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CITY OF GUELPH
Former IMICO Facility

Demolition and Waste Removal Report

Prepared for:
City of Guelph
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Prepared by:
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October, 1999

EO 98256

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October 7, 1999

Project EO 98256

Mr. T.E. (Terry) Hearn, P. Eng.
Assistant Director of Works
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Subject: Demolition and Site Clean-Up- Draft Report
International Mallable Iron Site, Guelph

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Dear : Mr. Hearn

Please find enclosed our Demolition and Site Clean-Up Report related to the former International Mallable Iron Site (IMICO) located at 200 Beverly Street, Guelph, Ontario.

This report provides a summary of the activities associated with the demolition of site buildings, removal and off-site disposal of all equipment, building rubble, and waste materials, and the documentation of all analysis completed. To date, the PCB waste materials are securely stored on the IMICO site awaiting off-site disposal. When these PCB waste materials have been disposed off-site, Earth Tech (Canada) Inc. will issue an addendum to this report detailing these disposal activities.

We trust the enclosed is satisfactory for your review.

Very truly yours,

Earth Tech (Canada) Inc.

Joseph Young, P.Eng.
Project Manager

cc: Thom Kewen, Kewen Environmental Limited

File Location: Document2

Executive Summary

In the summer of 1998 Proctor & Redfern Limited (P&R) was retained by the City of Guelph (City) to undertake contract tendering and project administration for the demolition of buildings and clean-up of waste materials from the Former IMICO Facility (Site) located at 200 Beverly Street, in Guelph, Ontario. The purpose of this clean-up program was to address issues identified in the Director's Order issued by the MOE in July 1994. In the Order, the MOE requested that the owner prepare a Remedial Work Plan (RWP) detailing all activities in association with the clean-up of the Site.

In January 1998, the City acquired control of the Site, and following preliminary investigations, submitted an Interim RWP to the MOE in August 1998. The Interim RWP was approved by the Director in September 1998. Contract tender packages were then prepared by P&R and forwarded to six qualified demolition contractors with Philip Environmental Services Ltd. (PES) being ultimately awarded the contract in November 1998.

A waste materials removal program was initiated prior to demolition activities and consisted primarily of removal and disposal of asbestos containing materials (ACMs), PCB contaminated materials, various liquid wastes, leachate toxic waste, registerable waste, non-registerable solid wastes (primarily soils), and other waste debris. A summary of waste materials is provided in the attached Table A detailing type of material, locations, tonnage/ volumes, and final disposal locations. All waste removal and demolition work was completed following a comprehensive health and safety plan submitted by PES prior to initiation of site activities.

Demolition of on-site buildings began with the outer peripheral buildings surrounding the Foundry Area and then proceeded from the western to eastern sections of the Foundry. Demolition debris and equipment consisting of metal and steel was separated and transported to a PES's metal recycling facility. The main wooden support pillars located in the Foundry, and wood from other isolated buildings was donated to the local Mennonite community. Waste brick debris and concrete was transported to Bel-Air Excavating's gravel pit and PES's Taro Landfill, respectively. All remaining construction and waste debris was disposed of at the City's landfill.

Upon completion of demolition activities, remediation of PCB contaminated materials was undertaken in two areas of the Site. Concrete floors in the Former PCB Storage Area and Capacitor Room areas underwent decontamination of surficial residue and stained concrete surfaces, respectively. Results from borehole drilling in the Capacitor Room area, conducted after remediation of stained surfaces, indicated additional PCB contaminated materials at depth, in the vicinity of a subsurface sump. Due to the initial condition of the Foundry and Capacitor Room areas prior to demolition, only limited access could be obtained for investigative activities. Therefore the remediation of the Capacitor Room was conducted utilizing a staged approach by remediating known and accessible PCB contaminated areas, and then conducting further investigations as access was obtained. In this manner the subsurface soils and fill materials, concrete structures and foundations, and limited bedrock areas underlying the Capacitor Room were remediated. Final verification testing of the entire Capacitor Room area indicated residual PCB concentrations between 5 and 10 ppm in two bedrock samples underlying the eastern sump area. All remaining areas of the Capacitor Room area contained PCB concentrations below the applicable guidelines.

In addition to the waste removal activities, a soil excavation program was completed in the northeast corner of the Site. The excavation program was initiated to remove metal and hydrocarbon contaminated soils from this area of the Site. Approximately 9,387 tonnes of contaminated soils, 36 tonnes of leachate toxic soils, and 925 tonnes of contaminated concrete were excavated. Contaminated concrete materials consisted of stained surficial concrete slabs and all sub-grade structural footings. Final disposal locations for the above materials are detailed on the attached Table A.

Excavation of contaminated soils proceeded to bedrock, ranging from 1.3 to 2.0 metres below groundsurface. Analytical results indicated elevated metal and hydrocarbon concentrations above the applicable guidelines around the final excavation.

Based on information obtained from the waste disposal and clean-up programs, it is recommended that groundwater monitoring programs should be conducted downgradient from the former Capacitor Room area and in the northeast corner of the Site. Groundwater monitoring would assist in determining if groundwater quality is being adversely affected from the presence of residual contaminants.

Table A
Summary of Waste Materials
IMICO Demolition Project- City of Guelph

Waste Material	Locations	Tonnage/ Volume	Disposal Location
Asbestos	Boiler Room Cooling Towers Electrical Shop Finishing & Annealing Area Foundry Garage Guard House Paint Shop Sand Storage Shed Storage Area Transformer Area Trimming & Grinding Area Warehouse	1600 tonnes	City of Guelph Landfill
Contaminated Soil	Northeast Corner of the Site	9423 tonnes	PES Taro Landfill PES Transfer Facility
Foundry Sands	Core Room Foundry Grinding & Annealing	1827 tonnes	PES Taro Landfill PES Transfer Facility
Waste Debris	Entire Site	Minor Quantities	City of Guelph Landfill
Liquids	Core Room Finishing & Annealing Area Foundry Storage Shed	465 litres	PES Transfer Facility
PCBs	Capacitor Room Former PCB Storage Area Foundry Garage	pending	pending
Contaminated Concrete	Capacitor Room Former PCB Storage Area Northeast Corner of the Site	1000 tonnes	PES Taro Landfill
Water	Foundry Finishing & Annealing Area Trimming & Grinding Area Core Room	100,000 Litres	City of Guelph Sanitary Sewers

TABLE OF CONTENTS

Page No.

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1. INTRODUCTION

From November 1998 to July 1999 the City of Guelph (City) completed a structural demolition and clean-up program at the former International Malleable Iron Company (IMICO) site located at 200 Beverley Street, Guelph, Ontario (hereinafter referred to as the "Site").

The purpose of the demolition and clean-up program was to address issues as identified by the Ontario Ministry of the Environment (MOE) in the Director's Order dated July 14, 1994.

This report documents the following:

i) removal and off-site disposal of all equipment, building rubble, liquid and solid waste materials, general solid industrial, and waste debris;

ii) demolition of all structures and buildings to existing slab on grade, or ground surface, as applicable;

iii) removal and disposal of PCB contaminated and asbestos containing materials;

iv) excavation and disposal of metal and hydrocarbon contaminated soils from the former Galvanizing Area located in the northeast corner of the Site;

v) documentation of all investigative and verification analysis completed

2. BACKGROUND

The Site is approximately 13 acres in size and is located in a light industrial setting with some residential properties in close proximity (Figure 1). Two rail-lines, owned by Guelph Junction Railway, are located along the northern site boundary.

IMICO purchased the Site in 1912 for development as a foundry. There is no evidence of any previous commercial, or industrial use of this land. The IMICO foundry historically operated as an iron-jobbing foundry using malleable and ductile iron with various types of moulding forms. Since 1912 there have been numerous additions and renovations including the addition of peripheral buildings, concrete floors in some buildings, and the relocation of numerous production areas.

In June 1989, Proctor & Redfern Limited (P&R) conducted a preliminary site assessment of the property and identified several environmental and potential health concerns. P&R undertook a detailed Phase II Investigation in November 1990 to investigate the potential for subsurface soil and groundwater contamination. A building materials survey was also conducted at this time to identify asbestos containing

materials (ACMs), waste sludges and polychlorinated biphenyls (PCBs). All results, conclusions, and recommendations from this detailed Phase II report are detailed in P&R's report to The Bank of Montreal, titled "Environmental Investigation, International Malleable Iron Company, June, 1991".

In July 1994, the MOE issued a Director's Order requiring that the Site be cleaned up. The Order required that the responsible party retain a qualified consultant to prepare a Remedial Work Plan (RWP) outlining all activities in association with the clean-up of the Site. Implementation of the RWP was to be undertaken by qualified contractors, with a detailed report being submitted summarizing all clean-up activities.

In January 1998 the City acquired control of the Site and developed an overall Site Management Plan including implementation of the Director's Order. The City retained P&R in April 1998, to conduct a more detailed inspection and engineering evaluation of the Site to form the basis for the RWP. The results of this evaluation were presented in P&R's report entitled "Site Inspections and Engineering Evaluations, International Malleable Iron Site, July 1998". This report presented a detailed assessment of the nature, type, and estimated quantities of the various waste materials, status of structural integrity of the buildings, and general outline for the demolition and waste removal plan, including cost estimates and schedules. Figure 2 illustrates area designations used during the assessment.

An Interim RWP was submitted to the MOE in August 1998, and was approved by the Director of the West Central Region in September 1998. In the summer of 1998, P&R was retained by the City to undertake contract tendering and project administration for this work plan, specifically the demolition of buildings and clean-up of waste materials from the Site. Contract tender packages were forwarded to six qualified demolition contractors with Philip Environmental Services Ltd. (PES) being ultimately awarded the contract in November 1998.

3. WASTE MATERIALS REMOVAL PROGRAM

Waste materials removal was undertaken by PES from November 21, 1998, to July 9, 1999. Waste materials consisted of ACMs, PCB contaminated materials, various liquid wastes, leachate toxic wastes, registerable wastes, and non-registerable solid wastes, and other waste debris. In addition to the pre-removal inventory of waste materials present on the Site, other waste materials were also identified during the demolition and waste removal programs. All waste removal and abatement work was undertaken following a comprehensive health and safety plan submitted by PES prior to initiation of on-site activities. A summary of samples collected for chemical analysis is presented in Table 1 detailing sample locations, types, and analysis preformed. All analytical results are provided in Appendix A.

3.1. Asbestos Abatement

Abatement of areas containing ACMs commenced on November 21, 1998, and was completed on February 23, 1999, as required by the MOE Order, and referenced in Section 2.1.3 (including Section 5 of the Provincial's Officer's Report – Building Demolition). On-site buildings contained ACMs in the following forms; friable aircell pipe insulation and fittings, non-friable wallboard, non-friable vinyl floor tiles, and non-friable roofing materials. Based on visual inspection, two building areas (Former GuardHouse and Western Foundry Area) contained secondary ACM sub-ceilings that were not identified in the initial waste inventory.

All asbestos abatement was completed in accordance with Regulation 838 (Ministry of Labour Occupational Health and Safety Act) using Type 1 and exterior Type 2 operations. Approximately 1600 tonnes of various ACMs were removed and disposed of at the City's municipal landfill. A summary of asbestos analysis completed is presented in Table 2

3.1.1. Roofing Materials and Other Non-Friable ACMs

Approximately 90% of the on-site buildings contained asphalt and tar roofing with non-friable ACMs. Due to the lack of structural integrity of most of the on-site buildings, the buildings were first demolished and then the roofing ACMs were separated from the building debris.

Several other buildings present on the Site contained various amounts of non-friable ACMs consisting of vinyl floor tiles, asbestos wallboard, and fireproof curtains. These non-friable ACMs were removed for disposal prior to demolition proceeding in these areas.

3.1.2. Piping Insulation and Other Friable ACMs

The pre-removal waste inventory indicated several buildings on the Site contained friable ACM associated with various overhead piping. This piping was predominantly located in the Foundry and Annealing areas of the Site and consisted of aircell insulation with parging elbows and fittings.

Several other buildings present on the Site contained various other friable ACMs consisting of braking systems in overhead cranes and wallpaper in fire doors. All of these friable ACMs were removed for disposal prior to demolition proceeding in these areas.

3.1.3. Foundry Equipment

Two large annealing ovens located in the Finishing, Annealing and Grinding areas contained significant amounts of friable ACM. Upon removal of the outer metal covering, inspection of the ovens indicated

non-ACM refractory lining and brick with a layer of ACM lining located adjacent to the outer metal covering. During demolition of the ovens all materials were treated as ACM for simplicity, and saturated with water prior to removal and disposal.

Several other areas of the Site also contained small amounts of equipment with ACMs consisting of ducting from equipment, hot water tank insulation, and various fittings from machinery. These ACMs were also saturated using water prior to removal and disposal.

3.2. Solid Wastes

Excavation and removal of solid wastes commenced on December 15, 1998, and was completed on June 10, 1999, as required by the MOE Order and referenced in Section 2.1.3 (including Section 5 of the Provincial's Officer's Report – Process Waste). The solid wastes were comprised of spent foundry sands, minor amounts of registerable foundry sands and dusts, and leachate toxic materials. Approximately 1700 tonnes of non-registerable foundry sands and 100 tonnes of registerable foundry sands and dust were removed and disposed at PES's Taro Landfill (Taro), located in Hamilton, Ontario. Approximately 160 kilograms of leachate toxic materials were also removed and disposed at PES's Transfer Facility, located in Hamilton, Ontario. MOE manifesting was completed for the transportation of the registerable foundry sands and dust, and the leachate toxic materials.

3.2.1. Foundry Sands

Foundry sands were predominantly located within concrete pits and sumps in the Foundry area, illustrated on Figure 3. Minor amounts were also located at the base of the two sand silos adjacent to the Core Room and on concrete floors in various buildings adjacent to the Foundry. Approximately 1700 tonnes of non-registerable and 100 tonnes of registerable foundry sands were disposed at Taro.

During demolition of northern sections of the Finishing & Annealing Area, a brick enclosure was observed adjacent to the northern wall. Inspection of this enclosure indicated that a former chimney structure surrounded by debris and black "soot" was present. Ontario Regulation 347 Leachate (Reg. 347) analytical results from this soot material indicated that it be classified as a registerable solid waste. An additional 27 tonnes of soot and contaminated brick were excavated and also disposed at Taro.

3.2.2. Leachate Toxic Materials

Several small metal pails of burnt wire and insulation debris, located between the Foundry and Core Room, were identified as containing leachate toxic concentrations for lead. Approximately 160 kilograms of this material was removed and disposed of at PES's Transfer Facility.

3.3. Liquid Wastes

Various liquid wastes consisting of waste oils and sludges were collected and disposed from several on-site buildings as required by the MOE Order, and referenced in Section 2.1.3 (including Section 5 of the Provincial's Officer's Report – Contaminated Water). The liquids were typically contained in small 20 litre plastic pails and 205 litre drums and consisted of spent lubricating and motor oils. A single 45,000 litre above ground storage tank (AST) used to store Bunker C fuel was also located east of the Core Room Inspection of the AST indicated approximately 5 cm of a solidified residue was present at the base. This material was removed in connection with decommissioning of the AST and disposed as a solid waste at Taro.

A total of 465 litres of waste oils and sludges, exclusive of Bunker C residues, were removed and disposed at PES's Transfer Facility on February 17, 1998. MOE manifesting was completed for the transportation of the liquid wastes.

4. DEMOLITION PROGRAM

A partial demolition of unsafe buildings and structures was completed by PES in July 1998. The areas demolished included the Shipping, Finishing and Annealing, Machine Shop and Warehouse, and Office buildings. Demolition of all other on-site buildings and structures, and the disposal of all equipment, building rubble, and general and domestic wastes were completed from November 23, 1998 to June 16, 1999. This demolition and waste removal was required by the MOE Order, and referenced in Section 2.1.3 (including Section 5 of the Provincial's Officer's Report – Building Demolition).

Full-scale demolition started on peripheral buildings (A, C, and D areas) surrounding the Foundry (B area). Upon completion of the peripheral buildings, demolition proceeded at the western end of the Foundry. During demolition activities, water from an on-site fire hydrant, was used for dust suppression to prevent the airborne migration of fine dust particles. Dust control activities were predominantly required in the central tower area and eastern areas of the building.

Demolition debris, steel, and metal equipment was separated and transported to PES's metal recycling facility located on Parkdale Ave. North, Hamilton, Ontario. The main wooden support pillars located in the Foundry, and in other isolated buildings were removed during demolition and inspected for asbestos and dust content. If no asbestos was present the wood was donated to the Mennonite community in Arthur, Ontario. Waste brick was transported to Bel-Air Excavating's gravel pit, located in Ayr, and waste concrete transported to Taro. All remaining miscellaneous construction and waste debris was disposed of at the City's landfill facility.

5. PCB REMEDIATION PROGRAM

Remediation of PCB contaminated materials was completed from May 10, 1999 to July 22, 1999, as required by the MOE Order, and referenced in Section 2.1.3 (including Section 5 of the Provincial's Officer's Report – Building Demolition). Remediation was undertaken in two areas of the Site: the concrete pad in the Former PCB Storage Area, and within the Capacitor Room in the Foundry (Figure 1). Both of these locations contained PCB concentrations above the 50 ppm criteria for PCB contaminated materials, as specified in Ontario Regulation 362 of the Environmental Protection Act. A summary of PCB analytical results completed during investigation and clean-up activities are presented in Table 3 and illustrated on Figures 4A, 4B, 4C, and 4D.

5.1. Former PCB Storage Pad Area

Ash residues located on top of the concrete pad in the Former PCB Storage Area were identified as containing elevated PCB concentrations (Figure 1). This material was collected and placed in a poly-lined 205 litre drum with the concrete pad then being pressure washed.

A total of approximately 250 kilograms of PCB contaminated ash residues are securely stored on the Site awaiting final disposal. The concrete pad was removed and transported to Taro for disposal. Water used in association with washing activities was collected and stored in a 205 litre drum awaiting off-site disposal.

5.2. Capacitor Room

Previous investigations completed by P&R in 1998 indicated several areas of the concrete floor in the Capacitor Room contained PCB concentrations above 50 ppm. Due to the condition of the Foundry and Capacitor Room at the time of these investigations, only limited access could be obtained for investigative activities. As a result, the Capacitor Room was remediated using a staged approach remediating known and accessible PCB contaminated areas, and then conducting further investigations as access was allowed. To assist in segregation and disposal of PCB and non-PCB wastes in the Capacitor Room area, materials were categorized and handled as follows:

(i) materials containing greater than 35 ppm PCBs were treated as a PCB waste material and securely stored on the Site awaiting off-site disposal;

(ii) materials containing PCBs between 5 and 35 ppm were treated as a non-PCB waste and disposed at Taro; and

(iii) materials containing less than 5 ppm PCBs were left in place.

5.2.1. Block Walls and Concrete Floor

Prior to PCB remediation activities in the Capacitor Room, additional PCB bulk samples (RS-4 to RS-8, RS-10, and RS-12 to RS-21) were collected from the Capacitor Room concrete cinder block walls to confirm PCB concentrations. Analytical results indicated PCB concentrations above 50 ppm adjacent to western doorframe (RS-5) of the Capacitor Room. This area of the concrete wall was removed prior to demolition and stored as a PCB waste material. All remaining cinder block analysis contained PCB concentrations significantly below 50 ppm and were therefore transported to Taro for disposal.

At the completion of demolition activities in the foundry area, concrete chipping of the Capacitor Room floor was undertaken to remove surficial concrete containing PCBs above 50 ppm. A plastic enclosure was constructed around the Capacitor Room floor slab and a mini-excavator used to remove the upper 7 to 10 cm of the concrete floor in three separate areas (Figure 4A). Upon removal of the concrete debris, visual observations indicated a utility trench located in the eastern section of the room, adjacent to the eastern sump. Inspection of the trench indicated it had a granular base with heavily stained concrete walls, and no concrete floor. Several samples of concrete (CS-16 to CS-21) were collected from the top and sides of the trench (Figure 4A). Additionally, soil samples (SS-9 to SS-12) were collected from the granular material at several depthes below the utility trench. Analytical results indicated elevated PCB concentrations above 50 ppm from the concrete trench walls and the soils at the base of the trench. Concrete containing elevated PCB concentrations above 50 ppm was removed by the mini-excavator and stored in drums, while PCB contaminated soils were covered with plastic tarps and temporarily left in place. All materials containing PCB concentrations above 50 ppm were securely stored on the Site awaiting off-site disposal. Minor amounts of water was used to suppress dust during concrete chipping activities and was collected and stored in 205 litre drum awaiting off-site disposal.

Concrete coring was then undertaken to collect samples of the upper 1 to 2.5 cm of the remediated concrete floor and adjacent areas. Analytical results indicated all areas contained PCB concentrations well below 50 ppm (CS-9 to CS-14) allowing the remaining non-PCB contaminated concrete floor to be removed and disposed of at Taro.

5.2.2. Sub-Floor

Upon removal of the Capacitor Room concrete floor to Taro, visual observations indicated that a second concrete sub-floor was present in the central section of the Capacitor Room (Figure 4B).

Borehole drilling and concrete coring (BH99-1 and BH99-2) was completed again to confirm that the sub-floor had not been contaminated by PCBs (Figure 4B). Analytical results from these additional boreholes indicated PCB concentrations above 50 ppm in the upper sections of the sub-floor.

A second plastic enclosure was constructed around the sub-floor and a mini-excavator was again used to break and remove the concrete pad. The entire sub-floor was removed and securely stored on the Site awaiting off-site disposal. Minor amounts of water were used to suppress dust and was collected and stored in a 205 litre drum awaiting off-site disposal.

5.2.3. Underlying Fill Materials

In association with borehole drilling of the sub-floor, additional boreholes (BH99-3 to BH99-13) were also completed to confirm that the underlying fill materials had not been contaminated by PCBs (Figure 4B). Analytical results indicated elevated PCB concentrations in the fill materials located adjacent to the eastern sump area.

Upon removal of the sub-floor, a 2 metre by 3 metre grid (Figure 4C) was constructed over the entire Capacitor Room to allow for characterization of the underlying soil and fill materials. Eleven (11) grid squares (E1 to E11) were developed and sampled (SS-18 to SS-23, SS-27, SS-29, and SS-30) using a composite sampling system for each grid. Several additional samples (SS-24 to SS-26 and SS-28) were also collected from the trench area to determine PCB concentrations adjacent to and underlying the trench. Composite soil sampling of the grid squares consisted of 5 grab samples (approximately 0 to 15 cm depth) from each grid square being collected in a single 250 ml jar for PCB analysis. Analytical results from the borehole drilling were then used to supplement the surficial composites by determining a verticle profile of each grid square, to approximately 1.0 metre below ground surface (mbgs). Analytical results from each grid square, exclusive of E7 and E8, contained PCB concentrations above 5 ppm and was therefore excavated to bedrock (approximately 1.0 to 1.3 mbgs) and disposed at Taro.

Analytical results (SS-23, SS-24, and SS-26) from grid squares E7 and E8 (Figure 4C) contained PCB concentrations above 50 ppm and were therefore excavated as a PCB waste material. Surficial concrete samples were collected from the exterior and interior walls of the sump (CS-34 and CS-35, respectively) located in grid square E9 and analyzed for PCBs. Analytical results indicated that the exterior western wall of the sump contained PCB concentrations above 50 ppm, while interior concrete samples contained PCB concentrations below 50 ppm. Based on the analytical results the western concrete wall of the sump was entirely removed as a PCB waste material. Remaining concrete sections of the sump were removed and transported to Taro for disposal.

All PCB waste materials were securely stored on the Site awaiting off-site disposal. Minor amounts of water were used to suppress dust and was collected and temporarily stored in a 205 litre drum awaiting off-site disposal.

5.2.4. Final Excavation Limits

Upon completion of the remediation activities, a final sampling program was undertaken to confirm the removal of all PCB contaminated materials. Approximately 30 samples were collected of soil, concrete, and bedrock from the final extents of the excavation area (Figure 4D). Analytical results from these samples indicated PCB concentrations below 5 ppm, except in two bedrock samples (CS-66 and CS-67), containing PCB concentrations above 5 ppm, but below 10 ppm.

5.3. Decontamination Waters

Water collected in association with the PCB washing activities was filtered and a composite sample collected and analyzed for PCB concentrations. Analytical results indicated PCB concentrations below the laboratory method detection limit, and therefore acceptable to the City's Sewer Use Bylaw (1996 – 15202) of non-detectable PCB limits for discharge. Upon receipt of approval from the City, approximately 200 litres of water was treated and discharged to the sanitary sewers.

6. STORM WATER MANAGEMENT

A stormwater management program was implemented during the course of the work to isolate and collect surface and groundwaters that came in contact with various waste materials during the waste removal and demolition programs. Storm and sanitary sewers located along the southern sections of the Site were located and temporarily blocked inside the property boundary to prevent the potential migration of surficial and groundwaters into the City's sewer systems.

Additional water management was undertaken in early spring to control melting snows and additional precipitation to the Site. After demolition, most surficial waters naturally drained to central, low-lying areas of the Foundry and collected in the sumps and pits that had been previously been isolated from the City's sewer systems. These waters were later disposed in connection with the cleaning activities of the pits and sumps.

Upon removal of foundry sands and machinery from the Foundry, all concrete surfaces including the pits and sumps within the building were pressured washed to remove any surficial staining. Wash water used during these activities was collected in the pits and sumps in the Foundry. Periodically, this water was pumped from the pits and sumps to a filter press to remove fine particulates, and then stored in ASTs awaiting disposal. When sufficient water had been collected, a bulk sample from the ASTs was analyzed

for metals and suspended solids. This information was then forwarded to the City to obtain permission to discharge in accordance with the City's Sewer Use Bylaw (1996 – 15202). Upon receipt of approval from the City, approximately 100,000 litres of water was treated and discharged to the sanitary sewers.

A former groundwater domestic well, located in the Foundry, was decommissioned by removing the upper steel casing and filling the well with an impermeable bentonitic grout, in accordance with protocols and procedures detailed in Ontario Regulation 903.

7. SOIL EXCAVATION PROGRAM

Soil excavation activities were undertaken by PES from June 3, 1999 to June 23, 1999, in accordance with the MOE Order, Section 2.1.3 (including Section 5 of the Provincial's Officer's Report – Contaminated Soil). Previous subsurface investigations undertaken by P&R and Gartner Lee indicated elevated metal and hydrocarbon concentrations in the soils in the northeast corner of the Site (Figure 1). Additional test pitting investigations completed by Gartner Lee in February 1999 indicated the highest degree of contaminated soils were present in area of approximately 2000 square metres. The excavation program was initiated to remove these contaminated soils to limit the potential for adverse effects on groundwater quality.

Approximately 9,387 tonnes of contaminated soils, 36 tonnes of leachate toxic soils, and 925 tonnes of contaminated concrete were excavated from the northeast corner of the Site. Contaminated concrete materials were comprised of stained surficial concrete slabs and all sub-grade structural footings. All contaminated materials, excluding leachate toxic soils, were classified as a non-hazardous, non-registerable solid waste and transported to Taro. Leachate toxic soils were transported to PES's Transfer Facility. MOE manifesting was completed for the transportation and disposal of the leachate toxic soils.

A total of 22 composite soil samples were collected from 17 excavation wall locations (Figure 5) and were analyzed for several parameters consisting of total petroleum hydrocarbons (TPH), polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and lead (Pb) and zinc (Zn) parameters. A summary of samples collected from soil excavation activities is presented in Table 7 detailing sample locations, types, and analysis performed. Tables 8 through 12 include analytical results for hydrocarbon, metals, VOCs, and PAH analysis, respectively. The MOE's "Guideline for Use at Contaminated Sites in Ontario, February 1997, Commercial/ Industrial Criteria" (Guidelines) are included for comparison purposes. Table A generic clean-up guidelines, for sites with potable groundwater conditions, were used to evaluate the data.

Excavation of soils proceeded to bedrock, ranging between 1.3 to 2.0 mbgs. Analytical results indicated Zn and TPH concentrations above the Guidelines in the final limits of the excavation walls. All remaining chemical analysis contained concentrations below Table A Guidelines for the parameters analyzed. Complete soil analytical results are provided in Appendix B.

8. BACKFILLING AND SITE RESTORATION

Backfilling of the sumps and pits in association with the Demolition Program was undertaken on May 21, 1999 through July 16, 1999. Backfilling of the Soil Excavation Program was undertaken on June 4, 1999 through June 23, 1999. Approximately 10,969 tonnes of Granular "B" materials were used for backfilling pits/ sumps (2,500 tonnes) and the soil excavation (8,469 tonnes).

Upon completion of all washing activities and prior to the placement of the Granular "B" materials, all concrete pits and sumps were penetrated with a hydraulic hammer to assist in the natural verticle drainage of precipitation and surficial water. Granular fill was then used in backfilling these areas. The backfill material was placed and compacted in 0.3 metre lifts.

Granular fill used in backfilling the soil excavation area was also placed and compacted in 0.3 metre lifts. Periodically, the backfill was tested to ensure compaction to at least 98% Standard Proctor Density was achieved. Compaction testing results are provided in Appendix C.

During backfilling activities, a single sample (SS-1) was collected from the Granular "B" backfill and analyzed for metals, total petroleum hydrocarbons, and volatile organic compounds parameters. Results presented in tables 8, 10, and 11 and Appendix C, indicated that all parameters analyzed were below the Guidelines.

Upon completion of all demolition and soil excavation activities several of the temporarily isolated storm sewers were reconnected to allow continued surficial drainage of the Site.

9. RECOMMENDATIONS

Based on a thorough review of results from the waste disposal and remediation programs, we provide the following recommendations:

- Groundwater monitoring should be conducted down-gradient of the former Capacitor Room to assist in determining if PCBs have penetrated into the underlying bedrock and have impacted groundwater quality.

- Groundwater monitoring should be conducted to determine any effects on groundwater quality from residual metal and hydrocarbon contamination in the northeast corner of the property.

10. LIMITATIONS OF THE PROGRAMS

There is no warranty, expressed or implied by Earth Tech (Canada) Inc. (Earth Tech) (formerly P&R) that the demolition and waste removal program uncovered all potential contaminants and resulting financial liabilities on the Site.

We believe that the level of detail carried out in determining classification and characterization of waste materials is appropriate, having regard to the available site history, the character of the Site, and the physical setting. It should be noted that any assessment regarding the characteristics of materials and presence of impacts on the Site is based on interpretation of conditions determined at specific sampling locations. Such assessments are also dependent on the accuracy of the analytical data generated through sample analyses and the specified parameters analyzed. In Earth Tech's opinion, it is not possible, even with exhaustive sampling, and analyses, to document all potential contamination on the Site.

It is Earth Tech's professional opinion that the level of detail carried out during the demolition and clean-up program was appropriate to meet the objectives. However, there is no warranty, expressed or implied, that previous environmental investigations conducted on the property uncovered all potential environmental liabilities associated with the Site. In addition, Earth Tech cannot guarantee the completeness or accuracy of information supplied by a third party.

It should also be noted that any investigation and clean-up regarding the presence of contamination on the Site is based on interpretation of conditions determined at specific sampling locations, and conditions may vary between sampling locations. Additionally, given that the same limitations in sampling and analytical testing that applied to the investigation phase, also apply to the clean-up phase, there is no warranty, expressed or implied by Earth Tech, that all targeted contamination has been removed from the Site. However, Earth Tech believes that the intensity and methods of sampling and analyses employed for the clean-up program provide assurances that remedial actions completed have significantly reduced the potential environmental liabilities of the Site.

This report was prepared by Earth Tech for the purposes of the City of Guelph. The material in it reflects Earth Tech's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Earth Tech accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

TABLES

Table 1
Summary of Samples Collected for Analysis
IMICO Demolition Project - City of Guelph

Sample ID	Location	Type	Analysis
AS-1	Finishing & Annealing Area - Electric Ovens	Brick	Asbestos
BH99-1-1	Capacitor Room	Borehole	PCBs
BH99-1-2	Capacitor Room	Borehole	PCBs
BH99-1-3	Capacitor Room	Borehole	PCBs
BH99-2-1	Capacitor Room	Borehole	PCBs
BH99-2-2	Capacitor Room	Borehole	PCBs
BH99-2-4	Capacitor Room	Borehole	PCBs
BH99-3-1	Capacitor Room	Borehole	PCBs
BH99-4-1	Capacitor Room	Borehole	PCBs
BH99-4-2	Capacitor Room	Borehole	PCBs
BH99-5-1	Capacitor Room	Borehole	PCBs
BH99-5-2	Capacitor Room	Borehole	PCBs
BH99-6-2	Capacitor Room	Borehole	PCBs
BH99-7-1	Capacitor Room	Borehole	PCBs
BH99-8-1	Capacitor Room	Borehole	PCBs
BH99-8-2	Capacitor Room	Borehole	PCBs
BH99-9-1 & 9-2	Capacitor Room	Borehole	PCBs
BH99-10-1	Capacitor Room	Borehole	PCBs
BH99-10-2	Capacitor Room	Borehole	PCBs
BH99-11-1	Capacitor Room	Borehole	PCBs
BH99-12-1	Capacitor Room	Borehole	PCBs
BH99-12-2	Capacitor Room	Borehole	PCBs
BH99-13-1	Capacitor Room	Borehole	PCBs
BH99-13-2	Capacitor Room	Borehole	PCBs
C-17A	Warehouse Area	Paper	Asbestos
C-17B	Warehouse Area	Tar	Asbestos
CS-9	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-10	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-11	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-12	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-13	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-14	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-16	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-17	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-18	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-19	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-20	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-21	Capacitor Room - Concrete Core Sample	Concrete	PCBs
CS-24	Utility Trench - Capacitor Room	Concrete	PCBs
CS-25	Utility Trench - Capacitor Room	Concrete	PCBs
CS-26	Furnace Sump - South of Capacitor Room	Concrete	PCBs

Table 1 (continued)
Summary of Samples Collected for Analysis
IMICO Demolition Project - City of Guelph

Sample ID	Location	Type	Analysis
CS-27	Furnace Sump - South of Capacitor Room	Concrete	PCBs
CS-28	Furnace Sump - South of Capacitor Room	Concrete	PCBs
CS-29	Furnace Sump - South of Capacitor Room	Concrete	PCBs
CS-30	Capacitor Room - Concrete Core Sample	Concrete	O.Reg. 347
CS-34	Eastern Sump - Capacitor Room	Concrete	PCBs
CS-35	Eastern Sump - Capacitor Room	Concrete	PCBs
CS-36	Eastern Sump - Capacitor Room	Concrete	PCBs
CS-37	Western Sump - Capacitor Room	Concrete	PCBs
CS-38	Western Sump - Capacitor Room	Concrete	PCBs
CS-39	Western Sump - Capacitor Room	Concrete	PCBs
CS-40	Bedrock Sample - E5 Grid Square	Bedrock	PCBs
CS-41	Concrete Sample - South Wall - E3	Concrete	PCBs
CS-42	Bedrock Sample - E6 Grid Square	Bedrock	PCBs
CS-43	Bedrock Sample - E7 Grid Square	Bedrock	PCBs
CS-44	Concrete Sample - East Wall - E10	Concrete	PCBs
CS-45	Concrete Sample - South Wall - E10	Concrete	PCBs
CS-46	Concrete Sample - North Wall - E10	Concrete	PCBs
CS-47	Bedrock Sample - E9 Grid Square	Bedrock	PCBs
CS-48	Composite of Concrete/Soil Shipped to Tarrow	Soil	PCBs
CS-49	Concrete Sample - West Wall - E7	Concrete	PCBs
CS-50	Concrete Sample - South Wall - E7	Concrete	PCBs
CS-51	Concrete Sample - North Wall - E8	Concrete	PCBs
CS-52	Bedrock Sample - E9 Grid Square	Bedrock	PCBs
CS-53	Bedrock Sample - E9 Grid Square	Bedrock	PCBs
CS-54	Concrete Sample - South Wall - E2	Concrete	PCBs
CS-55	Composite - Marcas Bin - 1130	Soil	PCBs
CS-56	Concrete Sample - North Wall - E8	Concrete	PCBs
CS-57	Concrete Sample - North Wall - E8	Concrete	PCBs
CS-58	Soil Sample - North Wall - E8	Soil	PCBs
CS-59	Concrete Sample - South Wall - E8	Concrete	PCBs
CS-60	Soil Sample - South Wall - E8	Soil	PCBs
CS-61	Bedrock Sample - E8 Grid Square	Bedrock	PCBs
CS-62	Bedrock Sample - E8 Grid Square	Bedrock	PCBs
CS-63	Bedrock Sample - E9 Grid Square	Bedrock	PCBs
CS-64	Bedrock Sample - E8 Grid Square	Bedrock	PCBs
CS-65	Bedrock Sample - E9 Grid Square	Bedrock	PCBs
CS-66	Bedrock Sample - E9 Grid Square	Bedrock	PCBs
CS-67	Bedrock Sample - E9 Grid Square	Bedrock	PCBs
NS-1	Surficial Soil Sample - Neighbor's Property	Soil	Metals
NS-2	Surficial Soil Sample - Neighbor's Property	Soil	Metals
RS-1	Former Chimney - Finishing & Annealing Area	Dust	O.Reg. 347
RS-2	Brown Sand - Silos	Soil	O.Reg. 347
RS-3	Black Sand - Silos	Soil	O.Reg. 347

Table 1 (continued)
Summary of Samples Collected for Analysis
Imico Demolition Project - City of Guelph

Sample ID	Location	Type	Analysis
RS-4	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-5	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-6	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-7	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-8	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-10	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-11	Transformer Oil - Former Sub Station	Oil	PCBs
RS-12	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-13	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-14	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-15	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-16	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-17	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-18	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-19	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-20	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-21	Concrete Block Wall - Capacitor Room	Concrete	PCBs
RS-22	Slag Fill - Shipping Area Ramp	Soil	O.Reg. 347
RS-23	Surficial Soil - Former PCB Storage Area	Soil	PCBs
RS-24	Surficial Soil - Former PCB Storage Area	Soil	PCBs
RS-25	Concrete Pad - Machine Shop & Warehouse	Concrete	O.Reg. 347
SB-1	Capacitor Room	Swab	PCBs
SB-3	Capacitor Room	Swab	PCBs
SB-6	Capacitor Room	Swab	PCBs
SB-7	Capacitor Room	Swab	PCBs
SB-8	Capacitor Room	Swab	PCBs
SB-9	Capacitor Room	Swab	PCBs
SS-1	Granular B Backfill	Soil	TPH, VOC, Metals
SS-2	Granular B Backfill	Soil	TPH, VOC, Metals
SS-3	Brick/Concrete/Soil Stockpile 1	Soil	TPH, Metals
SS-4	Brick/Concrete/Soil Stockpile 2	Soil	TPH, Metals
SS-5	Brick/Concrete/Soil Stockpile 3	Soil	TPH, Metals
SS-6	Brick/Concrete/Soil Stockpile 4	Soil	TPH
SS-7	Brick/Concrete/Soil Stockpile 5	Soil	TPH
SS-8	Utility Trench Sediment - Capcitor Room	Soil	PCBs
SS-9	Utility Trench Base - Capcitor Room	Soil	PCBs
SS-10	Utility Trench Base - Capcitor Room	Soil	PCBs
SS-11	Utility Trench Base - Capcitor Room	Soil	PCBs
SS-12	Utility Trench Base - Capcitor Room	Soil	PCBs
SS-13	Utility Trench Base - Capcitor Room	Soil	PCBs
SS-14	Concrete Stockpile - Capacitor Room	Concrete	PCBs
SS-15A	Concrete Stockpile - Capacitor Room	Concrete	PCBs
SS-15	Concrete Stockpile - Capacitor Room	Concrete	PCBs

Table 1 (continued)
Summary of Samples Collected for Analysis
Imico Demolition Project - City of Guelph

Sample ID	Location	Type	Analysis
SS-16	Concrete Stockpile - Capictor Room	Concrete	PCBs
SS-17	Concrete Stockpile - Capictor Room	Concrete	PCBs
SS-18	Grid Sample - Capacitor Room	Soil	PCBs
SS-19	Grid Sample - Capacitor Room	Soil	PCBs
SS-20	Grid Sample - Capacitor Room	Soil	PCBs
SS-21	Grid Sample - Capacitor Room	Soil	PCBs
SS-22	Grid Sample - Capacitor Room	Soil	PCBs
SS-23	Grid Sample - Capacitor Room	Soil	PCBs
SS-24	Soil Below Utility Trench - Capacitor Room	Soil	PCBs
SS-25	Soil Below Utility Trench - Capacitor Room	Soil	PCBs
SS-26	Soil Below Utility Trench - Capacitor Room	Soil	PCBs
SS-27	Grid Sample - Capacitor Room	Soil	PCBs
SS-28	Soil Adjacent to Utility Trench - Capacitor Room	Soil	PCBs
SS-29	Grid Sample - Capacitor Room	Soil	PCBs
SS-30	Grid Sample - Capacitor Room	Soil	PCBs
SS-31	Composite of BHs for Disposal	Soil	O.Reg. 347
SS-32	Base of Eastern Sumps	Soil	PCBs
SS-33	Soil Composite - Capacitor Room	Soil	PCBs
SS-34	Soil Composite - Capacitor Room	Soil	PCBs
SS-36	Soil Composite - Capacitor Room	Soil	PCBs
SS-37	Soil Composite - Capacitor Room	Soil	PCBs
SS-38	Soil Composite - Capacitor Room	Soil	PCBs
SS-39	Soil Composite - Capacitor Room	Soil	PCBs
SS-40	Soil Composite - Capacitor Room	Soil	PCBs
SS-41	Soil Composite - Capacitor Room	Soil	PCBs
SS-42	Soil Composite - Capacitor Room	Soil	PCBs
SS-43	Soil Composite - Capacitor Room	Soil	PCBs
SS-44	Soil Composite - Capacitor Room	Soil	PCBs
SS-45	Soil Composite - Capacitor Room	Soil	PCBs
SS-46	Soil Composite - Capacitor Room	Soil	PCBs
SS-47	Sediment from M.H. - Capacitor Room	Soil	PCBs
SS-48	Composite Marcas Bin - 1154	Soil	PCBs
SS-49	Composite Marcas Bin - 1156	Soil	PCBs
SS-50	Bedrock with Oil - Grid E8	Soil	PCBs

Table 2
Summary of Analytical Results for Asbestos Analysis
IMICO Demolition Project - City of Guelph

Sample Identification	Asbestos	
	Type	Amount
AS-1	Chrysotile	0.03
C-17A	None	-
C-17B	Chrysotile	0.5 - 5%

Table 3
Summary of Analytical Results for PCB Analysis
IMICO Demolition Project - City of Guelph

Parameter	Units	MOE Criteria	BH 99-1-1	BH 99-1-2	BH 99-1-3	BH 99-2-1	BH 99-2-2	BH 99-2-4	BH 99-3-1	BH 99-4-1	BH 99-4-2	BH 99-5-1	BH 99-5-2
PCB Swab	ug/m^2	1000											
PCB Bulk	ppm	5	1620.00	0.14	<0.05	2980.00	0.17	0.33	17.00	22.20	7.12	1.18	4.90

Parameter	Units	MOE Criteria	BH 99-6-2	BH 99-7-1	BH 99-8-1	BH 99-8-2	BH99-9-1/BH99-9-2 Composite	BH 99-10-1	BH 99-10-2	BH 99-11-1	BH 99-12-1	BH 99-12-2
PCB Swab	ug/m^2	1000										
PCB Bulk	ppm	5	24.70	<0.05	69.80	0.68	<0.50	<0.50	<0.50	<0.50	0.94	<0.50

Parameter	Units	MOE Criteria	BH 99-13-1	BH 99-13-2
PCB Swab	ug/m^2	1000		
PCB Bulk	ppm	5	1.00	<0.50

Parameter	Units	MOE Criteria	CS-9	CS-10	CS-11	CS-12	CS-13	CS-14	CS-16	CS-17	CS-18	CS-19	CS-20
PCB Swab	ug/m^2	1000											
PCB Bulk	ppm	5	19.30	2.48	2.03	3.58	2.37	3.73	20.00	22.00	7.50	26.00	110.00

Parameter	Units	MOE Criteria	CS-21	CS-24	CS-25	CS-26	CS-27	CS-28	CS-29	CS-34	CS-35	CS-36	CS-37
PCB Swab	ug/m^2	1000											
PCB Bulk	ppm	5	28.00	<0.05	<0.05	1.03	0.12	0.75	1.21	79.90	20.20	30.40	0.45

Parameter	Units	MOE Criteria	CS-38	CS-39	CS-40	CS-41	CS-42	CS-43	CS-44	CS-45	CS-46	CS-47	CS-48
PCB Swab	ug/m^2	1000											
PCB Bulk	ppm	5	0.14	<0.05	0.16	0.65	0.10	46.50	0.23	0.09	0.19	440.00	18.30

Parameter	Units	MOE Criteria	CS-49	CS-50	CS-51	CS-52	CS-53	CS-54	CS-55	CS-56	CS-57	CS-58	CS-59
PCB Swab	ug/m^2	1000											
PCB Bulk	ppm	5	0.16	188.00	48.90	0.95	0.32	<0.05	418.00	<0.05	<0.05	<0.05	0.23

Table 3 (continued)
Summary of Analytical Results for PCB Analysis
IMICO Demolition Project - City of Guelph

Parameter	Units	MOE Criteria	CS-60	CS-61	CS-62	CS-63	CS-64	CS-65	CS-66	CS-67
PCB Swab	ug/m^2	1000								
PCB Bulk	ppm	5	<0.05	3.33	2.74	0.15	0.45	3.08	8.47	9.58

Parameter	Units	MOE Criteria	RS-4	RS-5	RS-6	RS-7	RS-8	RS-10	RS-11	RS-12	RS-13	RS-14	RS-15
PCB Swab	ug/m^2	1000											
PCB Bulk	ppm	5	2.23	65.80	0.63	31.60	11.40	12.30	<1.00	<0.05	<0.05	<0.05	<0.05

Parameter	Units	MOE Criteria	RS-16	RS-17	RS-18	RS-19	RS-20	RS-21	RS-23	RS-24
PCB Swab	ug/m^2	1000								
PCB Bulk	ppm	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.63	<0.05

Parameter	Units	MOE Criteria	SB-1	SB-3	SB-6	SB-7	SB-8	SB-9
PCB Swab	ug/m^2	1000	<0.50	4.80	<0.50	<0.50	<0.05	0.13
PCB Bulk	ppm	5						

Parameter	Units	MOE Criteria	SS-8	SS-9	SS-10	SS-11	SS-12	SS-13	SS-14	SS-15A	SS-15	SS-16	SS-17
PCB Swab	ug/m^2	1000											
PCB Bulk	ppm	5	353.00	1.13	1.14	22.00	560.00	<2.50	0.53	<2.50	<0.50	700.00	170.00

Parameter	Units	MOE Criteria	SS-18	SS-19	SS-20	SS-21	SS-22	SS-23	SS-24	SS-25	SS-26	SS-27	SS-28
PCB Swab	ug/m^2	1000											
PCB Bulk	ppm	5	6.50	13.00	16.00	10.00	15.00	60.00	2700.00	16.00	550.00	0.96	<0.50

Table 3 (continued)
Summary of Analytical Results for PCB Analysis
IMICO Demolition Project - City of Guelph

Parameter	Units	MOE Criteria	SS-29	SS-30	SS-32	SS-33	SS-34	SS-36	SS-37	SS-38	SS-39	SS-40	SS-41
PCB Swab	ug/m^2	1000											
PCB Bulk	ppm	5	0.91	7.30	973.00	64.70	10.70	23.30	1.24	<5.00	<5.00	0.10	0.54

Parameter	Units	MOE Criteria	SS-42	SS-43	SS-44	SS-45	SS-46	SS-47	SS-48	SS-49	SS-50
PCB Swab	ug/m^2	1000									
PCB Bulk	ppm	5	<0.05	0.33	<0.05	<0.05	<0.05	5.78	143.00	148.00	19.90

MOE Guidelines: "Guidelines for Use at Contaminated Sites in Ontario", revised February 1997, Ministry of Environment, Table A Criteria - Potable Groundwater Conditions, Residential Land Use Criteria

- Exceeds MOE Guidelines
< - Result less than Method Detection Limit

RS - Concrete & Soil Samples
SB - Swab Samples

SS - Soil Samples
CS - Concrete & Rock Samples
BH - Borehole Samples

Table 4
Summary of Analytical Results for Metal Analysis
IMICO Demolition Project - City of Guelph

Parameter	MOE Criteria	NS-1	NS-2	SS-1	SS-2	SS-3	SS-4	SS-5
Antimony	13	0.5	0.9	NA	NA	NA	NA	NA
Arsenic	20	11.9	10.3	NA	NA	NA	NA	NA
Barium	750	94	185	319	120	75	76	73
Beryllium	1.2	0.2	0.4	0.9	0.7	0.5	0.4	0.4
Cadmium	12	6.9	5.5	<0.3	<0.3	<0.3	0.5	0.5
Chromium	750	22	37	23	*	17	42	17
Chromium (+6)	8	<1	<1	NA	NA	NA	NA	NA
Cobalt	40	4	4	6	5	4	4	2
Copper	225	76	85	15	19	14	44	20
Lead	200	95	162	59	29	13	83	33
Mercury	10	0.37	0.36	NA	NA	NA	NA	NA
Molybdenum	40	<3	<3	<3	<3	<3	3	<3
Nickel	150	11	13	16	11	8	19	8
Selenium	10	5.8	2.4	NA	NA	NA	NA	NA
Silver	20	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Vanadium	200	16	16	33	23	14	20	13
Zinc	600	1360	2240	184	192	118	448	190

All results expressed in ppm

MOE Guidelines: "Guidelines for Use at Contaminated Sites in Ontario", revised February 1997, Ministry of Environment, Table A Criteria - Potable Groundwater Conditions, Residential Land Use Criteria

- Exceeds MOE Guidelines
< - Result less than Method Detection Limit
NA - Not Analyzed

Table 5
Summary of Analytical Results for TPH Analysis
IMICO Demolition Project - City of Guelph

Parameter	MOE Criteria	SS-3	SS-4	SS-5	SS-6	SS-7
TPH (Gas & Diesel)	100	460	52	39	63	270
TPH (Heavy Oils)	1000	970	330	320	280	730
Benzene	0.24	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	2.1	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.28	<0.02	<0.02	<0.02	<0.02	<0.02
Total Xylenes	25	<0.04	<0.04	<0.04	<0.04	<0.04

All results expressed in ppm

MOE Guidelines: "Guidelines for Use at Contaminated Sites in Ontario", revised February 1997, Ministry of Environment, Table A Criteria - Potable Groundwater Conditions, Residential Land Use Criteria

- Exceeds MOE Guidelines
< - Result less than Method Detection Limit
NA - Not Analyzed

Table 6
Summary of Analytical Results for Ontario Regulation 347 Analysis
IMICO Demolition Project - City of Guelph

Compound	Leachate Criteria (mg/L)	CS-30	RS-1	RS-2	RS-3	RS-22	RS-25	SS-31
Fluorine	2.4	0.9	1.4	<0.1	0.1	<0.1	0.5	0.2
Nitrate	10.0	<0.2	5.6	<0.2	<0.2	<0.2	0.8	<0.2
Nitrite	1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Free Cyanide	0.2	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
PCBs	0.003	<0.0006	NA	<0.0005	<0.0005	<0.0005	NA	0.003
Mercury	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.05	<0.005	0.004	<0.005	<0.005	<0.005	<0.005	<0.005
Selenium	0.01	<0.005	0.139	<0.005	<0.005	<0.005	<0.005	<0.005
Silver	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	5.0	0.14	0.39	0.03	0.07	0.01	0.17	0.05
Barium	1.0	0.457	0.143	0.117	0.185	0.031	0.233	0.086
Cadmium	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.007
Chromium	0.05	0.02	0.01	<0.01	<0.01	<0.00	<0.01	<0.01
Lead	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	0.02	0.007	<0.001	<0.001	<0.001	<0.001	0.004	<0.001

"Ontario Regulation 347", consolidated September 1998, Ministry of Environment, Schedule 4 - Leachate Quality Criteria

- Exceeds Ontario Regulation 347 Guidelines
< - Result less than Method Detection Limit
NA - Not Analyzed

Table 7
Summary of Samples Collected for Analysis
IMICO Soil Excavation Project - City of Guelph

Sample ID	Location	Type	Analysis
CS-22	C-16 Concrete Surficial Pad	Concrete	Metals & TPHs
CS-23	C-15 Concrete Surficial Pad	Concrete	Metals & TPHs
CS-31	C-15 Concrete Surficial Pad	Concrete	TPHs
CS-32	C-15 Concrete Surficial Pad	Concrete	TPHs
CS-33	C-15 Concrete Surficial Pad	Concrete	TPHs
ES-1	Northern Excavation Wall	Soil	O.Reg. 347
ES-2	Northern Excavation Wall	Soil	Metals, TPHs & O.Reg. 347
ES-3	Northern Excavation Wall	Soil	Metals, TPHs & O.Reg. 347
ES-4	Northern Excavation Wall	Soil	Metals, TPHs & O.Reg. 347
ES-5	Eastern Excavation Wall	Soil	Metals, TPHs & O.Reg. 347
ES-6	Eastern Excavation Wall	Soil	VOCs, Metals & TPHs
ES-7	Southern Excavation Wall	Soil	Metals & TPHs
ES-8	Southern Excavation Wall	Soil	TPHs
ES-9	Southern Excavation Wall	Soil	TPHs
ES-10	Northern Excavation Wall	Soil	TPHs
ES-11	Northern Excavation Wall	Soil	PAHs, Metals & TPHs
ES-11A	Northern Excavation Wall	Soil	PAHs & TPHs
ES-12	Western Excavation Wall	Soil	PAHs, Metals & TPHs
ES-13	Resample ES-9	Soil	Metals & TPHs
ES-13A	Resample ES-9	Soil	TPHs
ES-14	Southern Excavation Wall	Soil	Metals & TPHs
ES-14A	Southern Excavation Wall	Soil	PAHs & TPHs
ES-15	Western Excavation Wall	Soil	PAHs, Metals & TPHs
ES-16	Western Excavation Wall	Soil	Metals & TPHs
ES-16A	Western Excavation Wall	Soil	PAHs & TPHs
ES-17	Resample ES-8	Soil	Metals & TPHs
ES-17A	Resample ES-8	Soil	PAHs & TPHs
SS-1	Granular B Backfill	Soil	VOCs, Metals & TPHs
SS-2	Granular B Backfill	Soil	O.Reg. 347

Table 8
Summary of Analytical Results for Hydrocarbon Analysis
IMICO Soil Excavation Project - City of Guelph

Parameter	MOE Criteria	CS-22	CS-23	CS-31	CS-32	CS-33	ES-2	ES-3
TPH (Gas & Diesel)	100	1500	510	360	200	170	410	78
TPH (Heavy Oils)	1000	8800	1700	1700	630	850	520	270
Benzene	0.24	NA	NA	NA	NA	NA	NA	NA
Toluene	2.1	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	0.28	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	25	NA	NA	NA	NA	NA	NA	NA
Parameter	**MOE Criteria**	**ES-4**	**ES-5**	**ES-6**	**ES-7**	**ES-10**	**ES-11**	**ES-11A**
TPH (Gas & Diesel)	100	460	69	27	350	<10	1800	4000
TPH (Heavy Oils)	1000	550	520	250	780	200	1900	8600
Benzene	0.24	NA	NA	NA	NA	NA	NA	NA
Toluene	2.1	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	0.28	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	25	NA	NA	NA	NA	NA	NA	NA
Parameter	**MOE Criteria**	**ES-12**	**ES-13**	**ES-13A**	**ES-14**	**ES-14A**	**ES-15**	**ES-16**
TPH (Gas & Diesel)	100	2900	<10	640	37	3200	<10	<10
TPH (Heavy Oils)	1000	1600	<100	2800	440	7500	130	<100
Benzene	0.24	NA	NA	NA	<0.02	<0.02	<0.02	<0.02
Toluene	2.1	NA	NA	NA	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.28	NA	NA	NA	<0.02	<0.02	<0.02	<0.02
Total Xylenes	25	NA	NA	NA	<0.04	<0.04	<0.04	<0.04
Parameter	**MOE Criteria**	**ES-16A**	**ES-17**	**ES-17A**	**SS-1**			
TPH (Gas & Diesel)	100	1300	100	420	<10			
TPH (Heavy Oils)	1000	670	580	1600	NA			
Benzene	0.24	<0.02	NA	NA	NA			
Toluene	2.1	<0.02	NA	NA	NA			
Ethylbenzene	0.28	<0.02	NA	NA	NA			
Total Xylenes	25	<0.04	NA	NA	NA			

All results are expressed in ppm.
< - Result less than Method Detection Limit
NA - Not Analyzed
NC - No Criteria
ES - Soil Sample
CS - Concrete Sample
MOE Criteria - MOEs "Guideline For Use At Contaminated Sites In Ontario", dated February 1997, Table A.
- Exceeds MOE Criteria

Table 9
Summary of Analytical Results for Ontario Regulation 347 Analysis
IMICO Soil Excavation Project - City of Guelph

Compound	Leachate Criteria (mg/L)	SS-2	ES-1	ES-2	ES-3	ES-4	ES-5
Fluorine	2.4	NA	0.5	0.2	1.9	4.0	0.1
Nitrate	10.0	NA	<0.2	0.2	0.2	<0.2	0.4
Nitrite	1.0	NA	<0.2	<0.2	<0.2	<0.2	<0.2
Free Cyanide	0.2	NA	<0.001	<0.001	<0.001	<0.001	<0.001
PCBs	0.003	0.001	NA	NA	NA	NA	NA
Mercury	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Selenium	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	5.0	0.03	0.07	0.09	0.09	0.09	0.03
Barium	1.0	0.057	0.219	0.278	0.329	0.238	0.140
Cadmium	0.005	<0.001	0.003	0.003	0.007	0.001	0.001
Chromium	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	0.05	<0.005	<0.005	<0.005	0.007	0.010	<0.005
Uranium	0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

"Ontario Regulation 347", consolidated September 1998, Ministry of Environment, Schedule 4 - Leachate Quality Criteria

- Exceeds Ontario Regulation 347 Guidelines

< - Result less than Method Detection Limit

NA - Not Analyzed

Table 10
Summary of Analytical Results for Metal Analysis
IMICO Soil Excavation Project - City of Guelph

Parameter	MOE Criteria	ES-2	ES-3	ES-4	ES-5	ES-6	ES-7	ES-10
Lead	1000	400	440	214	152	96	158	412
Zinc	600	4900	2590	3290	2460	3860	2600	6350
Parameter	**MOE Criteria**	**ES-11**	**ES-12**	**ES-13**	**ES-14**	**ES-15**	**ES-16**	**ES-17**
Lead	1000	206	648	20	145	80	144	49
Zinc	600	2260	1460	40	1320	992	2180	334

Parameter	MOE Criteria	CS-22	CS-23	SS-1
Aluminium	NC	3940	4530	NA
Antimony	40	NA	NA	<0.2
Arsenic	40	NA	NA	1.7
Barium	1500	22	47	22
Beryllium	1.2	<0.2	<0.2	<0.2
Cadmium	12	<0.3	<0.3	<0.3
Chromium	750	25	20	7
Chromium (+6)	8	NA	NA	<1
Cobalt	80	<2	<2	3
Copper	225	10	9	14
Lead	1000	21	15	10
Manganese	NC	410	336	NA
Mercury	10	NA	NA	0.01
Molybdenum	40	<3	<3	<3
Nickel	150	3	3	5
Phosphorus	NC	243	161	NA
Selenium	10	NA	NA	<0.2
Silver	40	<0.8	<0.8	<0.8
Sodium	NC	553	333	NA
Strontium	NC	190	136	NA
Titanium	NC	155	189	NA
Vanadium	200	9	9	19
Zinc	600	145	120	74

All results are expressed in ppm.
< - Result less than Method Detection Limit
NA - Not Analyzed
NC - No Criteria
ES - Soil Sample
CS - Concrete Sample
MOE Criteria - MOEs "Guideline For Use At Contaminated Sites In Ontario", dated February 1997, Table A.
- Exceeds MOE Criteria

Table 11
Summary of Analytical Results for VOC Analysis
IMICO Soil Excavation Project - City of Guelph

Parameter	MOE Criteria	ES-6	SS-1
Chloromethane	NC	ND	ND
Vinyl Chloride	0.003	ND	ND
Bromomethane	0.061	ND	ND
Chloroethane	NC	ND	ND
Trichlorofluoromethane	NC	ND	ND
Acetone	3.5	ND	ND
1,1-Dichloroethene	0.0024	ND	ND
Dichloromethane (Methylene Chloride)	1.1	ND	ND
trans-1,2-Dichloroethene	4.1	ND	ND
Methyl-t-Butyl Ether	5.7	ND	ND
1,1-Dichloroethane	3	ND	ND
Methyl Ethyl Ketone (MEK)	0.27	ND	ND
cis-1,2-Dichloroethene	2.3	ND	ND
Chloroform	0.13	ND	ND
1,2-Dichloroethane	0.022	ND	ND
1,1,1-Trichloroethane	26	ND	ND
Carbon Tetrachloride	0.10	ND	ND
Benzene	0.24	ND	ND
1,2-Dichloropropane	0.019	ND	ND
Trichloroethene	1.1	ND	ND
Bromodichloromethane	0.12	ND	ND
cis-1,3-Dichloropropene	0.0066	ND	ND
Methyl Isobutyl Ketone (MIBK)	0.48	ND	ND
trans-1,3-Dichloropropene	NC	ND	ND
1,1,2-Trichloroethane	0.28	ND	ND
Toluene	2.1	ND	ND
2-Hexanone	NC	ND	ND
Dibromochloromethane	0.09	ND	ND
1,2-Dibromoethane (Ethylene dibromide)	0.0056	ND	ND
Tetrachloroethene (Perchloroethylene)	0.45	ND	ND
1,1,1,2-Tetrachloroethane	0.019	ND	ND
Chlorobenzene	2.4	ND	ND
Ethylbenzene	0.28	ND	ND
m-Xylene & p-Xylene	25	ND	ND
Bromoform	0.11	ND	ND
Styrene	1.2	ND	ND
1,1,2,2-Tetrachloroethane	0.01	ND	ND
o-Xylene	NC	ND	ND
1,3-Dichlorobenzene	30	ND	ND
1,4-Dichlorobenzene	0.32	ND	ND
1,2-Dichlorobenzene	0.88	ND	ND

All Results are expressed in pm

< - Result less than Method Detection Limit

ND - Not Detected

NC - No Criteria

MOE Criteria - MOEs "Guideline For Use At Contaminated Sites In Ontario", dated February 1997, Table A.

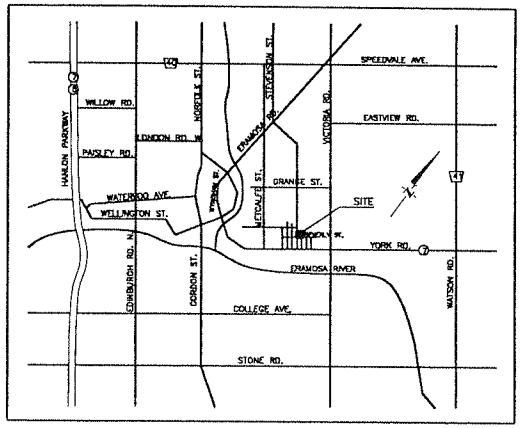
- Exceeds MOE Criteria

Table 12
Summary of Analytical Results for PAH Analysis
IMICO Soil Excavation Project - City of Guelph

Parameter	MOE Criteria	ES-11	ES-11A	ES-12	ES-14A	ES-15	ES-16A	ES-17A
Naphthalene	4.6	ND	ND	0.19	ND	ND	ND	ND
2-Methylnaphthalene	1.2	ND	ND	0.13	ND	ND	ND	ND
1-Methylnaphthalene	1.2	ND	ND	0.62	ND	ND	ND	ND
Acenaphthylene	130	ND	ND	0.07	ND	ND	ND	ND
Acenaphthene	15	ND	ND	0.16	0.17	ND	0.10	ND
Fluorene	340	ND	ND	0.26	0.13	ND	0.16	ND
Phenanthrene	40	ND	ND	0.66	0.15	ND	ND	ND
Anthracene	28	ND	ND	0.11	0.06	ND	ND	ND
Fluoranthene	40	ND	ND	0.05	0.07	ND	0.07	ND
Pyrene	250	0.06	0.22	0.14	0.34	ND	0.27	ND
Benzo(a)anthracene	6.6	ND	0.12	ND	ND	ND	ND	ND
Chrysene	17	0.33	0.39	ND	0.65	ND	0.11	ND
Benzo(b)fluoranthene	18	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	18	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	1.9	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	19	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	1.9	ND	ND	ND	ND	ND	ND	ND
Benzo(ghi)perylene	40	ND	ND	ND	ND	ND	ND	ND

All Results are expressed in pm
< - Result less than Method Detection Limit
ND - Not Detected
NC - No Criteria
MOE Criteria - MOEs "Guideline For Use At Contaminated Sites In Ontario", dated February 1997, Table A.
- Exceeds MOE Criteria

FIGURES



EMPLOYEE PARKING LOT

GUELPH JUNCTION RAILWAY

GUARD HOUSE

ENTRANCE

STEVENSON STREET

GARAGE

STORAGE SHED

STORAGE SHED

SHIPPING

FORMER PCB STORAGE AREA

CORE ROOM

SUB STATION

TRIMMING AND GRINDING

FINISHING AND ANNEALING OVEN

GRINDING AND ANNEALING

MACHINE SHOP AND WAREHOUSE

CAPACITOR ROOM

FOUNDRY

OFFICES

WAREHOUSE

BEVERLEY STREET

LEGEND

SOIL EXCAVATION AREA

PCB REMEDIATION AREA

cad file 982569.dwg

INTERNATIONAL MALLEABLE IRON CO.LTD.

FIGURE 1

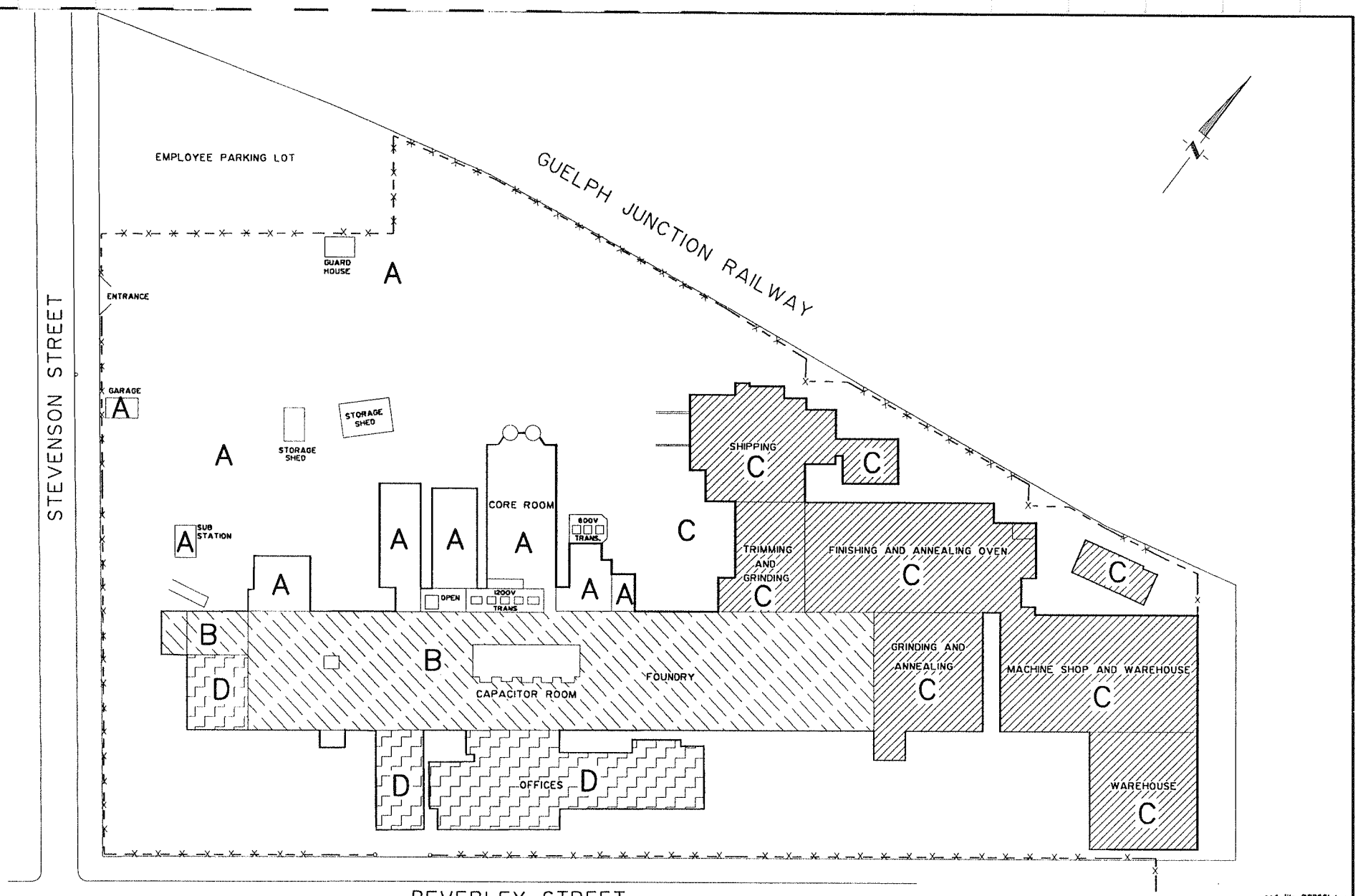
SITE PLAN - GENERAL LOCATION

DATE: July 1998

SCALE: 0 10 20m (1:500)

EARTH TECH

Earth Tech (Canada) Inc. Hamilton, Ontario



cad file 982561.dwg

INTERNATIONAL MALLEABLE IRON CO.LTD.

FIGURE 2

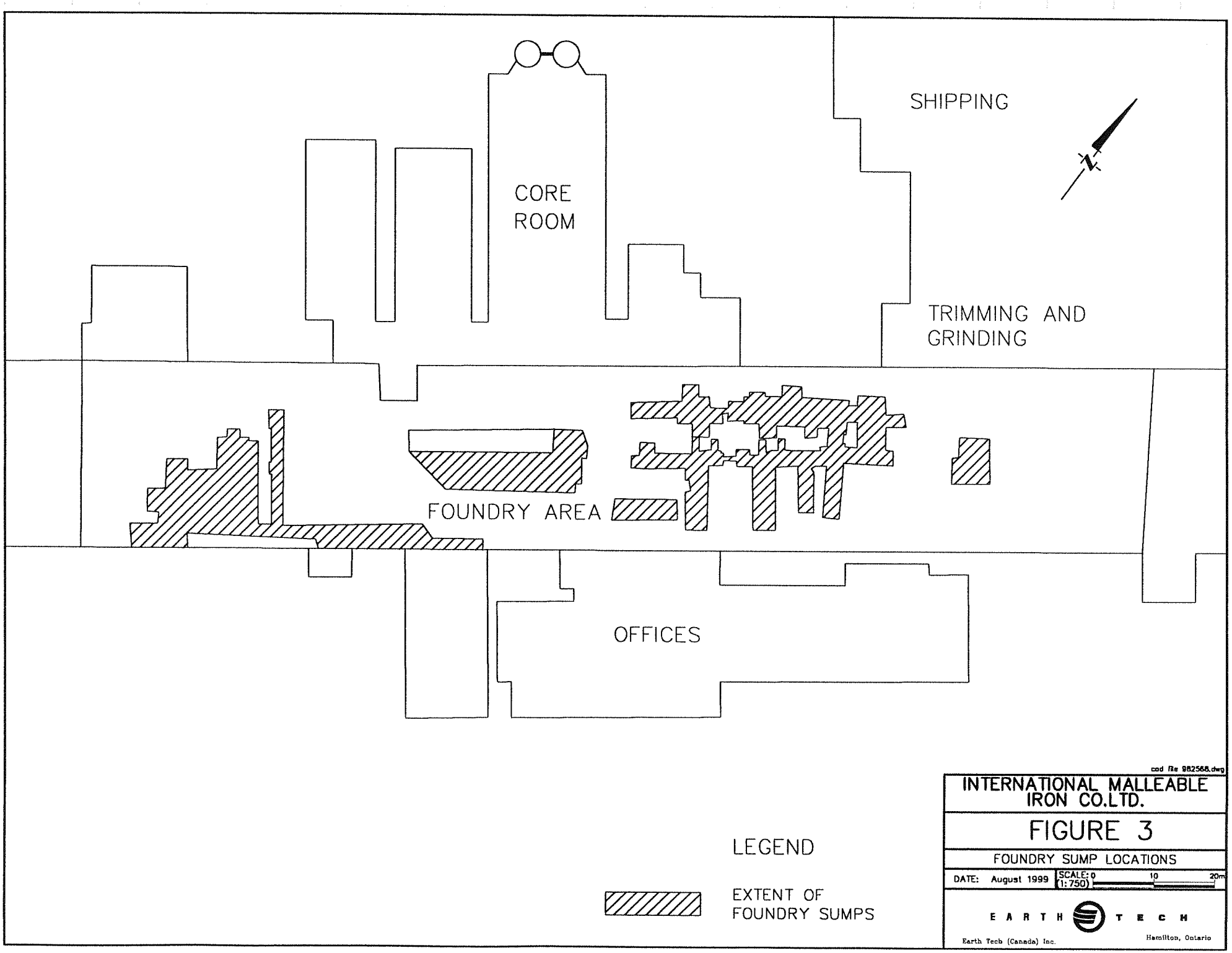
SITE PLAN - AREA DESIGNATION

DATE: July 1998

SCALE: 0 10 20m (1:500)

EARTH TECH

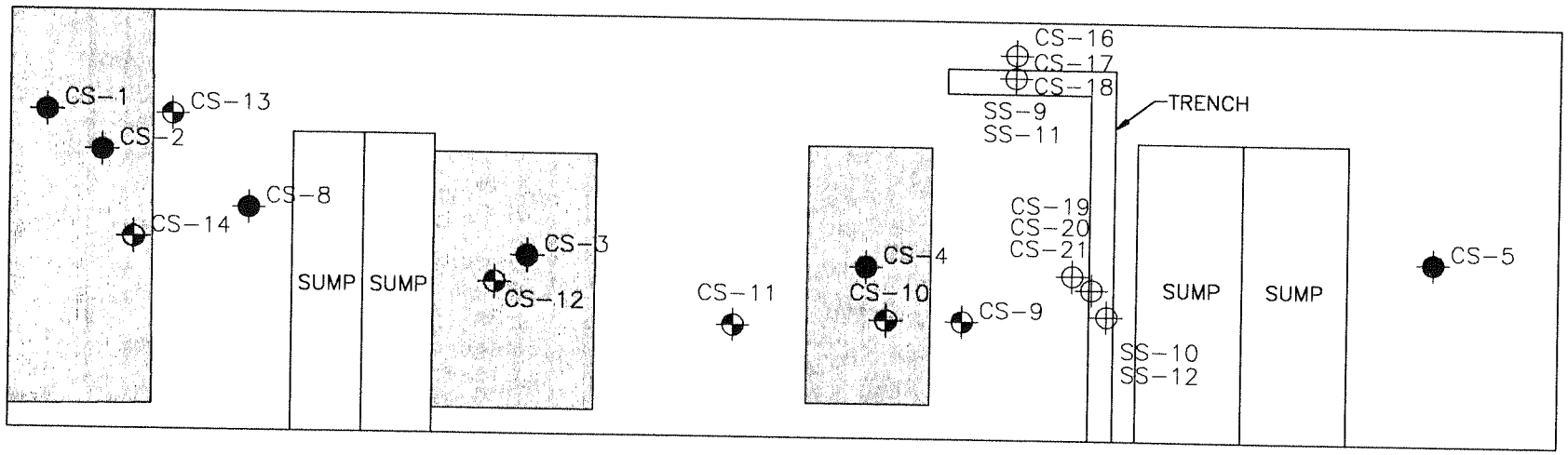
Earth Tech (Canada) Inc. Hamilton, Ontario


SHIPPING
CORE ROOM
TRIMMING AND GRINDING
FOUNDRY AREA
OFFICES
LEGEND
EXTENT OF FOUNDRY SUMPS
cad file 982568.dwg
INTERNATIONAL MALLEABLE IRON CO.LTD.
FIGURE 3
FOUNDRY SUMP LOCATIONS
DATE: August 1999
SCALE: 0 (1:750) 10 20m
EARTH TECH
Earth Tech (Canada) Inc.
Hamilton, Ontario

LEGEND

- CS-13 — CONCRETE CORE LOCATION (1999)
- CS-1 — CONCRETE CORE LOCATION (1998)
- CS-16 — CONCRETE SAMPLE LOCATION
- SS-9 — SOIL SAMPLE LOCATION

REMEDIATED CONCRETE AREA

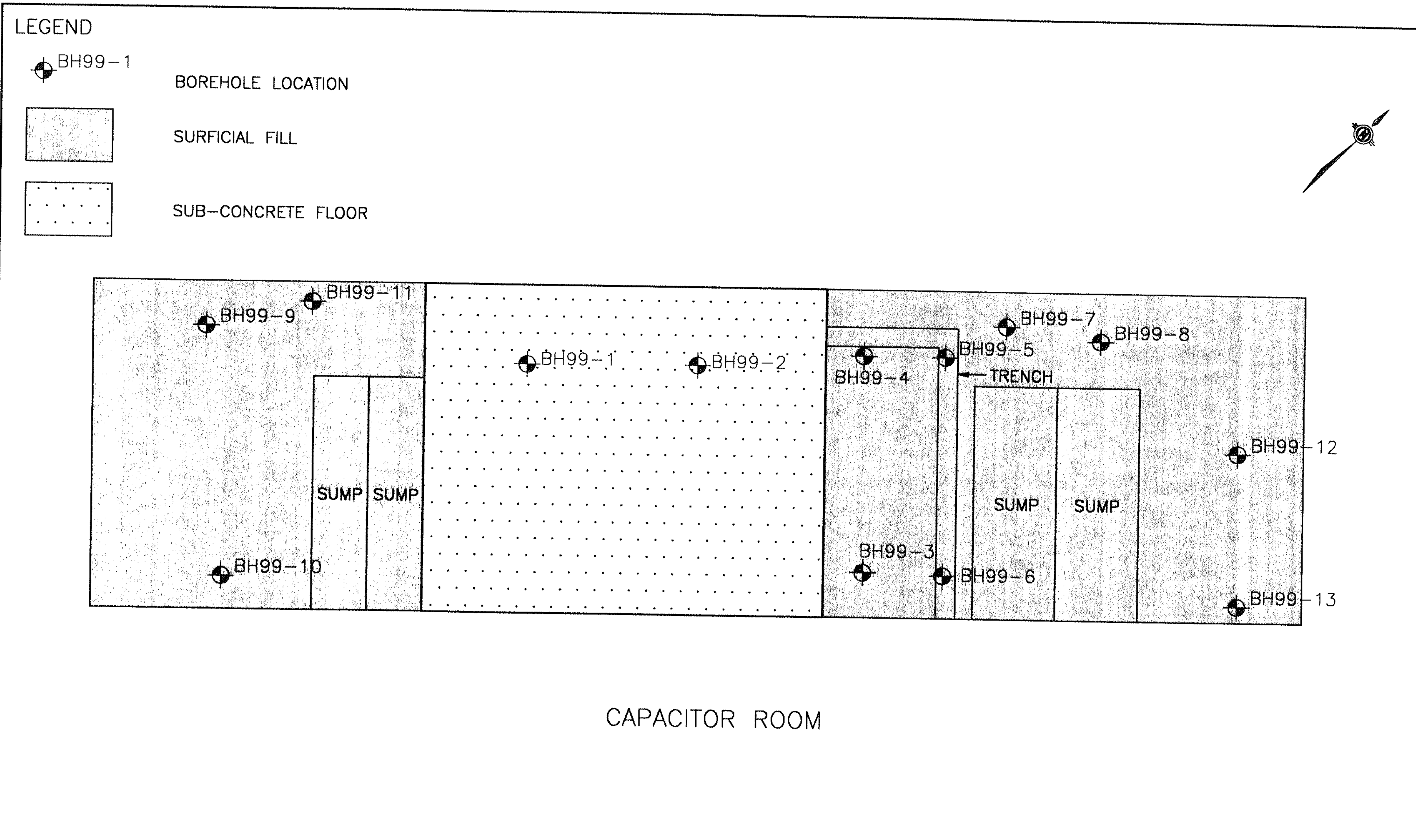


CAPACITOR ROOM

NOTE: NORTH/SOUTH EXAGGERATION 2X

DRAWN BY: L.B.	SURFICIAL CONCRETE SLAB	INTERNATIONAL MALLEABLE IRON COMPANY LIMITED	EARTH TECH Earth Tech (Canada) Inc. Don Mills, Ontario 416.445.3600
CKD. BY: J.F.	CAPACITOR ROOM		SCALE: 1:100 DATE: JULY,1999 DRAWING NO. Figure 4A

Date: OCT 4,1999 Time: 2:39 P.M. Drawing File: W:\westernsf\EC98256\4A.DWG



NOTE: NORTH/SOUTH EXAGGERATION 2X

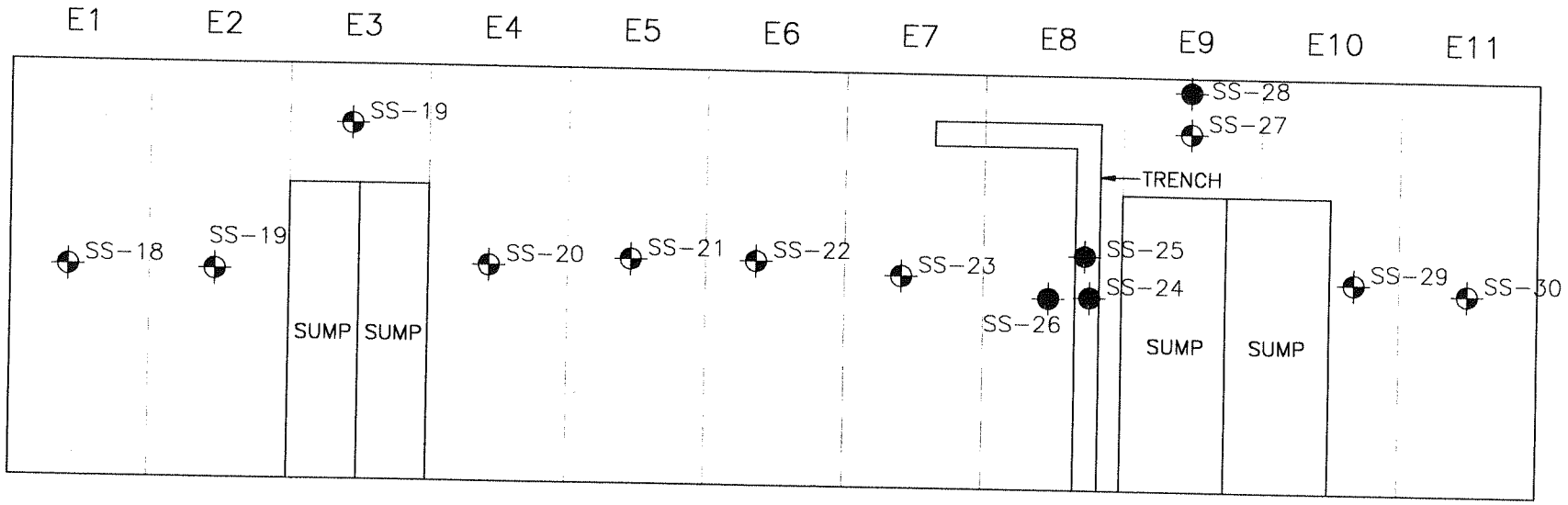
DRAWN BY: L.B.	SUB-CONCRETE FLOOR AND FILL MATERIALS	INTERNATIONAL MALLEABLE IRON COMPANY LIMITED	EARTH TECH Earth Tech (Canada) Inc. Don Mills, Ontario 416.445.3600
CKD. BY: J.F.	CAPACITOR ROOM		SCALE: 1:100 DATE: JULY,1999 DRAWING NO. Figure 4B

Date: OCT 5,1999 Time: 2:34 P.M. Drawing File: W:\wastemgt\E098256\4B.DWG

LEGEND

SS-18 SURFICIAL COMPOSITE GRID SAMPLE

SS-24 NON-COMPOSITE GRID SAMPLE



CAPACITOR ROOM

NOTE: NORTH/SOUTH EXAGGERATION 2X

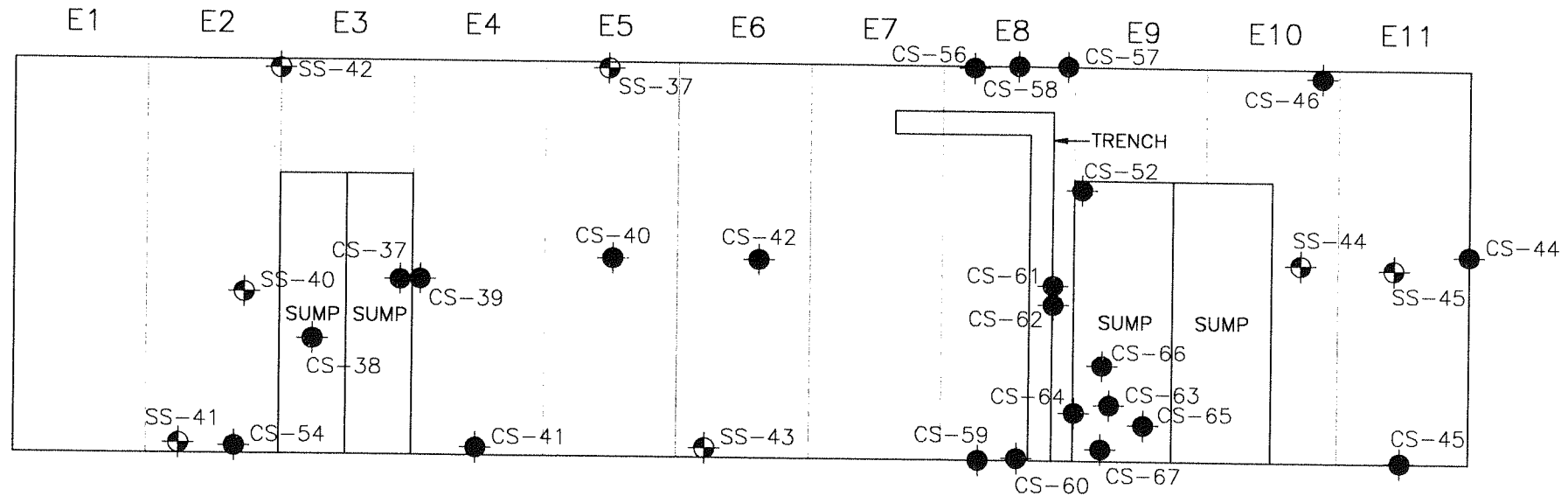
DRAWN BY: L.B.	GRID SAMPLE LOCATIONS	INTERNATIONAL MALLEABLE IRON COMPANY LIMITED	EARTH TECH Earth Tech (Canada) Inc. Don Mills, Ontario 416.445.3600
CKD. BY: J.F.	CAPACITOR ROOM		SCALE: 1:100 DATE: JULY,1999 DRAWING NO. Figure 4C

Date: OCT 4,1999 Time: 2:52 P.M. Drawing File: W:\westemg\EG98256\4C.DWG

LEGEND

SS-40 SOIL SAMPLE LOCATION

CS-37 CONCRETE/BEDROCK SAMPLE LOCATION

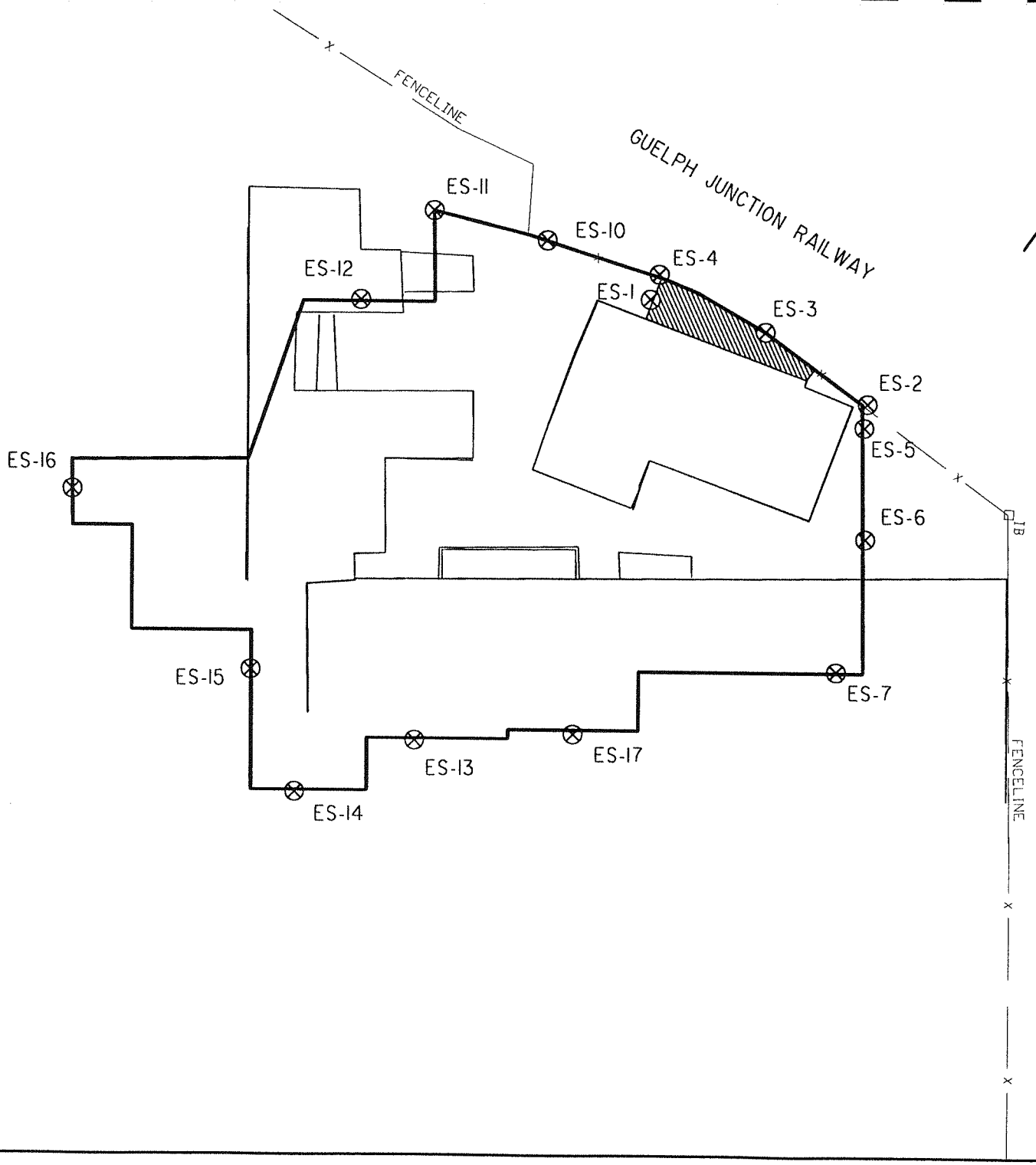


CAPACITOR ROOM

NOTE: NORTH/SOUTH EXAGGERATION 2X

DRAWN BY: L.B.	FINAL EXCAVATION SAMPLE LOCATIONS	INTERNATIONAL MALLEABLE IRON COMPANY LIMITED	EARTH TECH Earth Tech (Canada) Inc. Don Mills, Ontario 416.445.3600
CKD. BY: J.F.	CAPACITOR ROOM		SCALE: 1:100 DATE: JULY,1999 DRAWING NO. Figure 4D

Date: OCT 7,1999 Time: 12:55 P.M. Drawing File: #:\waste\mgt\E098256\4D.DWG



LEGEND

ES-1 ⊗ SOIL SAMPLE LOCATION (WALL)

LEACHATE TOXIC SOIL

EXCAVATION LIMITS

cad file 982566.dwg

INTERNATIONAL MALLEABLE IRON CO.LTD.

FINAL EXCAVATION SAMPLING LOCATIONS

FIGURE 5

DATE: May 1999 | SCALE: (1:500) 0 5 10m

EARTH TECH

Earth Tech (Canada) Inc. Hamilton, Ontario

APPENDIX A

PHILIP SERVICES

28-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: E098256

Received: 24-Jun-99 10:51
PO #:

Job: 9954554

Status: Final

- The PCBs detected in the sample is Aroclor 1016.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed:

.....

Mike Muneswar
Manager, Environmental Inorganic Services

PHILIP SERVICES

28-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: E098256

Received: 24-Jun-99 10:51
PO #:

Job: 9954554

Status: Final

Reg. 347 Leach

Sample Id	U ICP/MS mg/L
SS-31	<0.001
Blank	<0.001
QC Standard (found)	0.051
QC Standard (expected)	0.050
Repeat SS-31	<0.001

PHILIP SERVICES

28-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 1

Attn: John Fairclough
Project: E098256

PO #:

Received: 24-Jun-99 10:51

Job: 9954554

Status: Final

Reg. 347 Leach

Sample Id	F- SM 4500F mg/L	NO3-N SM 4110B mg/L	NO2-N SM 4110B mg/L	Free CN- SM 4500I mg/L	LOD Grav. %	Wt. Samp. Grav. g	PCB's GC/ECD ug/L	Hg ICP/MS mg/L
SS-31	0.2	<0.2	<0.2	<0.001	5.90	53.1	0.30	<0.0005
Blank	<0.1	<0.2	<0.2	<0.001	---	---	<0.05	<0.0005
QC Standard (found)	0.3	1.0	0.4	0.010	---	---	102. %	0.0045
QC Standard (expected)	0.2	1.0	0.4	0.010	---	---	100. %	0.0040
Repeat SS-31	0.2	<0.2	<0.2	<0.001	5.90	53.1	0.29	<0.0005

Sample Id	As ICP/MS mg/L	Se ICP/MS mg/L	Ag ICP/MS mg/L	B ICP/MS mg/L	Ba ICP/MS mg/L	Cd ICP/MS mg/L	Cr ICP/MS mg/L	Pb ICP/MS mg/L
SS-31	<0.005	<0.005	<0.005	0.05	0.086	0.007	<0.01	<0.005
Blank	<0.005	<0.005	<0.005	<0.01	<0.005	<0.001	<0.01	<0.005
QC Standard (found)	0.050	0.049	0.035	0.04	0.048	0.048	0.05	0.047
QC Standard (expected)	0.050	0.050	0.030	0.05	0.050	0.050	0.05	0.050
Repeat SS-31	<0.005	<0.005	<0.005	0.05	0.092	0.006	<0.01	<0.005

PHILIP SERVICES

4-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 1-Jun-99 17:18

Job: 9953801

Status: Final

Ignitability:

Burning Rate Test

Tested sample was formed into a strip 250 mm long by 20 mm wide and 10 mm high. The flame was applied to one end of the strip and the timing was started. The flame was held there for 2 minutes.

Sample	Ignition Time (sec.)	Burning Rate (mm/min.)
RS-25	No Ignition	0

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Ralph Siebert, B.Sc.
Project Manager

PSC PHILIP SERVICES

4-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 1

Attn: John Fairclough
Project: 98256

PO #:

Received: 1-Jun-99 17:18

Job: 9953801

Status: Final

Reg. 347 Leach

Sample Id	F- SM 4500F mg/L	NO3-N SM 4110B mg/L	NO2-N SM 4110B mg/L	Free CN- SM 4500I mg/L	LOD Grav. %	Wt. Samp. Grav. g	Hg ICP/MS mg/L	As ICP/MS mg/L
RS-25	0.5	0.8	<0.2	<0.001	1.00	50.5	<0.0005	<0.005
Blank	<0.1	<0.2	<0.2	<0.001	---	---	<0.0005	<0.005
QC Standard (found)	0.2	4.6	10.1	0.011	---	---	0.0043	0.051
QC Standard (expected)	0.2	4.4	10.0	0.010	---	---	0.0040	0.050
Repeat RS-25	0.6	0.8	<0.2	<0.001	1.00	50.5	<0.0005	<0.005

Sample Id	Se ICP/MS mg/L	Ag ICP/MS mg/L	B ICP/MS mg/L	Ba ICP/MS mg/L	Cd ICP/MS mg/L	Cr ICP/MS mg/L	Pb ICP/MS mg/L	U ICP/MS mg/L
RS-25	<0.005	<0.005	0.17	0.233	0.002	<0.01	<0.005	0.004
Blank	<0.005	<0.005	<0.01	<0.005	<0.001	<0.01	<0.005	<0.001
QC Standard (found)	0.047	0.055	0.05	0.050	0.047	0.05	0.048	0.050
QC Standard (expected)	0.050	0.030	0.05	0.050	0.050	0.05	0.050	0.050
Repeat RS-25	<0.005	<0.005	0.17	0.233	0.002	<0.01	<0.005	0.004

PSC
PHILIP SERVICES

2-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 31-May-99 15:49

Job: 9953758

Status: Final

- For analysis of PCB's only 700ml of leach was available for extraction. The M.D.L was corrected accordingly.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Ralph Siebert, B.Sc.
Project Manager

PHILIP SERVICES

2-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 2
Copy: 1 of 2
Set : 2

Attn: John Fairclough
Project: 98256

Received: 31-May-99 15:49
PO #:

Job: 9953758

Status: Final

Reg. 347 Leach

Sample Id	U ICP/MS mg/L
CS-30	0.007
Blank	<0.001
QC Standard (found)	0.047
QC Standard (expected)	0.050
Repeat CS-30	0.006

PHILIP SERVICES

2-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 31-May-99 15:49

Job: 9953758

Status: Final

Reg. 347 Leach

Sample Id	F- SM 4500F mg/L	NO3-N SM 4110B mg/L	NO2-N SM 4110B mg/L	Free CN- SM 4500I mg/L	LOD Grav. %	Wt. Samp. Grav. g	PCB's GC/ECD ug/L	Hg ICP/MS mg/L
CS-30	0.9	<0.2	<0.2	<0.001	0.00	50.0	<0.06	<0.0005
Blank	<0.1	<0.2	<0.2	<0.001	---	---	<0.05	<0.0005
QC Standard (found)	0.2	1.0	0.4	0.010	---	---	117. %	0.0043
QC Standard (expected)	0.2	1.0	0.4	0.010	---	---	100. %	0.0050
Repeat CS-30	0.8	<0.2	<0.2	<0.001	0.00	50.0	<0.06	<0.0005

Sample Id	As ICP/MS mg/L	Se ICP/MS mg/L	Ag ICP/MS mg/L	B ICP/MS mg/L	Ba ICP/MS mg/L	Cd ICP/MS mg/L	Cr ICP/MS mg/L	Pb ICP/MS mg/L
CS-30	<0.005	<0.005	<0.005	0.14	0.457	<0.001	0.02	<0.005
Blank	<0.005	<0.005	<0.005	<0.01	<0.005	<0.001	<0.01	<0.005
QC Standard (found)	0.053	0.048	0.035	0.05	0.051	0.050	0.05	0.044
QC Standard (expected)	0.050	0.050	0.030	0.05	0.050	0.050	0.05	0.050
Repeat CS-30	<0.005	<0.005	<0.005	0.14	0.468	<0.001	0.02	<0.005

PHILIP SERVICES

22-Feb-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 3
Copy: 1 of 2

Attn: J. Fairclough
Project: 98256

Received: 16-Feb-99 16:37
PO #:

Job: 9950960

Status: Final

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Ralph Siebert, B.Sc.
Project Manager

PHILIP SERVICES

22-Feb-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: J. Fairclough
Project: 98256

Received: 16-Feb-99 16:37
PO #:

Job: 9950960

Status: Final

Reg. 347 Leach

Sample Id	U ICP/MS mg/L
RS-22	<0.001
Blank	<0.001
QC Standard (found)	0.048
QC Standard (expected)	0.050
Repeat RS-22	<0.001

PHILIP SERVICES

22-Feb-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
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Attn: J. Fairclough
Project: 98256

PO #:

Received: 16-Feb-99 16:37

Job: 9950960

Status: Final

Reg. 347 Leach

Sample Id	F- SM 4500F mg/L	NO3-N SM 4110B mg/L	NO2-N SM 4110B mg/L	Free CN- SM 4500I mg/L	LOD Grav. %	Wt. Samp. Grav. g	PCB's GC/ECD ug/L	Hg ICP/MS mg/L
RS-22	<0.1	<0.2	<0.2	<0.001	0.00	50.0	<0.05	<0.0005
Blank	<0.1	<0.2	<0.2	<0.001	---	---	<0.05	<0.0005
QC Standard (found)	2.0	4.5	10.2	0.010	---	---	103. %	0.0044
QC Standard (expected)	2.0	4.4	10.0	0.010	---	---	100. %	0.0050
Repeat RS-22	<0.1	<0.2	<0.2	<0.001	0.00	50.0	<0.05	<0.0005

Sample Id	As ICP/MS mg/L	Se ICP/MS mg/L	Ag ICP/MS mg/L	B ICP/MS mg/L	Ba ICP/MS mg/L	Cd ICP/MS mg/L	Cr ICP/MS mg/L	Pb ICP/MS mg/L
RS-22	<0.005	<0.005	<0.005	0.01	0.031	<0.001	<0.00	<0.005
Blank	<0.005	<0.005	<0.005	<0.01	<0.005	<0.001	<0.00	<0.005
QC Standard (found)	0.050	0.050	0.009	0.05	0.050	0.048	0.05	0.049
QC Standard (expected)	0.050	0.050	0.010	0.05	0.050	0.050	0.05	0.050
Repeat RS-22	<0.005	<0.005	<0.005	0.01	0.039	<0.001	<0.00	<0.005

PHILIP SERVICES

15-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 8-Dec-98 17:31

Job: 9859368

Status: Final

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Ralph Siebert, B.Sc.
Project Manager

PHILIP SERVICES

15-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 2
Copy: 1 of 2
Set : 1

Attn: John Fairclough
Project: 98256

PO #:

Received: 8-Dec-98 17:31

Job: 9859368

Status: Final

Reg. 347 Leach

Sample Id	U ICP/MS mg/L
RS-2	<0.001
RS-3	<0.001
Blank	<0.001
QC Standard (found)	0.043
QC Standard (expected)	0.050
Repeat RS-2	<0.001

PHILIP SERVICES

15-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 1

Attn: John Fairclough
Project: 98256

PO #:

Received: 8-Dec-98 17:31

Job: 9859368

Status: Final

Reg. 347 Leach

Sample Id	F- SM 4500F mg/L	NO3-N SM 4110B mg/L	NO2-N SM 4110B mg/L	Free CN- SM 4500I mg/L	LOD Grav. %	Wt. Samp. Grav. g	PCB's GC/ECD ug/L	Hg ICP/MS mg/L
RS-2	<0.1	<0.2	<0.2	<0.001	2.00	51.0	<0.05	<0.0005
RS-3	0.1	<0.2	<0.2	<0.001	---	---	<0.05	<0.0005
Blank	<0.1	<0.2	<0.2	<0.001	---	---	<0.05	<0.0005
QC Standard (found)	0.6	1.7	1.6	0.010	---	---	81.0%	0.0052
QC Standard (expected)	0.6	1.6	1.5	0.010	---	---	100. %	0.0050
Repeat RS-2	<0.1	<0.2	<0.2	<0.001	2.00	51.0	<0.05	<0.0005

Sample Id	As ICP/MS mg/L	Se ICP/MS mg/L	Ag ICP/MS mg/L	B ICP/MS mg/L	Ba ICP/MS mg/L	Cd ICP/MS mg/L	Cr ICP/MS mg/L	Pb ICP/MS mg/L
RS-2	<0.005	<0.005	<0.005	0.03	0.117	<0.001	<0.01	<0.005
RS-3	<0.005	<0.005	<0.005	0.07	0.185	<0.001	<0.01	<0.005
Blank	<0.005	<0.005	<0.005	<0.01	<0.005	<0.001	<0.01	<0.005
QC Standard (found)	0.050	0.051	0.007	0.05	0.054	0.051	0.05	0.044
QC Standard (expected)	0.050	0.050	0.010	0.05	0.050	0.050	0.05	0.050
Repeat RS-2	<0.005	<0.005	<0.005	0.02	0.056	<0.001	<0.01	<0.005

PHILIP SERVICES

7-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 2
Copy: 2 of 2

Attn: John Fairclough
Project: 98256

Received: 2-Dec-98 09:24
PO #:

Job: 9859154

Status: Final

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed:

.....

Mike Muneswar
Manager, Environmental Inorganic Services

PHILIP SERVICES

7-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 2-Dec-98 09:24

Job: 9859154

Status: Final

Reg. 347 Leach

Sample Id	F- SM 4500F mg/L	NO3-N SM 4110B mg/L	NO2-N SM 4110B mg/L	Free CN- SM 4500I mg/L	LOD Grav. %	Wt. Samp. Grav. g	Hg ICP/MS mg/L	As ICP/MS mg/L
RS-1	1.4	5.6	<0.2	0.002	6.20	53.3	<0.0005	0.004
Blank	<0.1	<0.2	<0.2	<0.001	---	---	<0.0005	<0.005
QC Standard (found)	0.6	1.7	0.1	0.009	---	---	0.0052	0.051
QC Standard (expected)	0.6	1.6	0.2	0.010	---	---	0.0050	0.050
Repeat RS-1	1.5	5.8	<0.2	0.002	6.20	53.3	<0.0005	0.004

Sample Id	Se ICP/MS mg/L	Ag ICP/MS mg/L	B ICP/MS mg/L	Ba ICP/MS mg/L	Cd ICP/MS mg/L	Cr ICP/MS mg/L	Pb ICP/MS mg/L	U ICP/MS mg/L
RS-1	0.139	<0.005	0.39	0.143	<0.001	0.01	<0.005	<0.001
Blank	<0.005	<0.005	<0.01	<0.005	<0.001	<0.05	<0.005	<0.001
QC Standard (found)	0.051	0.009	0.05	0.051	0.052	0.05	0.045	0.048
QC Standard (expected)	0.050	0.010	0.05	0.050	0.050	0.05	0.050	0.050
Repeat RS-1	0.145	<0.005	0.39	0.133	<0.001	0.01	<0.005	<0.001

PHILIP SERVICES

6-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 24-Jun-99 13:41

Job: 9954586

Status: Final

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Ralph Siebert, B.Sc.
Project Manager

PHILIP SERVICES

6-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
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Set : 1

Attn: John Fairclough
Project: 98256

PO #:

Received: 24-Jun-99 13:41

Job: 9954586

Status: Final

Parameter			NS-1 soil	NS-2 soil	Blank	Standard (found)	Standard (expected)	Repeat NS-1
Antimony	SW 7041	ug/g	0.5	0.9	<0.2	0.8	0.6	0.6
Arsenic	SW 7061	ug/g	11.9	10.3	<0.2	10.6	11.2	11.9
Barium	SW 6010 mod.	ug/g	94	185	<5	111	129	96
Beryllium	SW 6010 mod.	ug/g	0.2	0.4	<0.2	0.4	0.4	0.3
Cadmium	SW 6010 mod.	ug/g	6.9	5.5	<0.3	1.6	1.9	7.2
Chromium	SW 6010 mod.	ug/g	22	37	<1	18	18	23
Chromium (6+)	SW 7196	ug/g	<1	<1	<1	3	3	<1
Cobalt	SW 6010 mod.	ug/g	4	4	<2	9	9	4
Copper	SW 6010 mod.	ug/g	76	85	<1	30	29	81
Lead	SW 6010 mod.	ug/g	95	162	<5	79	79	106
Mercury	SW 7470	ug/g	0.37	0.36	<0.10	0.18	0.19	0.40
Molybdenum	SW 6010 mod.	ug/g	<3	<3	<3	<3	<3	<3
Nickel	SW 6010 mod.	ug/g	11	13	<2	28	29	12
Selenium	SW 7741	ug/g	5.8	2.4	<0.2	1.9	1.5	6.1
Silver	SW 6010 mod.	ug/g	<0.8	<0.8	<0.8	1.0	<0.8	<0.8
Vanadium	SW 6010 mod.	ug/g	16	16	<1	28	33	16
Zinc	SW 6010 mod.	ug/g	1360	2240	<5	178	163	1350

PHILIP SERVICES

11-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 4-May-99 15:46

Job: 9952966

Status: Final

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Ralph Siebert, B.Sc.
Project Manager

PHILIP SERVICES

11-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

Received: 4-May-99 15:46
PO #:

Job: 9952966

Status: Final

Parameter		Standard (expected)	Repeat SS-1
Barium	SW 6010 mod. ug/g	163	320
Beryllium	SW 6010 mod. ug/g	0.6	0.9
Cadmium	SW 6010 mod. ug/g	0.8	<0.3
Chromium	SW 6010 mod. ug/g	51	23
Cobalt	SW 6010 mod. ug/g	28	5
Copper	SW 6010 mod. ug/g	35	14
Lead	SW 6010 mod. ug/g	20	61
Molybdenum	SW 6010 mod. ug/g	<3	<3
Nickel	SW 6010 mod. ug/g	44	13
Silver	SW 6010 mod. ug/g	2.6	<0.8
Vanadium	SW 6010 mod. ug/g	46	31
Zinc	SW 6010 mod. ug/g	126	185

PHILIP SERVICES

11-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 2

Attn: John Fairclough
Project: 98256

PO #:

Received: 4-May-99 15:46

Job: 9952966

Status: Final

Parameter		SS-1 soil	SS-2 soil	SS-3 soil	SS-4 soil	SS-5 soil	Blank	Standard (found)
Barium	SW 6010 mod. ug/g	319	120	75	76	73	<5	158
Beryllium	SW 6010 mod. ug/g	0.9	0.7	0.5	0.4	0.4	<0.2	0.6
Cadmium	SW 6010 mod. ug/g	<0.3	<0.3	<0.3	0.5	0.5	<0.3	0.9
Chromium	SW 6010 mod. ug/g	23	20	17	42	17	<1	41
Cobalt	SW 6010 mod. ug/g	6	5	4	4	2	<2	27
Copper	SW 6010 mod. ug/g	15	19	14	44	20	<1	34
Lead	SW 6010 mod. ug/g	59	29	13	83	33	<5	23
Molybdenum	SW 6010 mod. ug/g	<3	<3	<3	3	<3	<3	<3
Nickel	SW 6010 mod. ug/g	16	11	8	19	8	<2	39
Silver	SW 6010 mod. ug/g	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	2.1
Vanadium	SW 6010 mod. ug/g	33	23	14	20	13	<1	43
Zinc	SW 6010 mod. ug/g	184	192	118	448	190	<5	121

PHILIP SERVICES

11-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 4-May-99 15:46

Job: 9952966

Status: Final

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.

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Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

11-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 4-May-99 15:46

Job: 9952966

Status: Final

Soil samples

Sample Id	TPH-Heavy Oils SM 5520B m ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g	Benzene HS-GC/PID ug/g	Toluene HS-GC/PID ug/g
SS-1	970	460	<10	460	<0.02	<0.02
SS-2	330	52	<10	52	<0.02	<0.02
SS-3	320	39	<10	39	<0.02	<0.02
SS-4	280	63	<10	63	<0.02	<0.02
SS-5	730	270	<10	270	<0.02	<0.02
Blank	<100	<10	<10	<10	<0.02	<0.02
QC Standard (found)	101%	---	89%	105%	102. %	106. %
QC Standard (expected)	100%	---	100%	100%	100. %	100. %
Repeat SS-1	910	450	<10	450	<0.02	<0.02

Sample Id	Ethylbenzene HS-GC/PID ug/g	m-&p-Xylenes HS-GC/PID ug/g	o-Xylene HS-GC/PID ug/g
SS-1	<0.02	<0.04	<0.02
SS-2	<0.02	<0.04	<0.02
SS-3	<0.02	<0.04	<0.02
SS-4	<0.02	<0.04	<0.02
SS-5	<0.02	<0.04	<0.02
Blank	<0.02	<0.04	<0.02
QC Standard (found)	102. %	103. %	102. %
QC Standard (expected)	100. %	100. %	100. %
Repeat SS-1	<0.02	<0.04	<0.02

Philip Services Corporation

CERTIFICATE OF ANALYSIS

HOLD TIME REPORT

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:25-Jun-1999

Attention: Mr. Nick Boulton
Client Reference: 9954533
Work Order: 59823

Purchase Order:
Date Received: 24-Jun-1999
Sample Type: Solids

Analytical Tests	Date Analyzed	Hold Time (in days)	Actual Time (in days)	Exceeded	Regulation, Alternative
99-B016334					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016335					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016336					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016337					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016338					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016339					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016340					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016341					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016342					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only

CERTIFICATE OF ANALYSIS

HOLD TIME REPORT

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:25-Jun-1999

Attention: Mr. Nick Boulton
Client Reference: 9954533
Work Order: 59823

Purchase Order:
Date Received: 24-Jun-1999
Sample Type: Solids

Analytical Tests	Date Analyzed	Hold Time (in days)	Actual Time (in days)	Exceeded	Regulation, Alternative
99-B016343					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016344					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016345					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only
99-B016346					Date Sampled:
PCB Preparation	24-Jun-1999	7	0		EPA, waters and soils only

Philip Services Corporation

CERTIFICATE OF QUALITY CONTROL

Client: Philip Analytical Services (McAdam)
Contact: Mr. Nick Boulton

Date Reported: 25-Jun-1999
Work Order: 59823

Matrix: Solids

Client Reference: 9954533

			Process Blank		Process % Recovery			Matrix Spike					Duplicate			
Parameter	RDL	Units	Result	Upper Limit	Result	Lower Limit	Upper Limit	Spike ID	Result	Target	Lower Limit	Upper Limit	Duplicate ID	Original Result	Duplicate Result	QC Flag
Total PCB (Solid)	0.005	mg/kg	< 0.05	0.01	76.67	75.0	125.0	99-B016334	2.1	2.6	1.7	3.5	99-B016334	6.5	6.1	B

QC Flag(s) pertain to B-Process Blank, R-Process % Recovery, S-Matrix Spike and/or D-Duplicate
na Denotes Not Applicable

Philip Analytical Services Corporation
921 Leathorne Street, London, Ontario, Canada N5Z 3M7 (519) 686-7558 1-800-268-7396 FAX (519) 686-6374

CERTIFICATE OF ANALYSIS

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:25-Jun-1999

Attention: Mr. Nick Boulton
Client Reference: 9954533
Work Order: 59823

Purchase Order:
Date Received: 24-Jun-1999
Sample Type: Solids

Sample #	Test	Result	Units	RDL	Comment
99-B016339	Sample Description: SS-23		Date & Time Sampled:		
	Total PCB (Solid)	60.	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016340	Sample Description: SS-24		Date & Time Sampled:		
	Total PCB (Solid)	2700	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016341	Sample Description: SS-25		Date & Time Sampled:		
	Total PCB (Solid)	16.	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016342	Sample Description: SS-26		Date & Time Sampled:		
	Total PCB (Solid)	550	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016343	Sample Description: SS-27		Date & Time Sampled:		
	Total PCB (Solid)	0.96	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		

EXPLANATION OF CODES:
RDL Reporting Detection Limit

CERTIFICATE OF ANALYSIS

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:25-Jun-1999

Attention: Mr. Nick Boulton
Client Reference: 9954533
Work Order: 59823

Purchase Order:
Date Received: 24-Jun-1999
Sample Type: Solids

Sample #	Test	Result	Units	RDL	Comment
99-B016344	Sample Description: SS-28		Date & Time Sampled:		
	Total PCB (Solid)	< 0.5	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016345	Sample Description: SS-29		Date & Time Sampled:		
	Total PCB (Solid)	0.91	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016346	Sample Description: SS-30		Date & Time Sampled:		
	Total PCB (Solid)	7.3	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		

EXPLANATION OF CODES
RDL Reporting Detection Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:25-Jun-1999

Attention: Mr. Nick Boulton	Purchase Order:
Client Reference: 9954533	Date Received: 24-Jun-1999
Work Order: 59823	Sample Type: Solids

Sample #	Test	Result	Units	RDL	Comment
99-B016334	Sample Description: SS-18		Date & Time Sampled:		
	Total PCB (Solid)	6.5	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016335	Sample Description: SS-19		Date & Time Sampled:		
	Total PCB (Solid)	13.	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016336	Sample Description: SS-20		Date & Time Sampled:		
	Total PCB (Solid)	16.	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016337	Sample Description: SS-21		Date & Time Sampled:		
	Total PCB (Solid)	10.	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016338	Sample Description: SS-22		Date & Time Sampled:		
	Total PCB (Solid)	15.	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		

EXPLANATION OF CODES:
RDL Reporting Detection Limit

Philip Analytical Services Corporation
921 Leathorne Street, London, Ontario, Canada N5Z 3M7 (519) 686-7558 1-800-268-7396 FAX (519) 686-6374

CERTIFICATE OF ANALYSIS

HOLD TIME REPORT

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:29-Jun-1999

Attention: Mr. Nick Boulton	Purchase Order:
Client Reference: 9954486	Date Received: 28-Jun-1999
Work Order: 59905	Sample Type: Solids

Analytical Tests	Date Analyzed	Hold Time (in days)	Actual Time (in days)	Exceeded	Regulation, Alternative
99-B016634					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016635					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016636					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only

CERTIFICATE OF ANALYSIS

HOLD TIME REPORT

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:29-Jun-1999 Page: 1

Attention: Mr. Nick Boulton
Client Reference: 9954486
Work Order: 59905

Purchase Order:
Date Received: 28-Jun-1999
Sample Type: Solids

Analytical Tests	Date Analyzed	Hold Time (in days)	Actual Time (in days)	Exceeded	Regulation, Alternative
99-B016625					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016626					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016627					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016628					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016629					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016630					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016631					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016632					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only
99-B016633					Date Sampled: 22-Jun-1999
PCB Preparation	28-Jun-1999	7	6		EPA, waters and soils only

Philip Services Corporation

CERTIFICATE OF QUALITY CONTROL

Client: Philip Analytical Services (McAdam)
Contact: Mr. Nick Boulton

Date Reported: 29-Jun-1999
Work Order: 59905

Matrix: Solids

Client Reference: 9954486

			Process Blank		Process % Recovery			Matrix Spike					Duplicate			
Parameter	RDL	Units	Result	Upper Limit	Result	Lower Limit	Upper Limit	Spike ID	Result	Target	Lower Limit	Upper Limit	Duplicate ID	Original Result	Duplicate Result	QC Flag
Total PCB (Solid)	0.005	mg/kg	< 0.05	0.01	83.33	75.0	125.0						99-B016625	< 0.5	< 0.5	B

QC Flag(s) pertain to B-Process Blank, R-Process % Recovery, S-Matrix Spike and/or D-Duplicate
na Denotes Not Applicable

Philip Analytical Services Corporation
921 Leathorne Street, London, Ontario, Canada N5Z 3M7 (519) 686-7558 1-800-268-7396 FAX (519) 686-6374

Ontario Environmental & Safety Network Ltd
530A Eastchester Ave.
St. Catharines, ON L2M 7P3 1-888-271-2111

facsimile transmittal

To:	Jon Arsenault, Gartner Lee Limited	**Fax:**	(905) 688-1219
From:	OESN Ltd. , Todd M. Jeffery	**Date:**	2/5/99
Re:	Sample Analysis IMICO	**Pages:**	1
CC:	none		

☑ Urgent ☑ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

Sample results from IMICO. Material is non asbestos. GL-1 (Sample ID)

If you have any questions please do not hesitate to call.

Sincerely,

Todd M. Jeffery

PINCHIN
ENVIRONMENTAL

December 7, 1998

Philip Services
5735 McAdam Road
Mississauga, Ontario
L4Z 1N9

Attention: **Mr. Dave Harrison**

Dear Mr. Harrison:

RE: Bulk Sample Analysis
Laboratory Reference Number: b14922 - 1998

Please find attached the results of our analysis of one bulk sample submitted on December 4, 1998 for determination of asbestos content by Polarized Light Microscopy and Dispersion Staining.

Sample preparation and analytical procedures are in compliance with the Code for the Determination of Asbestos from Bulk Insulation Samples, dated the 23rd of August, 1985 and issued by the Occupational Health and Safety Division of the Ontario Ministry of Labour, and U.S. EPA Method 600/R-93/116 dated July, 1993. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the volume percentage of asbestos present. The lower limit of reliable quantitation is estimated to be 0.5%. A reported concentration of Trace indicates the presence of confirmed asbestos in a quantity limited to only a few fibres or fibre bundles in an entire sample. Multiple phases within a sample are analyzed separately. A total of two analyses were performed.

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of one year. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin Environmental Ltd. is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP) for selected test methods for the identification of asbestos in bulk samples.

This test report relates only to the items tested.

If you have any questions, please feel free to contact me.

Yours truly,

Karen Slayer
Laboratory Manager
Pinchin Environmental Ltd.

/nc

PINCHIN
ENVIRONMENTAL
5749 Coopers Avenue
Mississauga, Ontario
L4Z 1R9

BULK SAMPLE ANALYSIS

PROJECT NAME: Philip Services #9859245

PREPARED FOR: Dave Harrison
Philip Services
5735 McAdam Road
Mississauga, Ontario L4Z 1N9

LAB REFERENCE No: b14922 - 1998

DATE: December 7, 1998

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)				COMMENTS
		ASBESTOS		OTHER		
C-17 Roof Sample	2 Phases: a) Tar impregnated paper. b) Homogeneous, black, tar material.	None detected Chrysotile	 0.5-5%	Cellulose Tar Tar	25-50% 50-75% >75%	Layers of cellulose paper are present on the surface of this sample.

ANALYST: Nicole Cosgrove

PHILIP
ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 8707 • PA DER 06-353

ANALYTICAL REPORT

Client: Philip Analytical Services-Mississauga

Report to: Nick Boulton
Barringer Laboratories
5735 McAdam Road
Mississauga ON L4Z 1N9

Project: 179117
Received: 17-FEB-99
Reported: 17-FEB-99

Project Description: Project #9950954
Tracking #SC-99-0101

Sampled: 16-FEB-99

	PERCENT(%) BY VOLUME	DATE	ANALYST
AS-1			
Lab Sample: 1346671			
Bulk Identification	Asbestos present	17-FEB-99	BSB

Sample description:
Homogeneous, brown soil.

ASBESTOS		FIBROUS		NON-FIBROUS	
Chrysotile:	3	Cellulose:	2	Calcite:	27
				Pumice:	20
				Vermiculite:	20
				Other:	28

Analytical Method: EPA/600/R-93/116 (July 1993)
Reported results have been determined from the sample submitted to the laboratory.

PHILIP SERVICES

11-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 8-Dec-98 16:57

Job: 9859363

Status: Final

Swab Samples

Sample Id	PCB's GC/ECD ug/swab	DCBP GC/ECD % Recovery
SB-1	<0.50	---
SB-3	4.80	---
SB-6	<0.50	---
SB-7	<0.50	---
Blank	<0.05	117. %
QC Standard (found)	99.0%	114. %
QC Standard (expected)	100. %	100. %

PHILIP SERVICES

11-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 2
Copy: 1 of 1
Set : 2

Attn: John Fairclough
Project: 98256

Received: 8-Dec-98 16:57

PO #:

Job: 9859363

Status: Final

Concrete Samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
RS-4	2.23	108. %
Blank	<0.05	103. %
QC Standard (found)	92.0%	99.0 %
QC Standard (expected)	100. %	100. %
Repeat	2.27	108. %

PHILIP SERVICES

11-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 3
Copy: 1 of 1

Attn: John Fairclough
Project: 98256

Received: 8-Dec-98 16:57
PO #:

Job: 9859363

Status: Final

- DCBP = Decachlorobiphenyl (surrogate standard for PCBs)
- The PCBs detected in sample SB-3 (composite of 2 swabs) and sample RS-4 is mostly Aroclor 1242.
- The swab sample extracts were diluted by a factor of 10 due to the presence of interfering materials. The MDLs have been adjusted accordingly.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

18-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 14-Dec-98 17:59

Job: 9859550

Status: Final

Rock samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
RS-5	65.8	---
RS-6	0.63	94.0 %
RS-7	31.6	---
RS-8	11.4	---
RS-10	12.3	---
Blank	<0.05	99.0 %
QC Standard (found)	84.0%	94.0 %
QC Standard (expected)	100. %	100. %
Repeat RS-5	75.4	---

- DCBP = Decachlorobiphenyl (surrogate standard for PCBs)
- Surrogate standard recoveries are not reported for samples requiring dilutions
- The PCBs detected in samples RS-5, RS-6 and RS-8 is mostly weathered 1016. The PCBs detected in samples RS-7 and RS-10 is mostly 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

21-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 2 of 2

Attn: John Fairclough
Project: 98256

PO #:

Received: 14-Dec-98 18:00

Job: 9859551

Status: Final

Oil Samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
RS-11	<1.00	106. %
Blank	<1.00	115. %
QC Standard (found)	111. %	109. %
QC Standard (expected)	100. %	100. %
Repeat RS-11	<1.00	104. %

- DCBP = Decachlorobiphenyl (surrogate standard for PCBs)

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....
Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

23-Dec-98

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 1

Attn: Joe Young
Project: 98256

PO #:

Received: 21-Dec-98 13:04

Job: 9859762

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
RS-21	<0.05	104. %
RS-12	<0.05	108. %
RS-13	<0.05	97.0 %
RS-14	<0.05	95.0 %
RS-15	<0.05	95.0 %
RS-16	<0.05	95.0 %
RS-17	<0.05	100. %
RS-18	<0.05	104. %
RS-19	<0.05	102. %
RS-20	<0.05	103. %
Blank	<0.05	98.0 %
QC Standard (found)	87.0%	100. %
QC Standard (expected)	100. %	100. %
Repeat RS-21	<0.05	101. %

- DCBP = Decachlorobiphenyl (surrogate standard for PCBs)
- The samples contain early eluting material that may be severely weathered PCBs. Confirmation of PCBs by way of GC/MS analysis may be required.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....
Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

29-Jan-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 22-Jan-99 16:27

Job: 9950353

Status: Final

Swab Samples

Sample Id	PCB's GC/ECD ug/swab	DCBP GC/ECD % Recovery
SB-8	<0.05	81.0 %
SB-9	0.13	80.0 %
Blank	<0.05	101. %
QC Standard (found)	108. %	107. %
QC Standard (expected)	100. %	100. %

- DCBP = Decachlorobiphenyl (surrogate standard for PCBs)
- The PCBs detected in swab sample SB-9 is a mixture of Aroclor 1254 and 1260.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

2-Mar-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 25-Feb-99 18:34

Job: 9951246

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
RS-23	0.63	100. %
RS-24	<0.05	100. %
Blank	<0.05	106. %
QC Standard (found)	94.0%	97.0 %
QC Standard (expected)	100. %	100. %
Repeat RS-23	0.57	108. %

- DCBP = Decachlorobiphenyl (surrogate standard for PCBs)
- The PCBs detected in sample RS-23 is Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskall

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

17-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 14-May-99 09:48

Job: 9953284

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
SS-8	353.	111. %
Blank	<0.05	91.0 %
QC Standard (found)	92.0%	82.0 %
QC Standard (expected)	100. %	100. %
Repeat SS-8	354.	92.0 %

- DCBP=Decachlorobiphenyl(surrogate standard for PCBs).
- The PCBs detected in the sample is Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

19-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2

Attn: John Fairclough
Project: 98256

PO #:

Received: 17-May-99 16:46

Job: 9953367

Status: Final

Concrete Samples

Sample Id	PCB's GC/ECD ug/g
CS-9	19.3
CS-10	2.48
CS-11	2.03
CS-12	3.58
CS-13	2.37
CS-14	3.73
Blank	<0.05
QC Standard (found)	98.0%
QC Standard (expected)	100. %
Repeat CS-9	19.5

- The PCB's detected in the samples is Aroclor 1232.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

21-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 1

Attn: John Fairclough
Project: 98256

PO #:

Received: 17-May-99 17:02

Job: 9953370

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
SS-9	1.13	94.0 %
SS-10	1.14	87.0 %
SS-9 Spiked	112. %	88.0 %
Blank	<0.05	100. %
QC Standard (found)	110. %	99.0 %
QC Standard (expected)	100. %	100. %
Repeat SS-9	1.01	89.0 %

- DCBP= Decachlorobiphenyl (surrogate standard for PCB's)
- The PCB's detected in the samples is Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

2-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 31-May-99 15:49

Job: 9953758

Status: Final

Concrete Samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-24	<0.05	92.0 %
CS-25	<0.05	84.0 %
CS-26	1.03	115. %
CS-27	0.12	85.0 %
CS-28	0.75	118. %
CS-29	1.21	114. %
Blank	<0.05	99.0 %
QC Standard (found)	124. %	89.0 %
QC Standard (expected)	100. %	100. %
Repeat CS-24	<0.05	94.0 %

- DCBP: Decachlorobiphenyl (surrogate standard for PCB's).
- The PCBs detected in sample CS-26 is Aroclor 1016.
- The remaining samples contain Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

4-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 2 of 2

Attn: John Fairclough
Project: 98256

Received: 31-May-99 17:09
PO #:

Job: 9953760

Status: Final

Water Samples

Sample Id	PCB's GC/ECD ug/L	DCBP GC/ECD % Recovery
WS-1	6.82	80.0 %
Blank	<0.05	93.0 %
QC Standard (found)	111. %	92.0 %
QC Standard (expected)	100. %	100. %
Repeat WS-1	6.86	80.0 %

- DCBP-Decachlorobiphenyl (Surrogate Standard for PCB's)
- The PCB's detected in the water sample is Aroclor 1016.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

11-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 1

Attn: John Fairclough
Project: 98256

Received: 9-Jun-99 15:00
PO #:

Job: 9954065

Status: Final

Concrete Samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
BH99-1-1	1620.	---
BH99-2-1	2980.	---
Blank	<0.05	109. %
QC Standard (found)	105. %	108. %
QC Standard (expected)	100. %	100. %
Repeat BH99-1-1	1650.	---

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11-Jun-99

PROCTOR & REDFERN
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Page: 2
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Attn: John Fairclough
Project: 98256

Received: 9-Jun-99 15:00
PO #:

Job: 9954065

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
BH99-1-2	0.14	113. %
BH99-2-2	0.17	109. %
BH99-3-1	17.0	---
BH99-4-1	22.2	---
BH99-4-2	7.12	---
BH99-5-1	1.18	101. %
BH99-6-2	24.7	---
BH99-7-1	<0.05	109. %
BH99-8-1	69.8	---
BH99-S-2	4.90	---
Spiked BH99-1-2	120. %	110. %
Blank	<0.05	109. %
QC Standard (found)	105. %	108. %
QC Standard (expected)	100. %	100. %
Repeat BH99-1-2	0.14	115. %

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11-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
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Attn: John Fairclough
Project: 98256

PO #:

Received: 9-Jun-99 15:00

Job: 9954065

Status: Final

- DCBP-Decachlorobiphenyl (Surrogate Standard for PCB's)
- The PCB's detected in the samples is Aroclor 1242.
- No surrogate recoveries were reported for samples requiring dilution.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

16-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

Received: 14-Jun-99 16:41
PO #:

Job: 9954219

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
BH99-1-3	<0.05	92.0 %
BH99-2-4	0.33	101. %
BH99-2-4 spiked	86.0%	91.0 %
Blank	<0.05	102. %
QC Standard (found)	97.0%	94.0 %
QC Standard (expected)	100. %	100. %
Repeat BH99-1-3	<0.05	91.0 %

- DCBP= Decachlorobiphenyl(surrogate standard for PCB's).
- The PCB's detected in the sample BH99-2-4 is Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

21-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 17-Jun-99 16:07

Job: 9954346

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
BH99-8-2	0.68	86.0 %
BH99-8-2 Spiked	99.0%	84.0 %
Blank	<0.05	90.0 %
QC Standard (found)	107. %	84.0 %
QC Standard (expected)	100. %	100. %
Repeat BH88-8-2	0.68	85.0 %

- DCBP=Decachlorobiphenyl(surrogate standard for PCBs).
- The PCBs detected in the sample is Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

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28-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 1

Attn: John Fairclough
Project: 98256

Received: 24-Jun-99 13:40
PO #:

Job: 9954585

Status: Final

Concrete Samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-34	79.9	---
CS-35	20.2	---
CS-36	30.4	---
Blank	<0.05	102. %
QC Standard (found)	107. %	72.0 %
QC Standard (expected)	100. %	100. %
Repeat CS-34	84.1	---

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28-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
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Page: 2
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Set : 2

Attn: John Fairclough
Project: 98256

Received: 24-Jun-99 13:40
PO #:

Job: 9954585

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
SS-32	973.	---
Blank	<0.05	102. %
QC Standard (found)	107. %	72.0 %
QC Standard (expected)	100. %	100. %
Repeat SS-32	972.	---

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28-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
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M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 24-Jun-99 13:40

Job: 9954585

Status: Final

- DCBP=Decachlorobiphenyl(surrogate standard for PCBs).
- No surrogate recoveries were reported for samples requiring dilution.
- The PCBs detected in samples CS-34 and SS-32 is Aroclor 1016.
- The PCBs detected in CS-35 and CS-36 is a mixture of Aroclors 1016 and 1260.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: Suzana Pejović for
.....
Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

7-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
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Attn: John de Vries
Project: 98256

Received: 5-Jul-99 15:29

PO #:

Job: 9954844

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
SS-33	64.7	---
SS-34	10.7	---
SS-36	23.3	---
SS-37	1.24	88.0 %
SS-38	<5.00	---
SS-39	<5.00	---
Blank	<0.05	97.0 %
QC Standard (found)	117. %	95.0 %
QC Standard (expected)	100. %	100. %
Repeat SS-33	66.2	---

- DCBP= Decachlorobiphenyl (surrogate standard for PCB's)
- The PCB's detected in the samples is Aroclor 1242.
- No surrogate recovery was reported for samples requiring dilution.
- Samples SS-38 and SS-39 were diluted by a factor of 100 due to the presence of interfering material. The M.D.L. was corrected accordingly.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....
Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

8-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 1
Set : 1

Attn: John De Vries
Project: EO98256

Received: 6-Jul-99 13:54
PO #:

Job: 9954887

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-37	0.45	122. %
CS-38	0.14	121. %
CS-39	<0.05	123. %
SS-40	0.10	112. %
SS-41	0.54	75.0 %
SS-42	<0.05	123. %
SS-43	0.33	118. %
SS-44	<0.05	122. %
SS-45	<0.05	128. %
SS-46	<0.05	124. %
CS-38 Spiked	95.0%	126. %
Blank	<0.05	130. %
QC Standard (found)	117. %	108. %
QC Standard (expected)	100. %	100. %
Repeat CS-37	0.49	130. %

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8-Jul-99

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Page: 2
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Attn: John De Vries
Project: EO98256

Received: 6-Jul-99 13:54
PO #:

Job: 9954887

Status: Final

- DCBP=Decachlorobiphenyl(surrogate standard for PCBs).
- The PCB's detected in the samples is Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

12-Jul-99

PROCTOR & REDFERN LIMITED
80 King St., 2nd Floor
St. Catharines, ON
L2R 7G1

Attn: John De Vries
Project:

Received: 8-Jul-99 18:13
PO #: EO 98342

Job: 9954988

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
SS-47	5.78	---
Blank	<0.05	107. %
QC Standard (found)	117. %	116. %
QC Standard (expected)	100. %	100. %
Repeat	5.99	---

- DCBP= Decachlorobiphenyl (surrogate standard for PCB's)
- The PCB's detected in the sample is Aroclor 1242.
- No surrogate recovery was reported due to sample dilution.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

15-Jul-99

PROCTOR & REDFERN LIMITED
80 King St., 2nd Floor
St. Catharines, ON
L2R 7G1

Page: 1
Copy: 1 of 2

Attn: John De Vries
Project:

Received: 13-Jul-99 18:41
PO #: EO 08256

Job: 9955119

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-48	18.3	---
Blank	<0.05	88.0 %
QC Standard (found)	86.0%	91.0 %
QC Standard (expected)	100. %	100. %
Repeat CS-48	18.7	---

- DCBP-Decachlorobiphenyl (Surrogate Standard for PCB's)
- The PCB's detected in the sample is Aroclor 1242.
- No surrogate recoveries were reported for samples requiring dilution.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....
Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

16-Jul-99

PROCTOR & REDFERN LIMITED
80 King St., 2nd Floor
St. Catharines, ON
L2R 7G1

Page: 1
Copy: 2 of 2

Attn: John De Vries
Project:

Received: 14-Jul-99 13:48
PO #: EO 98256

Job: 9955136

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
SS-50	19.9	---
Blank	<0.05	85.0 %
QC Standard (found)	89.0%	87.0 %
QC Standard (expected)	100. %	100. %
Repeat SS-50	20.1	---

- DCBP-Decachlorobiphenyl (Surrogate Standard for PCB's)
- The PCB's detected in the sample is Aroclor 1242.
- No surrogate recoveries are reported for samples requiring dilution.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

16-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John De Vries/John Fairclough
Project:

Received: 14-Jul-99 16:06
PO #: EO98256

Job: 9955156

Status: Final

Rock samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-43	46.5	---
CS-47	440.	---
CS-52	0.95	---
Blank	<0.05	85.0 %
QC Standard (found)	89.0%	87.0 %
QC Standard (expected)	100. %	100. %
Repeat CS-43	46.7	---

- DCBP= Decachlorobiphenyl (surrogate standard for PCB's)
- The PCB's detected in the samples is Aroclor 1242.
- Surrogate recoveries were not reported for samples requiring dilution.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

20-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 1

Attn: John De Vries/John Fairclough Received: 14-Jul-99 16:07
Project: PO #: EO98256

Job: 9955157 Status: Final

Rock samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-40	0.16	86.0 %
CS-42	0.10	86.0 %
Blank	<0.05	100. %
QC Standard (found)	112. %	104. %
QC Standard (expected)	100. %	100. %
Repeat CS-40	0.15	88.0 %

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20-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John De Vries/John Fairclough Received: 14-Jul-99 16:07
Project: PO #: EO98256

Job: 9955157 Status: Final

Concrete Samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-41	0.65	92.0 %
CS-44	0.23	85.0 %
CS-45	0.09	85.0 %
CS-46	0.19	87.0 %
CS-49	0.16	89.0 %
CS-50	188.	---
CS-51	48.9	---
Blank	<0.05	100. %
QC Standard (found)	112. %	104. %
QC Standard (expected)	100. %	100. %

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20-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John De Vries/John Fairclough Received: 14-Jul-99 16:07
Project: PO #: EO98256

Job: 9955157 Status: Final

- DCBP = Decachlorobiphenyl (surrogate standard)
- The PCB's detected in the samples is Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....M. Riskallah.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

20-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 1

Attn: John De Vries
Project:

Received: 16-Jul-99 15:59
PO #: 98256

Job: 9955281

Status: Final

Rock samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-53	0.32	86.0 %
Blank	<0.05	94.0 %
QC Standard (found)	89.0%	91.0 %
QC Standard (expected)	100. %	100. %
Repeat CS-53	0.32	86.0 %

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20-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 2
Copy: 1 of 2
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Attn: John De Vries
Project:

Received: 16-Jul-99 15:59
PO #: 98256

Job: 9955281

Status: Final

Concrete Samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-54	<0.05	87.0 %
Blank	<0.05	94.0 %
QC Standard (found)	89.0%	91.0 %
QC Standard (expected)	100. %	100. %

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20-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John De Vries
Project:

Received: 16-Jul-99 15:59
PO #: 98256

Job: 9955281

Status: Final

- DCBP = Decachlorobiphenyl (surrogate standard)
- The PCB's detected in sample CS-53 is Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

28-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
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Attn: John Fairclough
Project: 98256

Received: 22-Jul-99 16:01
PO #:

Job: 9955459

Status: Final

Soil samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
SS-48	143.	---
SS-49	148.	---
CS-55	418.	---
CS-58	<0.050	84.0 %
CS-60	<0.050	81.0 %
Blank	<0.050	82.0 %
QC Standard (found)	100. %	98.0 %
QC Standard (expected)	100. %	100. %
Repeat SS-48	139.	---

PSC
PHILIP SERVICES

28-Jul-99

PROCTOR & REDFERN
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M3C 3K3

Page: 2
Copy: 2 of 2
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Attn: John Fairclough
Project: 98256

Received: 22-Jul-99 16:01

PO #:

Job: 9955459

Status: Final

Concrete Samples

Sample Id	PCB's GC/ECD ug/g	DCBP GC/ECD % Recovery
CS-56	<0.05	78.0 %
CS-57	<0.05	79.0 %
CS-59	0.23	85.0 %
CS-61	3.33	81.0 %
CS-62	2.74	80.0 %
CS-63	0.15	82.0 %
CS-64	0.45	86.0 %
CS-65	3.08	79.0 %
CS-66	8.47	85.0 %
CS-67	9.58	88.0 %
CS-56 Spiked	115. %	81.0 %
Blank	<0.05	95.0 %
QC Standard (found)	120. %	96.0 %
QC Standard (expected)	100. %	100. %
Repeat CS-56	<0.05	79.0 %

PHILIP SERVICES

28-Jul-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

Received: 22-Jul-99 16:01
PO #:

Job: 9955459 Status: Final

- DCBP = Decachlorobiphenyl (surrogate standard for PCBs)
- Surrogate standard recoveries are not reported for samples requiring dilutions.
- The PCBs detected in all samples is mostly Aroclor 1242.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

Philip Analytical Services Corporation
Certificate of Analysis

	Client ID:		SS11	SS11	SS12	SS13	CS16
	Lab No.:		007960 99	007960 99	007961 99	007962 99	007963 99
	Date Sampled:		99/05/21	99/05/21	99/05/21	99/05/21	99/05/21
Component	**MDL**	**Units**		Duplicate			
Moisture	0.5	(%)	3.5	-	9.3	11	1.5
PCB							
Arochlor 1242	0.1	mg/kg	22	24	560	<2.5	20
Arochlor 1248	0.1	"	<2.5	<2.5	<50	<2.5	<2.5
Arochlor 1254	0.1	"	<2.5	<2.5	<50	<2.5	<2.5
Arochlor 1260	0.1	"	<2.5	<2.5	<50	<2.5	<2.5
PCB (Total)	0.1	"	22	24	560	<2.5	20
Surrogate Recoveries		%					
Pentachlorobiphenyl	56-122	"	NA	NA	NA	NA	NA
Trichlorobiphenyl	58-124	"	NA	NA	NA	NA	NA

CHIMISTE
Éric Fortin
92-149
QUÉBEC

Dominique Jean
Organic Supervisor
lr

CHIMISTE
Annick Tremblay
89-052
QUÉBEC

Approved by
Annick Tremblay, Chemist
# of file=007960sn

Philip Analytical Services Corporation
Certificate of Analysis

	Client ID:		CS17	CS18	CS19	CS20	CS21
	Lab No.:		007964 99	007965 99	007966 99	007967 99	007968 99
	Date Sampled:		99/05/21	99/05/21	99/05/21	99/05/21	99/05/21
Component	**MDL**	**Units**					
Moisture	0.5	(%)	1.5	1.5	2.7	1.5	1.5
PCB							
Arochlor 1242	0.1	mg/kg	22	7.5	26	110	28
Arochlor 1248	0.1	"	<2.5	<2.5	<2.5	<10	<2.5
Arochlor 1254	0.1	"	<2.5	<2.5	<2.5	<10	<2.5
Arochlor 1260	0.1	"	<2.5	<2.5	<2.5	<10	<2.5
PCB (Total)	0.1	"	22	7.5	26	110	28
Surrogate Recoveries		%					
Pentachlorobiphenyl	56-122	"	NA	NA	NA	NA	NA
Trichlorobiphenyl	58-124	"	NA	NA	NA	NA	NA

CHIMISTE
Éric Fortin
92-149
QUÉBEC

Dominique Jean
Organic Supervisor
lr

CHIMISTE
Annick Tremblay
89-052
QUÉBEC

Approved by
Annick Tremblay, Chemist
# of file=007980sn

Philip Analytical Services Corporation
Certificate of Analysis

	Client ID:		SS15
	Lab No.:		007969 99
	Date Sampled:		99/05/21
Component	**MDL**	**Units**	
Moisture	0.5	(%)	8.6
PCB			
Arochlor 1242	0.1	mg/kg	<2.5
Arochlor 1248	0.1	"	<2.5
Arochlor 1254	0.1	"	<2.5
Arochlor 1260	0.1	"	<2.5
PCB (Total)	0.1	"	<2.5
Surrogate Recoveries		%	
Pentachlorobiphenyl	56-122	"	NA
Trichlorobiphenyl	58-124	"	NA

CHIMISTE Éric Fortin 92-149 QUÉBEC

Dominique Jean
Organic Supervisor
lr

CHIMISTE Annick Tremblay 89-052 QUÉBEC

Approved by
Annick Tremblay, Chemist
# of file=007960sn

Philip Analytical Services Corporation
Laboratory Method Blanks

Component	MDL	Units		
Batch Code:			**0525EG01**	**RM**
Arochlor 1242	0.1	mg/kg	<	83%
Arochlor 1248	0.1	"	<	NA
Arochlor 1254	0.1	"	<	NA
Arochlor 1260	0.1	"	<	NA
PCB (Total)	0.1	"	<	83%
Surrogate Recoveries		%		
Pentachlorobiphenyl	56-122	"	89	90
Trichlorobiphenyl	58-124	"	91	89

CHIMISTE
Éric Fortin
92-149
QUÉBEC

Dominique Jean
Organic Supervisor
ir

CHIMISTE
Annick Tremblay
89-052
QUÉBEC

Approved by
Annick Tremblay, Chemist
# of file=007960sn

Philip Analytical Services Corporation
Summary of Analysis Prep. Dates

Batch Code:	**0525EG01**
Arochlor 1242 etc.	007960 99
	007961 99
	007962 99
	007963 99
	007964 99
	007965 99
	007966 99
	007967 99
	007968 99
	007969 99
Date Analyzed:	99/05/25
Date Prepared:	99/05/25

Batch Code:	**0525VG01**
Moisture etc.	007960 99
	007961 99
	007962 99
	007963 99
	007964 99
	007965 99
	007966 99
	007967 99
	007968 99
	007969 99
Date Analyzed:	99/05/26
Date Prepared:	99/05/25

CHIMISTE
Éric Fortin
92-149
QUÉBEC

Dominique Jean
Organic Supervisor
lr

CHIMISTE
Annick Tremblay
89-052
QUÉBEC

Approved by
Annick Tremblay, Chemist
# of file=007960sn

PHILIP SERVICES CORP

Certificate of Analysis

CLIENT INFORMATION

Attention:	Nick Boulton
Client Name:	PHILIP ANALYTICAL SERVICES
Project:	9953510
Project Desc:	TRACKING #SC-99-0428
Sampled by:	PHILIP ANALYTICAL SERVICES
Address:	5735 McAdam Road Mississauga (Ontario) L4Z 1N9
Fax Number:	905-890-8575
Phone Number:	905-890-8566

LABORATORY INFORMATION

Contact:	Annick Tremblay
Project:	Q990619
Date Received:	99/05/25
Date Reported:	99/05/26
Date Revised:	99/05/26
Revision Number:	1
Certificate No.:	9E0409
No. of pages:	7

NOTES:

'-' = not analysed '<' = less than Method Detection Limit (MDL) 'NA' = no data available

LOQ can by determined for all analytes by multiplying the appropriate MDL X 3.33

Solids data is based on dry weight except for biota analyses.

Organic analyses are not corrected for extraction recovery standards except for isotope dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by Philip Analytical Services Corporation are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of MEF or EPA methodologies. See the appendix at the end of this report for the list of the methods used.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at Philip Analytical Services Corporation for a period of six weeks from receipt of data or as per contract. This report may not be reproduced except in its entirety, without the written authorization of Philip Analytical Services Corporation.

COMMENTS:

CHIMISTE Annick Tremblay 89-052 QUÉBEC

Verified by: Annick Tremblay
Project Manager

# of file: 007960sn

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:29-Jun-1999

Attention: Mr. Nick Boulton	Purchase Order:
Client Reference: 9954486	Date Received: 28-Jun-1999
Work Order: 59905	Sample Type: Solids

Sample #	Test	Result	Units	RDL	Comment
99-B016625	Sample Description: BH99-9-1/BH99-9-2 Comp.		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	< 0.5	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016626	Sample Description: BH99-13-1		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	1.0	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016627	Sample Description: BH99-10-1		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	< 0.5	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016628	Sample Description: BH99-10-2		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	< 0.5	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016629	Sample Description: BH99-11-1		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	< 0.5	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		

EXPLANATION OF CODES:
RDL Reporting Detection Limit

Philip Analytical Services Corporation
921 Leathorne Street, London, Ontario, Canada N5Z 3M7 (519) 686-7558 1-800-268-7396 FAX (519) 686-6374

R.R.

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:29-Jun-1999

Attention: Mr. Nick Boulton
Client Reference: 9954486
Work Order: 59905

Purchase Order:
Date Received: 28-Jun-1999
Sample Type: Solids

Sample #	Test	Result	Units	RDL	Comment
99-B016630	Sample Description: BH99-12-1		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	0.94	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016631	Sample Description: BH99-12-2		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	< 0.5	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016632	Sample Description: SS-14		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	0.53	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016633	Sample Description: SS-15		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	< 0.5	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016634	Sample Description: SS-16		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	700	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		

EXPLANATION OF CODES:
RDL Reporting Detection Limit

Philip Analytical Services Corporation
921 Leathorne Street, London, Ontario, Canada N5Z 3M7 (519) 686-7558 1-800-268-7396 FAX (519) 686-6374

CERTIFICATE OF ANALYSIS

Client:(1390) Philip Analytical Services (McAdam), MISSISSAUGA Reported:29-Jun-1999

Attention: Mr. Nick Boulton
Client Reference: 9954486
Work Order: 59905

Purchase Order:
Date Received: 28-Jun-1999
Sample Type: Solids

Sample #	Test	Result	Units	RDL	Comment
99-B016635	Sample Description: SS-17		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	170	mg/kg	0.005	Aroclor 1242
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		
99-B016636	Sample Description: BH99-13-2		Date & Time Sampled: 22-Jun-1999		
	Total PCB (Solid)	< 0.5	mg/kg	0.005	
	SURROGATE STANDARD RECOVERIES				
	Decachlorobiphenyl	Unavailable	%		

EXPLANATION OF CODES
RDL Reporting Detection Limit

APPENDIX B

PHILIP SERVICES

4-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 1

Attn: John Fairclough
Project: 98256

PO #:

Received: 26-Apr-99 16:46

Job: 9952710

Status: Final

Soil samples

Sample Id	TPH-Gas+Diesel Calc. ug/g	TPH-Gas P&T GC/MS ug/g	TPH-Diesel GC/FID ug/g
SS-1	<10	<10	<10
Blank	<10	<10	<10
QC Standard (found)	---	---	76%
QC Standard (expected)	---	---	100%
Repeat SS-1	<10	<10	<10

PHILIP SERVICES

4-May-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 26-Apr-99 16:46

Job: 9952710

Status: Final

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on the internal standard method of calibration,using Purge&Trap/GC/MS.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

1-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 1

Attn: John Fairclough
Project: 98256

PO #:

Received: 21-May-99 15:52

Job: 9953510

Status: Final

Concrete Samples

Sample Id	TPH-Heavy Oils SM 5520B m ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g
CS22	8800	1500	<10	1500
CS23	1700	510	<10	510
Blank	<100	<10	<10	<10
QC Standard (found)	100%	---	86%	88%
QC Standard (expected)	100%	---	100%	100%
Repeat CS22	8700	1500	<10	1500

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.
- The TPH-Diesel detected in both samples is mainly due to an oil contamination ranging from C-16 to C-36 rather than a true diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

1-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
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Page: 1
Copy: 1 of 1

Attn: John Fairclough
Project: 98256

PO #:

Received: 21-May-99 15:52

Job: 9953510

Status: Final

Concrete Samples

Sample Id	TPH-Heavy Oils SM 5520B m ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g
CS22	8800	1500	<10	1500
CS23	1700	510	<10	510
Blank	<100	<10	<10	<10
QC Standard (found)	100%	---	86%	88%
QC Standard (expected)	100%	---	100%	100%
Repeat CS22	8700	1500	<10	1500

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.
- The TPH-Diesel detected in both samples is mainly due to an oil contamination ranging from C-16 to C-36 rather than a true diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

10-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
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Attn: John Fairclough
Project: 98256

Received: 3-Jun-99 13:22
PO #:

Job: 9953865

Status: Final

Concrete Samples

Sample Id	TPH-Heavy Oils SM 5520B m ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g
CS-31	1700	360	<10	360
CS-32	630	200	<10	200
CS-33	850	170	<10	170
Blank	<100	<10	<10	<10
QC Standard (found)	100%	---	108%	103%
QC Standard (expected)	100%	---	100%	100%
Repeat CS-31	1700	350	<10	350

PHILIP SERVICES

10-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

Received: 3-Jun-99 13:22
PO #:

Job: 9953865

Status: Final

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.
- The TPH-Diesel detected in all samples is mainly due to an oil contamination ranging from C-20 to C-34 rather than a true diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....
Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

11-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
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Page: 1
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Attn: John Fairclough
Project: 98256

Received: 7-Jun-99 11:40
PO #:

Job: 9953973

Status: Final

Soil samples

Sample Id	TPH-Heavy Oils SM 5520B m ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g
ES-2	520	410	<10	410
ES-3	270	78	<10	78
ES-4	550	460	<10	460
Blank	<100	<10	<10	<10
QC Standard (found)	88%	---	68%	104%
QC Standard (expected)	100%	---	100%	100%
Repeat ES-2	510	360	<10	360

PHILIP SERVICES

11-Jun-99

PROCTOR & REDFERN
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Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 7-Jun-99 11:40

Job: 9953973

Status: Final

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.
- The TPH-Diesel detected in all samples is mainly due to an oil contamination ranging from C-16 to C-36 rather than a true diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

14-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 1 of 2
Set : 1

Attn: John Fairclough
Project: 98256

Received: 8-Jun-99 15:57
PO #:

Job: 9954031

Status: Final

Soil samples

Sample Id	TPH-Heavy Oils SM 5520B m ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g
ES-5	520	69	<10	69
ES-6	250	27	<10	27
Blank	<100	<10	<10	<10
QC Standard (found)	84%	---	75%	75%
QC Standard (expected)	100%	---	100%	100%
Repeat ES-5	530	65	<10	65

PHILIP SERVICES

14-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 8-Jun-99 15:57

Job: 9954031

Status: Final

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.
- The TPH-Diesel detected in the samples is mainly due to an oil contamination ranging from C-18 to C-34 rather than a true diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

15-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
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Attn: John Fairclough
Project: 98256

PO #:

Received: 11-Jun-99 12:34

Job: 9954152

Status: Final

Soil samples

Sample Id	TPH-Heavy Oils SM 5520B m ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g
ES-8	95000	3200	<10	3200
ES-9	11000	7500	38	7500
Blank	<100	<10	<10	<10
QC Standard (found)	100%	---	113%	117%
QC Standard (expected)	100%	---	100%	100%
Repeat ES-8	95000	3400	<10	3400

PHILIP SERVICES

15-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 11-Jun-99 12:34

Job: 9954152

Status: Final

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.
- The TPH-Diesel detected in the samples is mainly due to an oil contamination ranging from C-14 to C-34 rather than a true diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....M. Riskallah.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

16-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 2 of 2
Set : 1

Attn: John Fairclough
Project: 98256

Received: 11-Jun-99 12:36
PO #:

Job: 9954153

Status: Final

Soil samples

Sample Id	TPH-Heavy Oils SM 5520B mod. ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g
ES-7	780	350	<10	350
Blank	<100	<10	<10	<10
QC Standard (found)	100%	---	103%	92%
QC Standard (expected)	100%	---	100%	100%
Repeat ES-7	850	350	<10	350

PHILIP SERVICES

16-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 11-Jun-99 12:36

Job: 9954153

Status: Final

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.
- The TPH-Diesel detected in sample ES-7 is mainly due to an oil contamination ranging from C-16 to C-36 rather than a true diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....M. Riskallah.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

18-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 16-Jun-99 10:53

Job: 9954266

Status: Final

Soil samples

Sample Id	TPH-Heavy Oils SM 5520B m ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g
ES-11	1900	1800	<10	1800
ES-11A	8600	4000	<10	4000
ES-10	200	<10	<10	<10
ES-12	1600	2900	96	2800
ES-13A	2800	640	<10	640
ES-13	<100	<10	<10	<10
Blank	<100	<10	<10	<10
QC Standard (found)	100%	---	92%	87%
QC Standard (expected)	100%	---	100%	100%
Repeat ES-11	1900	1700	<10	1700

PHILIP SERVICES

18-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 16-Jun-99 10:53

Job: 9954266

Status: Final

- The TPH-Diesel detected in samples ES-11, ES-11A and ES-13A is mainly due to an oil contamination ranging from C-16 to C-32 rather than a true diesel.
- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah
.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

22-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 17-Jun-99 16:47

Job: 9954350

Status: Final

Soil samples

Sample Id	TPH-Heavy Oils SM 5520B mod. ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g	Benzene HS-GC/PID ug/g	Toluene HS-GC/PID ug/g
ES-14	440	37	<10	37	<0.02	<0.02
ES-14A	7500	3200	<10	3200	<0.02	<0.02
ES-15	130	<10	<10	<10	<0.02	<0.02
ES-16	<100	<10	<10	<10	<0.02	<0.02
ES-16A	670	1300	<10	1300	<0.02	<0.02
Blank	<100	<10	<10	<10	<0.02	<0.02
QC Standard (found)	100%	---	99%	88%	101. %	110. %
QC Standard (expected)	100%	---	100%	100%	100. %	100. %
Repeat ES-14	450	35	<10	35	<0.02	<0.02

PHILIP SERVICES

22-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 17-Jun-99 16:47

Job: 9954350

Status: Final

Soil samples

Sample Id	Ethylbenzene HS-GC/PID ug/g	m-&p-Xylenes HS-GC/PID ug/g	o-Xylene HS-GC/PID ug/g
ES-14	<0.02	<0.04	<0.02
ES-14A	<0.02	<0.04	<0.02
ES-15	<0.02	<0.04	<0.02
ES-16	<0.02	<0.04	<0.02
ES-16A	<0.02	<0.04	<0.02
Blank	<0.02	<0.04	<0.02
QC Standard (found)	119. %	121. %	125. %
QC Standard (expected)	100. %	100. %	100. %
Repeat ES-14	<0.02	<0.04	<0.02

PHILIP SERVICES

22-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 17-Jun-99 16:47

Job: 9954350

Status: Final

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.
- The TPH-Diesel detected in sample ES-14 and ES-14A is mainly due to an oil contamination ranging from C-14 to C-30 rather than a true diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: .....M. Riskallah.....

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

25-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Page: 1
Copy: 2 of 2
Set : 2

Attn: John Fairclough
Project: 98256

PO #:

Received: 23-Jun-99 16:49

Job: 9954533

Status: Final

Soil samples

Sample Id	TPH-Heavy Oils SM 5520B mod. ug/g	TPH-Gas+Diesel Calc. ug/g	TPH-Gas HS-GC/FID ug/g	TPH-Diesel GC/FID ug/g
ES-17	580	100	<10	100
ES-17A	1600	420	<10	420
Blank	<100	<10	<10	<10
QC Standard (found)	100%	---	116%	87%
QC Standard (expected)	100%	---	100%	100%
Repeat ES-17	550	86	<10	86

PHILIP SERVICES

25-Jun-99

PROCTOR & REDFERN
45 Green Belt Drive
Don Mills, ON
M3C 3K3

Attn: John Fairclough
Project: 98256

PO #:

Received: 23-Jun-99 16:49

Job: 9954533

Status: Final

- TPH-Gas represents total purgeable hydrocarbons (less than C10) based on gasoline calibration, using Headspace/GC/FID.
- TPH-Diesel represents total extractable hydrocarbons (C10-C24) based on diesel calibration, using GC/FID.
- TPH-Gas+Diesel is the summation of TPH-Gas and TPH-Diesel.
- The TPH-Diesel detected in the samples is mainly due to an oil contamination ranging from C-16 to C-32 rather than a true diesel.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analyses done unless otherwise agreed upon by contractual arrangement. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangements.

Job approved by:

Signed: M. Riskallah

Medhat Riskallah, Ph.D., C.Chem.
Manager, Gas Chromatography Section

PHILIP SERVICES

Client: Proctor & Redfern
Project Reference: 98256
Work Order Number: 9954266A
Matrix: Soil

Polynuclear Aromatic Hydrocarbons (PAH's)

Units: Micrograms/gram (µg/g) dry weight

Date: 22-Jun-99

Compound	**EQL µg/g**	ES-11	**EQL µg/g**	ES-11A DF=5	**EQL µg/g**	ES-12
Naphthalene	0.05	nd	0.25	nd	0.05	0.19
2-Methylnaphthalene	0.05	nd	0.25	nd	0.05	0.13
1-Methylnaphthalene	0.05	nd	0.25	nd	0.05	0.62
Acenaphthylene	0.05	nd	0.25	nd	0.05	0.07
Acenaphthene	0.05	nd	0.25	nd	0.05	0.16
Fluorene	0.05	nd	0.25	nd	0.05	0.26
Phenanthrene	0.05	nd	0.25	nd	0.05	0.66
Anthracene	0.05	nd	0.25	nd	0.05	0.11
Fluoranthene	0.05	nd	0.25	nd	0.05	0.05
Pyrene	0.05	0.06	0.25	*0.22	0.05	0.14
Benzo(a)anthracene	0.05	nd	0.25	*0.12	0.05	nd
Chrysene	0.05	0.33	0.25	0.39	0.05	nd
Benzo(b)fluoranthene	0.05	nd	0.25	nd	0.05	nd
Benzo(k)fluoranthene	0.05	nd	0.25	nd	0.05	nd
Benzo(a)pyrene	0.05	nd	0.25	nd	0.05	nd
Indeno(1,2,3-cd)pyrene	0.05	nd	0.25	nd	0.05	nd
Dibenzo(a,h)anthracene	0.05	nd	0.25	nd	0.05	nd
Benzo(ghi)perylene	0.05	nd	0.25	nd	0.05	nd
Surrogate Standard Recoveries (Control Limits)						
Acenaphthene-d10 (25-125%)		82%		77%		72%
Anthracene-d10 (30-120%)		77%		76%		78%
Benzo(a)pyrene-d12 (35-120%)		82%		77%		87%

PHILIP SERVICES

Client: Proctor & Redfern
Project Reference: 98256
Work Order Number: 9954266A
Matrix: Soil

Polynuclear Aromatic Hydrocarbons (PAH's)

Units: Micrograms/gram (µg/g) dry weight

Date: 22-Jun-99

		Method Blank			Spiked Method Blank			
Compound	**EQL µg/g**	**Result**	**Upper Limit**	**Accept**	**% Recovery**	**Lower Limit**	**Upper Limit**	**Accept**
Naphthalene	0.05	nd	0.05	yes	85	35	105	yes
2-Methylnaphthalene	0.05	nd	0.05	yes	86	30	100	yes
1-Methylnaphthalene	0.05	nd	0.05	yes	88	30	105	yes
Acenaphthylene	0.05	nd	0.05	yes	90	35	110	yes
Acenaphthene	0.05	nd	0.05	yes	89	35	105	yes
Fluorene	0.05	nd	0.05	yes	88	40	110	yes
Phenanthrene	0.05	nd	0.05	yes	95	50	110	yes
Anthracene	0.05	nd	0.05	yes	100	50	110	yes
Fluoranthene	0.05	nd	0.05	yes	104	50	120	yes
Pyrene	0.05	nd	0.05	yes	106	50	120	yes
Benzo(a)anthracene	0.05	nd	0.05	yes	104	55	120	yes
Chrysene	0.05	nd	0.05	yes	104	55	125	yes
Benzo(b)fluoranthene	0.05	nd	0.05	yes	113	50	125	yes
Benzo(k)fluoranthene	0.05	nd	0.05	yes	114	50	115	yes
Benzo(a)pyrene	0.05	nd	0.05	yes	115	50	120	yes
Indeno(1,2,3-cd)pyrene	0.05	nd	0.05	yes	110	50	125	yes
Dibenzo(a,h)anthracene	0.05	nd	0.05	yes	115	50	125	yes
Benzo(ghi)perylene	0.05	nd	0.05	yes	109	50	125	yes
Surrogate Standard Recoveries (Control Limits)								
Acenaphthene-d10		59%			70	25	125	yes
Anthracene-d10		65%			72	30	120	yes
Benzo(a)pyrene-d12		77%			89	35	120	yes

PHILIP SERVICES

Client: Proctor & Redfern
Project Reference: 98256
Work Order Number: 9954266A
Matrix: Soil

Polynuclear Aromatic Hydrocarbons (PAH's)

Date: 22-Jun-99

Legend: EQL = Estimated Quantitation Limit
nd = Not detected above EQL
DF = Dilution Factor
* = Detected below EQL but passed compound identification criteria

Date received: June 16, 1999
Date extracted: June 18, 1999
Date analysed: June 18 & 21, 1999

ANALYTICAL METHOD:

The soil samples (10 grams wet weight) were mixed with sodium sulfate and extracted with a 1:1 mixture of dichloromethane/acetone. The extracts were cleaned up using alumina column chromatography. Analysis was performed by gas chromatography/mass spectrometry using U.S. EPA Method 8270B (modified).

REPORT DISCUSSION:

Sample ES-11A was run at a dilution factor due to elevated levels of nontarget compounds present. Excessive levels of nontarget compounds may interfere with the proper quantitation of the sample and may also cause contamination of the analytical equipment if run undiluted. The quantitation limits for this sample are higher than the EQL's for undiluted samples as indicated above. The amounts reported have been corrected for the dilution factors used.

Note: Estimated quantitation limit is the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions.

NOTE: All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analysis done. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangement.

JOB APPROVED BY:

Kristin Agis

Kristin Agis, B.Sc.
Chemist

PSC
PHILIP SERVICES

Client: Proctor & Redfern
Project Reference: 98256
Work Order Number: 9954350B
Matrix: Soil

Polynuclear Aromatic Hydrocarbons (PAH's)

Units: Micrograms/gram (µg/g) dry weight

Date: 24-Jun-99

Compound	**EQL µg/g**	ES-14A DF=4	**EQL µg/g**	ES-15	ES-16A
Naphthalene	0.20	nd	0.05	nd	nd
2-Methylnaphthalene	0.20	nd	0.05	nd	nd
1-Methylnaphthalene	0.20	nd	0.05	nd	nd
Acenaphthylene	0.20	nd	0.05	nd	nd
Acenaphthene	0.20	*0.17	0.05	nd	0.10
Fluorene	0.20	*0.13	0.05	nd	0.16
Phenanthrene	0.20	*0.15	0.05	nd	nd
Anthracene	0.20	*0.06	0.05	nd	nd
Fluoranthene	0.20	*0.07	0.05	nd	0.07
Pyrene	0.20	0.34	0.05	nd	0.27
Benzo(a)anthracene	0.20	nd	0.05	nd	nd
Chrysene	0.20	0.65	0.05	nd	0.11
Benzo(b)fluoranthene	0.20	nd	0.05	nd	nd
Benzo(k)fluoranthene	0.20	nd	0.05	nd	nd
Benzo(a)pyrene	0.20	nd	0.05	nd	nd
Indeno(1,2,3-cd)pyrene	0.20	nd	0.05	nd	nd
Dibenzo(a,h)anthracene	0.20	nd	0.05	nd	nd
Benzo(ghi)perylene	0.20	nd	0.05	nd	nd
Surrogate Standard Recoveries (Control Limits)					
Acenaphthene-d10 (25-125%)		83%		80%	74%
Anthracene-d10 (30-120%)		79%		80%	73%
Benzo(a)pyrene-d12 (35-120%)		82%		92%	80%

PHILIP SERVICES

Client: Proctor & Redfern
Project Reference: 98256
Work Order Number: 9954350B
Matrix: Soil

Polynuclear Aromatic Hydrocarbons (PAH's)

Units: Micrograms/gram (µg/g) dry weight

Date: 24-Jun-99

		Method Blank			Spiked Method Blank			
Compound	**EQL µg/g**	**Result**	**Upper Limit**	**Accept**	**% Recovery**	**Lower Limit**	**Upper Limit**	**Accept**
Naphthalene	0.05	nd	0.05	yes	90	35	105	yes
2-Methylnaphthalene	0.05	nd	0.05	yes	85	30	100	yes
1-Methylnaphthalene	0.05	nd	0.05	yes	87	30	105	yes
Acenaphthylene	0.05	nd	0.05	yes	89	35	110	yes
Acenaphthene	0.05	nd	0.05	yes	87	35	105	yes
Fluorene	0.05	nd	0.05	yes	87	40	110	yes
Phenanthrene	0.05	nd	0.05	yes	92	50	110	yes
Anthracene	0.05	nd	0.05	yes	95	50	110	yes
Fluoranthene	0.05	nd	0.05	yes	97	50	120	yes
Pyrene	0.05	nd	0.05	yes	97	50	120	yes
Benzo(a)anthracene	0.05	nd	0.05	yes	93	55	120	yes
Chrysene	0.05	nd	0.05	yes	93	55	125	yes
Benzo(b)fluoranthene	0.05	nd	0.05	yes	105	50	125	yes
Benzo(k)fluoranthene	0.05	nd	0.05	yes	106	50	115	yes
Benzo(a)pyrene	0.05	nd	0.05	yes	103	50	120	yes
Indeno(1,2,3-cd)pyrene	0.05	nd	0.05	yes	81	50	125	yes
Dibenzo(a,h)anthracene	0.05	nd	0.05	yes	88	50	125	yes
Benzo(ghi)perylene	0.05	nd	0.05	yes	75	50	125	yes
Surrogate Standard Recoveries (Control Limits)								
Acenaphthene-d10		75%			69%	25	125	yes
Anthracene-d10		75%			69%	30	120	yes
Benzo(a)pyrene-d12		84%			82%	35	120	yes

PHILIP SERVICES

Client: Proctor & Redfern
Project Reference: 98256
Work Order Number: 9954350B
Matrix: Soil

Polynuclear Aromatic Hydrocarbons (PAH's)

Date: 24-Jun-99

Legend: EQL = Estimated Quantitation Limit
nd = Not detected above EQL
DF = Dilution Factor

Date received: June 17, 1999
Date extracted: June 21, 1999
Date analysed: June 21 & 22, 1999

ANALYTICAL METHOD:

The soil samples (10 grams wet weight) were mixed with sodium sulfate and extracted with a 1:1 mixture of dichloromethane/acetone. The extracts were cleaned up using alumina column chromatography. Analysis was performed by gas chromatography/mass spectrometry using U.S. EPA Method 8270B (modified).

REPORT DISCUSSION:

Sample ES-14A was run at a dilution factor due to elevated levels of hydrocarbon background present which would cause contamination of the equipment if run undiluted. The quantitation limits for this sample are higher than the EQL's for undiluted samples as indicated above. The amounts reported have been corrected for the dilution factor that was used.

Note: Estimated quantitation limit is the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions.

NOTE: All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analysis done. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangement.

JOB APPROVED BY:

Tasha Sutherland-Hill
Chemist

PHILIP SERVICES

Client: Proctor & Redfern
Project Reference: 98256
Work Order Number: 9954538B
Matrix: Soil

Polynuclear Aromatic Hydrocarbons (PAH's)

Units: Micrograms/gram (µg/g) dry weight

Date: 29-Jun-99

Compound	**EQL µg/g**	ES-17A
Naphthalene	0.05	nd
2-Methylnaphthalene	0.05	nd
1-Methylnaphthalene	0.05	nd
Acenaphthylene	0.05	nd
Acenaphthene	0.05	nd
Fluorene	0.05	nd
Phenanthrene	0.05	nd
Anthracene	0.05	nd
Fluoranthene	0.05	nd
Pyrene	0.05	nd
Benzo(a)anthracene	0.05	nd
Chrysene	0.05	nd
Benzo(b)fluoranthene	0.05	nd
Benzo(k)fluoranthene	0.05	nd
Benzo(a)pyrene	0.05	nd
Indeno(1,2,3-cd)pyrene	0.05	nd
Dibenzo(a,h)anthracene	0.05	nd
Benzo(ghi)perylene	0.05	nd
Surrogate Standard Recoveries (Control Limits)		
Acenaphthene-d10 (25-125%)		58%
Anthracene-d10 (30-120%)		54%
Benzo(a)pyrene-d12 (35-120%)		62%

PHILIP SERVICES

Client: Proctor & Redfern
Project Reference: 98256
Work Order Number: 9954538B
Matrix: Soil

Polynuclear Aromatic Hydrocarbons (PAH's)

Units: Micrograms/gram (µg/g) dry weight

Date: 29-Jun-99

		Method Blank			Spiked Method Blank			
Compound	**EQL µg/g**	**Result**	**Upper Limit**	**Accept**	**% Recovery**	**Lower Limit**	**Upper Limit**	**Accept**
Naphthalene	0.05	nd	0.05	yes	73	35	105	yes
2-Methylnaphthalene	0.05	nd	0.05	yes	73	30	100	yes
1-Methylnaphthalene	0.05	nd	0.05	yes	75	30	105	yes
Acenaphthylene	0.05	nd	0.05	yes	85	35	110	yes
Acenaphthene	0.05	nd	0.05	yes	80	35	105	yes
Fluorene	0.05	nd	0.05	yes	86	40	110	yes
Phenanthrene	0.05	nd	0.05	yes	95	50	110	yes
Anthracene	0.05	nd	0.05	yes	99	50	110	yes
Fluoranthene	0.05	nd	0.05	yes	100	50	120	yes
Pyrene	0.05	nd	0.05	yes	101	50	120	yes
Benzo(a)anthracene	0.05	nd	0.05	yes	95	55	120	yes
Chrysene	0.05	nd	0.05	yes	100	55	125	yes
Benzo(b)fluoranthene	0.05	nd	0.05	yes	107	50	125	yes
Benzo(k)fluoranthene	0.05	nd	0.05	yes	111	50	115	yes
Benzo(a)pyrene	0.05	nd	0.05	yes	106	50	120	yes
Indeno(1,2,3-cd)pyrene	0.05	nd	0.05	yes	94	50	125	yes
Dibenzo(a,h)anthracene	0.05	nd	0.05	yes	105	50	125	yes
Benzo(ghi)perylene	0.05	nd	0.05	yes	93	50	125	yes
Surrogate Standard Recoveries (Control Limits)								
Acenaphthene-d10		N/A			47%	25	125	yes
Anthracene-d10		N/A			52%	30	120	yes
Benzo(a)pyrene-d12		N/A			63%	35	120	yes

PHILIP SERVICES

Client: Proctor & Redfern
Project Reference: 98256
Work Order Number: 9954538B
Matrix: Soil

Polynuclear Aromatic Hydrocarbons (PAH's)

Date: 29-Jun-99

Legend: EQL = Estimated Quantitation Limit
nd = Not detected above EQL
N/A = Compound was not included in the quality control spiking mixture

Date received: June 23, 1999
Date extracted: June 28, 1999
Date analysed: June 29, 1999

ANALYTICAL METHOD:

The soil sample (10 grams wet weight) was mixed with sodium sulfate and extracted with a 1:1 mixture of dichloromethane/acetone. The extract was cleaned up using alumina column chromatography. Analysis was performed by gas chromatography/mass spectrometry using U.S. EPA Method 8270B (modified).

Note: Estimated quantitation limit is the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions.

NOTE: All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Philip Analytical is limited in liability to the actual cost of the pertinent analysis done. Your samples will be retained by PASC for a period of 30 days following reporting or as per specific contractual arrangement.

JOB APPROVED BY:

for Tasha Sutherland-Hill
Chemist

APPENDIX C

AGRA
ENGINEERING GLOBAL SOLUTIONS

AGRA Earth & Environmental Limited
440 Phillip Street
Unit 8
Waterloo, Ontario
Canada N2L 5R9
Tel (519) 885-6220
Fax (519) 885-3490

12 July 1999
Project No. TK99102

Proctor & Redfern Limited
45 Green Belt Drive
Don Mills, Ontario
M3C 3K3

Dear Sir:

Re: Field Density Test Results
Imico Restoration
Guelph

Please find enclosed the result of field density tests performed at the above noted project on June 16, 1999 on Granular 'B' material placed and compacted as noted on the field density test result sheets.

If you have any questions concerning the results, please do not hesitate to contact our office.

Yours truly,
AGRA Earth & Environmental Limited

Eric Y. Chung, P. Eng.
Kitchener-Waterloo Branch Manager

AGRA
ENGINEERING GLOBAL SOLUTIONS

FIELD DENSITY TEST RESULTS

AGRA Earth &
Environmental Limited
440 Phillip Street
Waterloo Ontario
N2L 5R9

REF. NO.	: TK99102	DATE	: June 16 1999
PROJECT	: Imico	CLIENT	: Proctor & Redfern
LOCATION	: Guelph	CONTRACTOR	: Phillip

PROCTOR DATA

LAB. NO.	SOIL CLASSIFICATION	PROCTOR TYPE	MAXIMUM DRY DENSITY (kg/m³)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)
6984	Granular 'B'	Standard	2141	133.7	5.5

TEST METHOD ○ CONSTANT DRY WEIGHT ◉ NUCLEAR

TOTAL NUMBER OF PAGES 1

TEST NO.	DATE	LOCATION	DEPTH/ ELEVATION	MOISTURE CONTENT %	MEASURED COMPACTION %	SPECIFIED COMPACTION %	SOIL TYPE/ REMARKS
1	June 16/99	Building C16 Area	6' Below Finish Grade	3.3	**98.0**	98	GRANULAR 'B' PASSED
2	"	"	"	3.2	**98.9**	"	"
3	"	"	"	3.3	**98.0**	"	"
4	"	"	10' Below Finish Grade	3.2	**98.5**	"	"

AFC - Advised Further Compaction

NOTE: TEST RESULTS APPLY ONLY AT THE LOCATION AND THE ELEVATION AT WHICH THE TEST WAS TAKEN

AGRA
Earth & Environmental

AGRA Earth &
Environmental Limited
440 Phillip Street
Waterloo Ontario
N2L 5R9

GRAIN SIZE DISTRIBUTION

REFERENCE NO. : TK9910 2
PROJECT : Imico
LOCATION : Guelph
CONTRACTOR :

DATE : April 26.99
CLIENT : P & R

SAMPLE DATA

LOCATION OF SAMPLE : Site
SAMPLED BY : B.E.

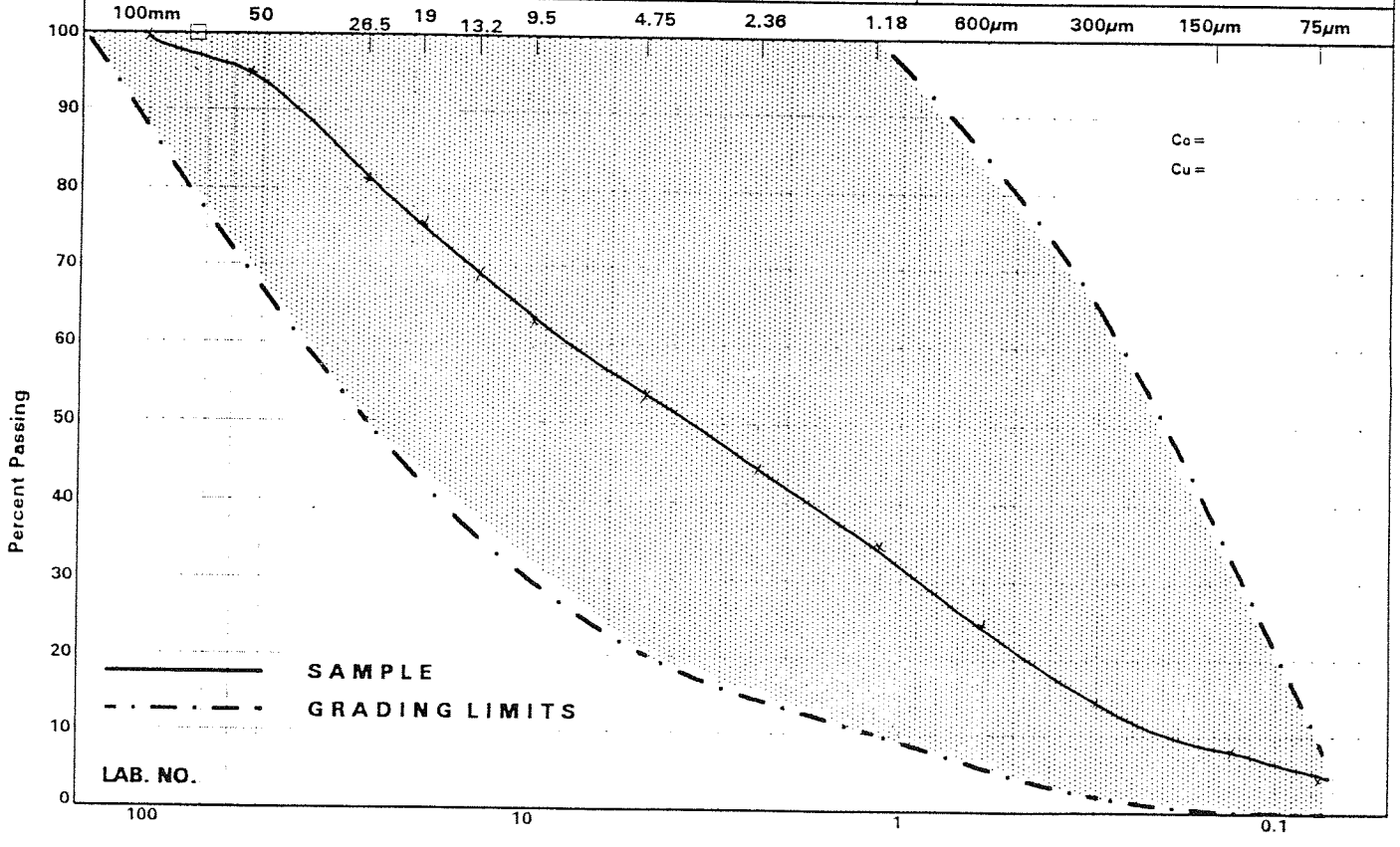
DATE SAMPLED : April 28. 99

GRANULAR B - TYPE I
(OPSS Form 1010 - 1993)

SIEVE	%PASSING	SPEC
150mm	100.0	100
26.5mm	82	50-100
4.75mm	55	20-100
1.18mm	34	10-100
300μm	14	2-65
75μm	5	0-8

SAMPLE NO. 6832

COMMENTS: Passed



ENCL. NO. 1

AGRA
Earth & Environmental

AGRA Earth &
Environmental Limited
440 Phillip Street
Waterloo Ontario
N2L 5R9

GRAIN SIZE DISTRIBUTION

REFERENCE NO. : TC99102
PROJECT : Inico
LOCATION : Guelph
CONTRACTOR :

DATE : June 11, 99
CLIENT : P&R

SAMPLE DATA

LOCATION OF SAMPLE : Site
SAMPLED BY : B.E.

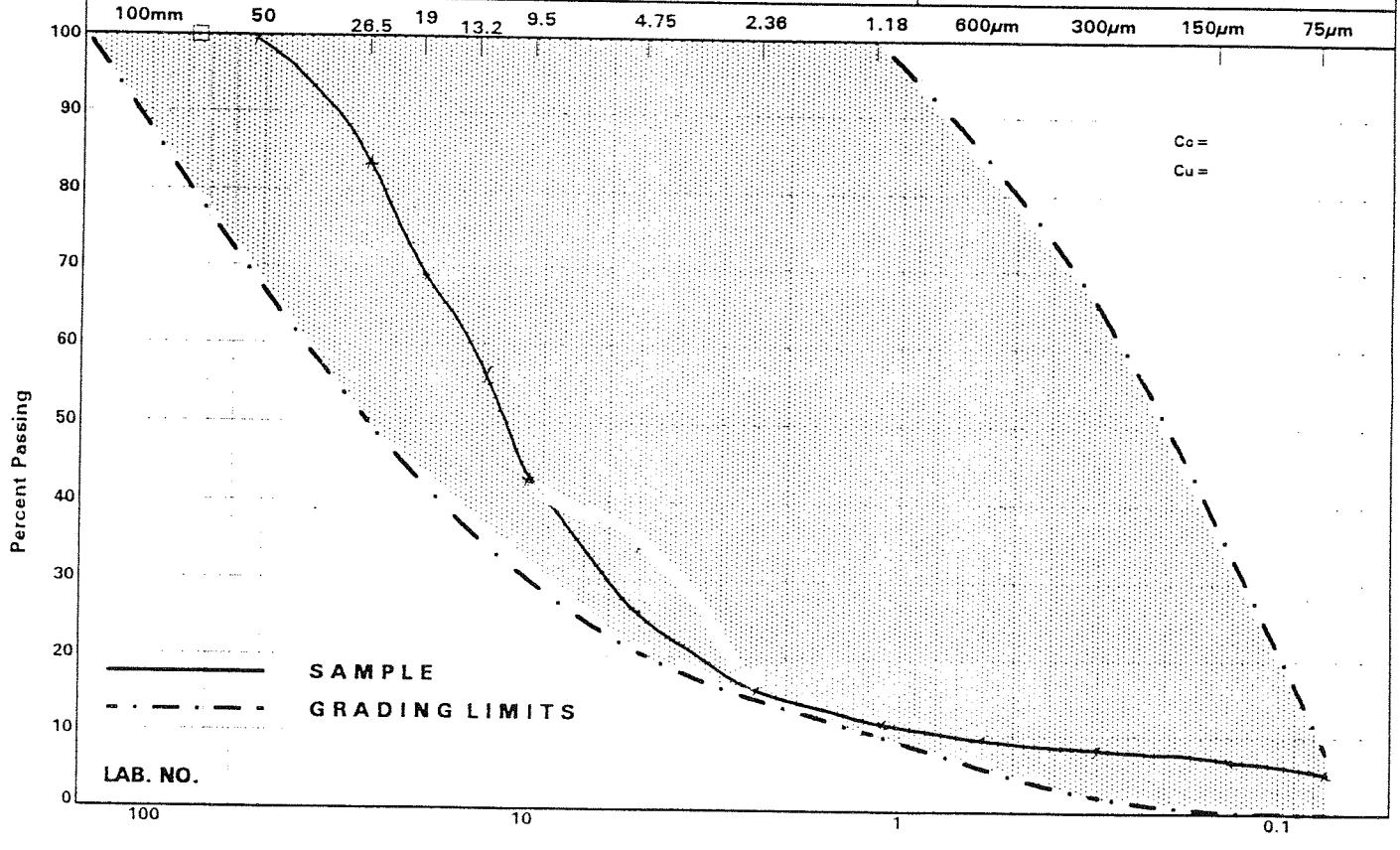
DATE SAMPLED : June 8, 99

GRANULAR B - TYPE I
(OPSS Form 1010 - 1993)

SIEVE	%PASSING	SPEC
150mm	100.0	100
26.5mm		50-100
4.75mm		20-100
1.18mm		10-100
300μm		2-65
75μm		0-8

SAMPLE NO. 6984

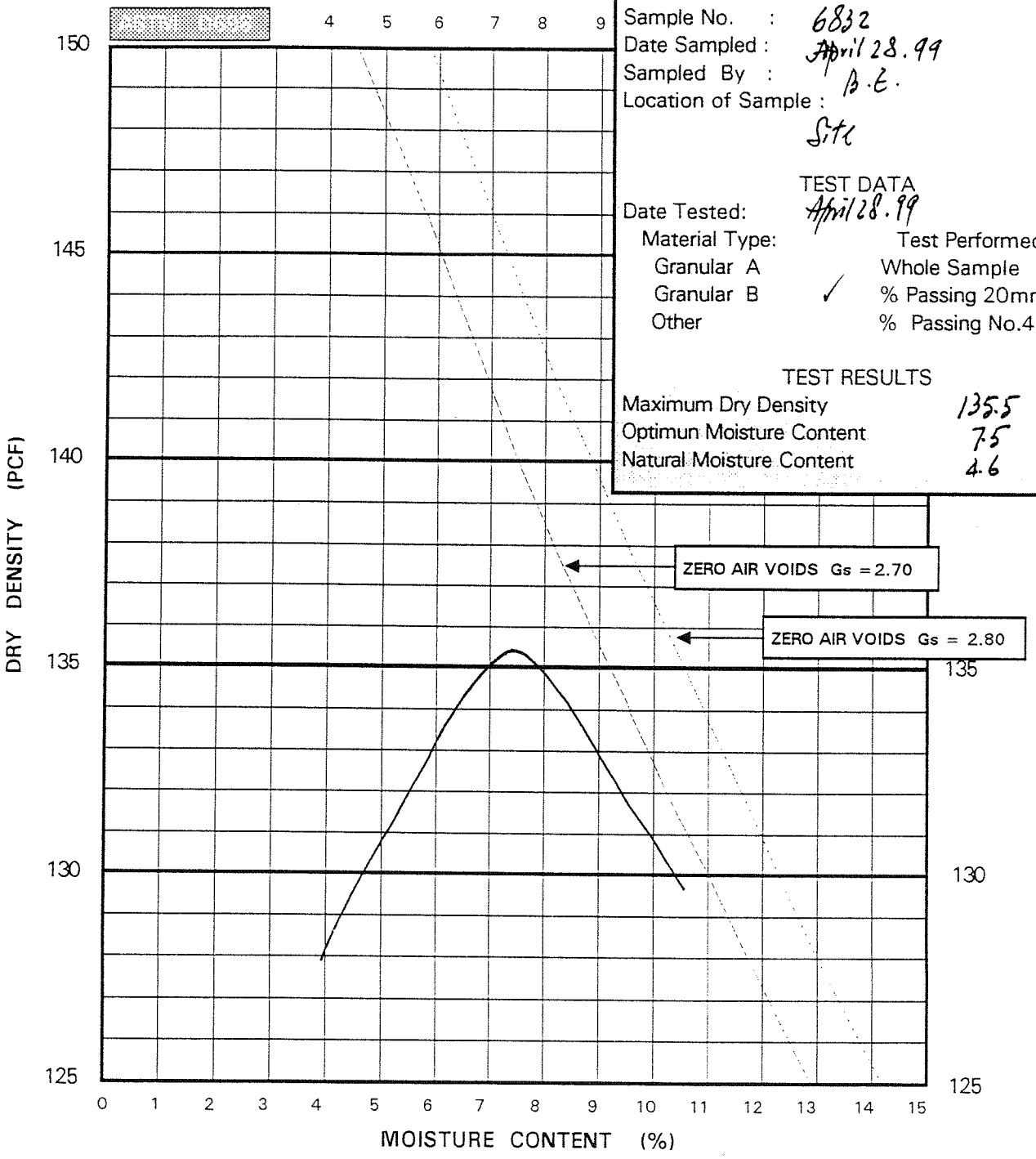
COMMENTS:



ENCL. NO. 2

Enclosure No. 3

STANDARD PROCTOR TEST RESULTS



SAMPLE DATA

Sample No. : 6832
Date Sampled : April 28.99
Sampled By : B.E.
Location of Sample : Site

TEST DATA

Date Tested: April 28.99

Material Type:		Test Performed on:	
Granular A		Whole Sample	
Granular B	✓	% Passing 20mm	✓
Other		% Passing No.4	

TEST RESULTS

Maximum Dry Density	135.5	PCF
Optimun Moisture Content	7.5	%
Natural Moisture Content	4.6	%

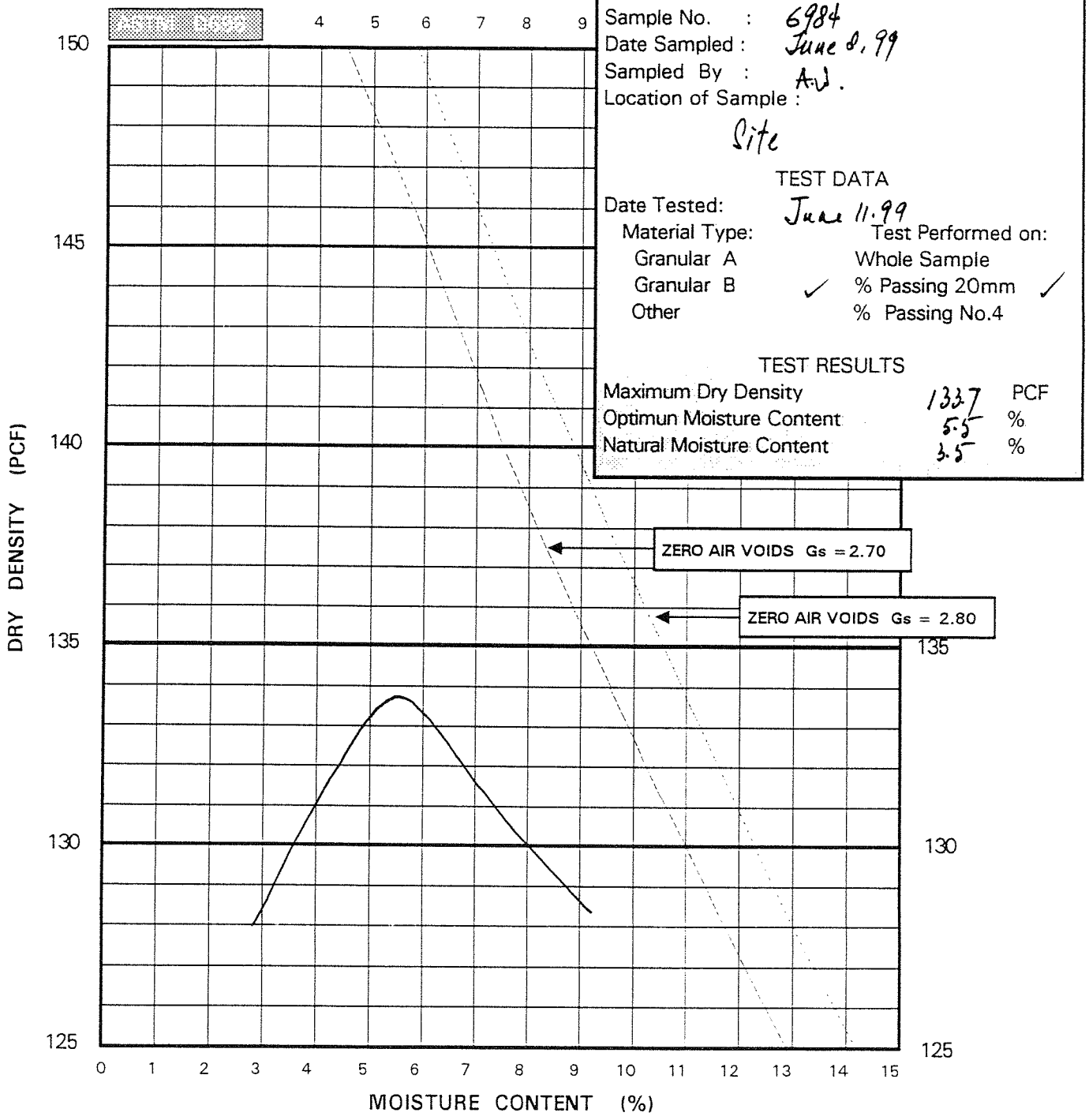
REFERENCE NO.	TK99102
PROJECT	Imico
LOCATION	Guelph
CLIENT	P & R

COMMENTS

AGRA
Earth & Environmental

Enclosure No. 4

STANDARD PROCTOR TEST RESULTS



SAMPLE DATA

Sample No. : 6984
Date Sampled : June 8, 99
Sampled By : A.J.
Location of Sample : Site

TEST DATA

Date Tested: June 11.99

Material Type:		Test Performed on:	
Granular A		Whole Sample	
Granular B	✓	% Passing 20mm	✓
Other		% Passing No.4	

TEST RESULTS

Maximum Dry Density	133.7	PCF
Optimun Moisture Content	5.5	%
Natural Moisture Content	3.5	%

REFERENCE NO.	TK99102	COMMENTS
PROJECT	Imico	
LOCATION	Guelph	AGRA Earth & Environmental
CLIENT	P&R	