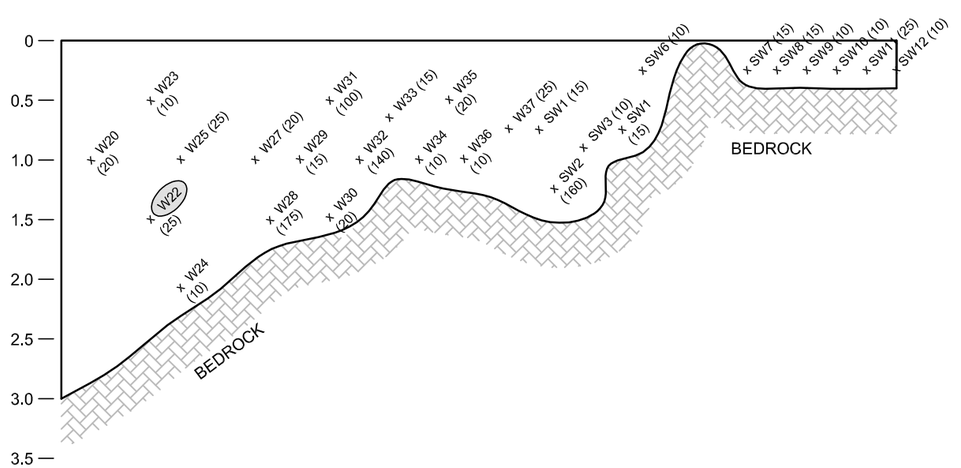


BASE PLAN
SCALE - 1:400

EAST WALL
SCALE - 1:250H; 1:100V



WEST WALL
SCALE - 1:200H; 1:50V



LEGEND:

x E7	SAMPLE LOCATION
x (E4)	ANALYZED SAMPLE LOCATION
(20)	HEADSPACE VAPOUR READING (ppm)

paterson group
consulting engineers
28 Concourse Gate, Unit 1, Ottawa, Ontario K2E 7T7

Scale:	AS SHOWN
Des.:	LAL
Dwn:	MPG
Chkd:	MSD

PAUL DULMAGE

ENVIRONMENTAL SITE REMEDIATION PROGRAM
FORMER APPLETEXT MILL
APPLETON, ONTARIO

SITE REMEDIATION PLAN

Dwg. No. **PE1114-6**
Report No.: PE1114
Date: 11/2010

APPENDIX 2

AERIAL PHOTOGRAPHS

MOE FREEDOM OF INFORMATION REQUEST FORM

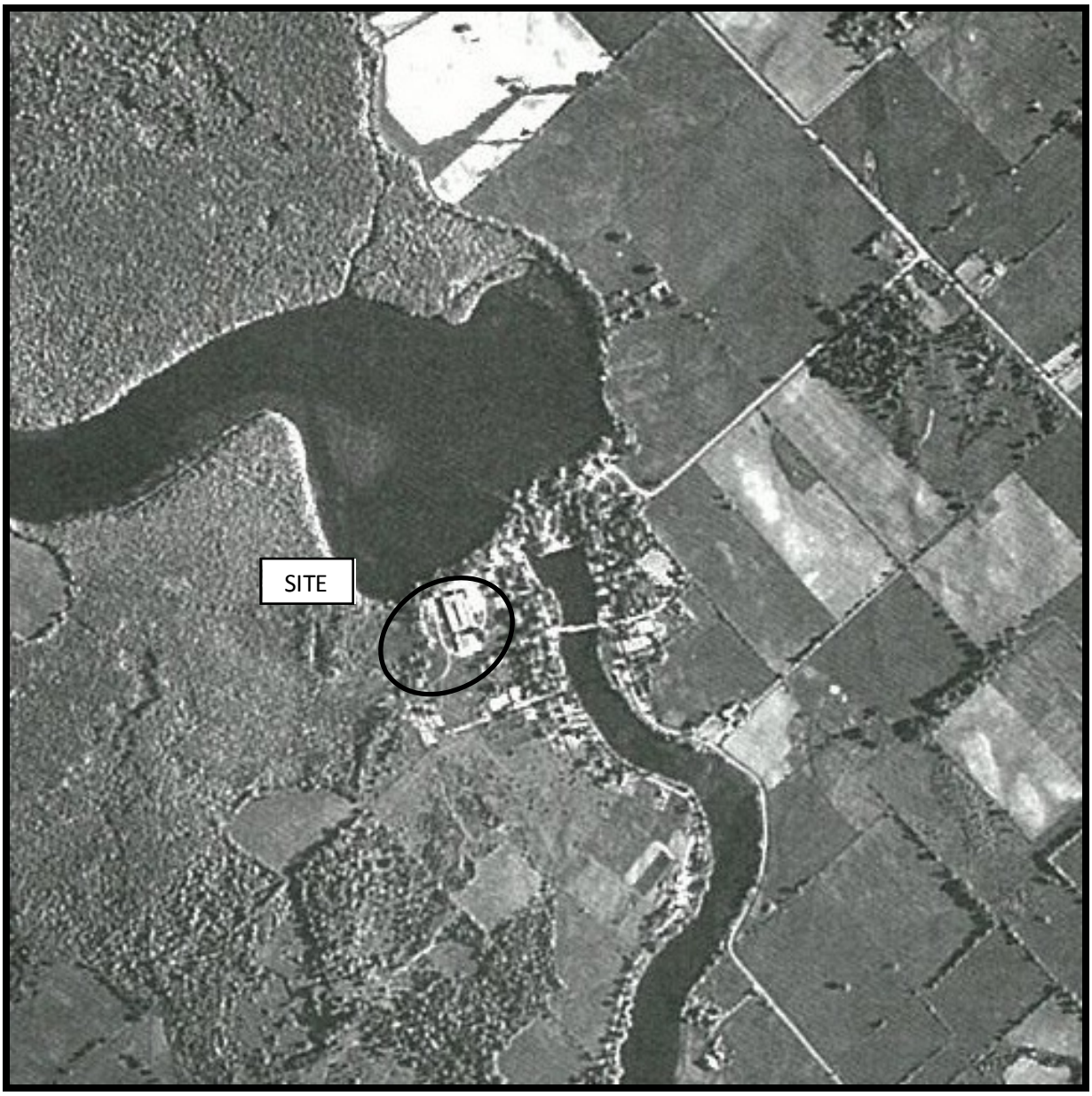
FIGURE 1 - KEY PLAN

DRAWING: PE1114-5 - SITE PLAN

AERIAL PHOTOGRAPH
1994

AERIAL PHOTOGRAPH
1981

AERIAL PHOTOGRAPH
1973



AERIAL PHOTOGRAPH
1959

Ontario Ministry of Environment and Energy

Freedom of Information Request

This form is for requesting documents which are in the Ministry's files on environmental concerns related to properties. Please refer to the guide on completion and use of this form. Our fax no. is (416) 314-4285.

Requester Data			For Ministry Use Only	
Name, Company Name, Mailing Address and Email Address of Requester Paterson Group Inc. 28 Concourse Gate - Unit 1 Ottawa, ON K2E 7T7 **Email address:** mdarcy@patersongroup.ca			FOI Request No.	Date Request Received
			Fee Paid ☐ ACCT ☐ CHQ ☐ VISA/MC ☐ CASH	
Telephone/Fax Nos. Tel. 613-226-7381 Fax 613-226-6344	Your Project/Reference No. PE1114	Signature/Print /Name of Requester Luke Lopers	☐ CNR ☐ ER ☐ NOR ☐ SWR ☐ WCR ☐ SAC ☐ IEB ☐ EAA ☐ EMR ☐ SWA	

Request Parameters

Municipal Address / Lot, Concession, Geographic Township **(Municipal address essential for cities, towns or regions)**

116-122 Old Mill Road, Appleton (Mississippi Mills), Ontario

Present Property Owner(s) and Date(s) of Ownership

Paul Dulmage

Previous Property Owner(s) and Date(s) of Ownership

Appletex Mill

Present/Previous Tenant(s),(if applicable)

Appletex Mill

Search Parameters *Files older than 2 years may require $60.00 retrieval cost. There is no guarantee that records responsive to your request will be located.*	**Specify Year(s) Requested**
Environmental concerns (General correspondence, occurrence reports, abatement)	all
Orders	all
Spills	all
Investigations/prosecutions ➤ Owner **AND** tenant information must be provided	all
Waste Generator number/classes	all

Certificates of Approval ➤ Proponent information must be provided

1985 and prior records are searched manually. **Search fees in excess of $300.00** could be incurred, depending on the types and years to be searched. Specify Certificates of Approval number(s) (if known). **If supporting documents are also required, mark SD box** and specify type e.g. maps, plans, reports, etc.

	SD	**Specify Year(s) Requested**
air - *emissions*		
water - *mains, treatment, ground level, standpipes & elevated storage, pumping stations (local & booster)*		
sewage - *sanitary, storm, treatment, stormwater, leachate & leachate treatment & sewage pump stations*		
waste water - *industrial discharges*		
waste sites - *disposal, landfill sites, transfer stations, processing sites, incinerator* sites		
waste systems - *PCB destruction, mobile waste processing units, haulers: sewage, non-hazardous & hazardous waste*		
pesticides - *licenses*		

A $5.00 non-refundable application fee, payable to the Minister of Finance, is mandatory. The cost of locating on-site and/or preparing any record is $30.00/hour and 20 cents/page for photocopying and you will be contacted for approval for fees in excess of $30.00.

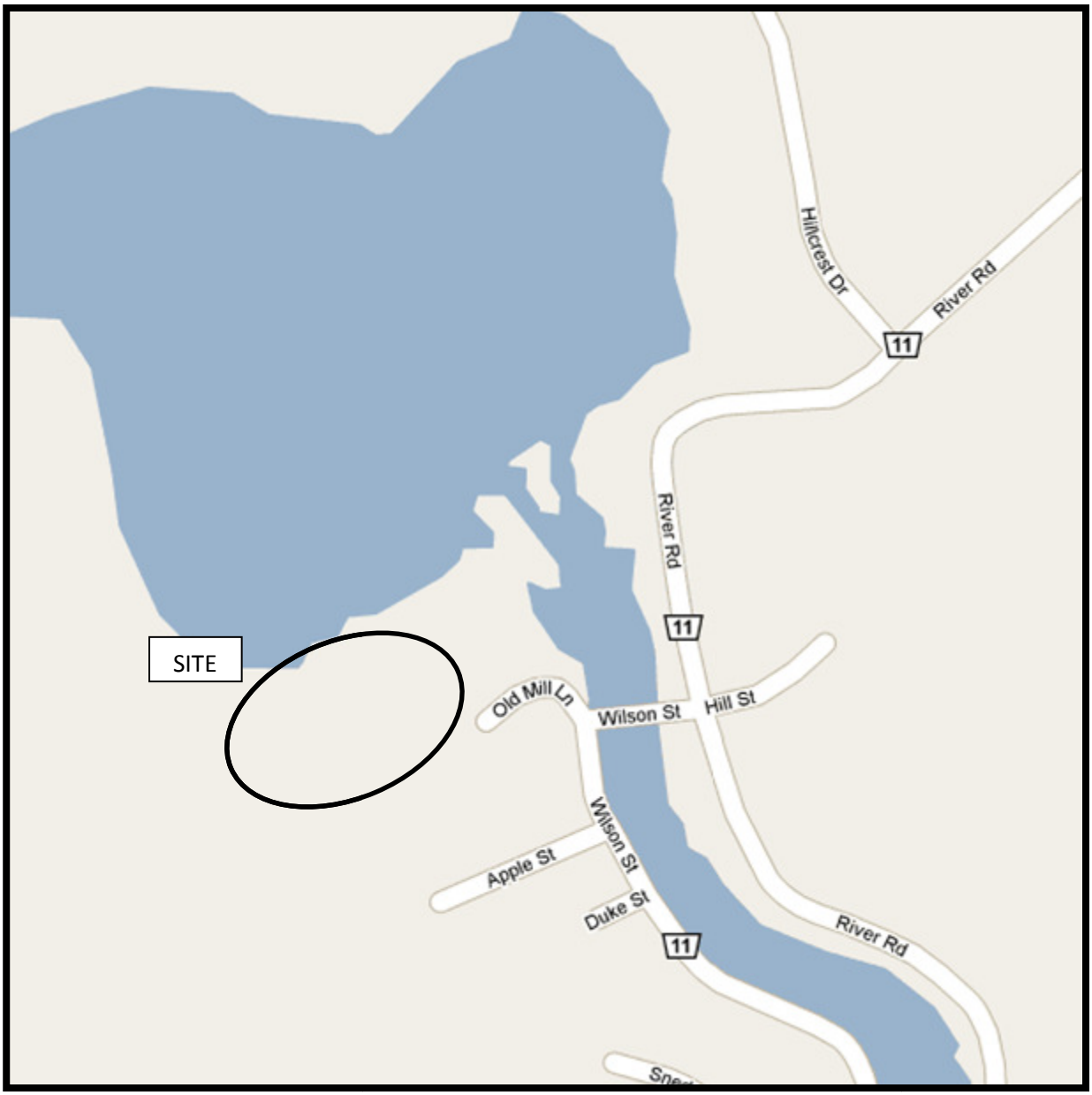


FIGURE 1

KEY PLAN

RESIDENTIAL DWELLINGS

VACANT / TREED LAND

GRAVEL ACCESS ROAD

RESIDENTIAL DWELLINGS

APPLE STREET

RESIDENTIAL DWELLINGS

FORMER MILL BUILDING

FORMER HEATING PLANT

FORMER PUMP HOUSE

APPROX. LOCATION OF INTERCEPTOR TRENCH

MW 2-08

MW 5-08

MW 1-08

MW 4-08

TP 1

1998

EDGE

RIVER

MISSISSIPPI

FLOW

ORDINARY

WATER'S

FORMER SHED

APPROX. LOCATION OF FORMER ABOVEGROUND STORAGE TANK

APPROX. LOCATION OF FORMER ABOVEGROUND STORAGE TANK

LAGOON 3

LAGOON 1

MW 3-08

LAGOON 2

APPROX. AREA OF FORMER DISPOSAL AREA

PROVINCIALLY SIGNIFICANT WETLAND

N

LEGEND:

- TEST PIT LOCATION
- MONITORING WELL LOCATION
- METALS REMEDIATION (SURFACE FILL REMOVAL)
- PETROLEUM HYDROCARBONS REMEDIATION (REMOVED TO BEDROCK)

paterson group
consulting engineers
28 Concourse Gate, Unit 1, Ottawa, Ontario K2E 7T7

Scale:	1:1500
Des.:	LAL
Dwn:	MPG
Chkd:	MSD

PAUL DULMAGE

ENVIRONMENTAL SITE REMEDIATION PROGRAM
FORMER APPLETEX MILL
APPLETON, ONTARIO

SITE PLAN

Dwg. No. **PE1114-5**
Report No.: PE1114
Date: 11/2010

11x17