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*Baker Street Parking Lot  
The City of Guelph, Ontario*

*Phase I Environmental  
Site Assessment*

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*Prepared for:  
The City of Guelph  
March 2001  
Project 01-110*

*Kewen Environmental Limited  
9 Bayberry Street, Stouffville ON L4A 7Z1  
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## **1. Introduction**

Kewen Environmental Limited was retained by The City of Guelph to conduct a Phase I environmental site assessment of the Baker Street Parking Lot in downtown Guelph (Figures 1 and 2).

The assessment was conducted in accordance with CSA Standard Z768-94 (April 1994) and included -

- a) records review
- b) site visit
- c) an interview with the City
- d) evaluation and reporting of information.

The assessment was conducted to assess whether actual or potential contaminants might be present on-site and might need to be considered in future redevelopment plans for the site. No additional tasks or special enhancements were included. No assessment of compliance with environmental regulations was conducted. The following assessment documents site conditions on March 7, 2001 and provides overall conclusions concerning environmental contamination.

## **2. Records Review**

The records reviews included -

- a) a 1999 lot plan survey prepared by BSR&D Ontario Land Surveyors
- b) an electronic land title search by Teraview
- c) IAO fire insurance records (1907, 1946, 1960)
- d) various background documents from the City files
- e) historical maps at the City of Guelph Library
- f) environmental database search by Southam Inc's EcoLog ERIS for a radius of 0.35 km around the property including -
  - Ont. Waste Generators Summary (Reg. 347)
  - Ont. Underground Storage Tanks
  - Ont. Certificates of Approval
  - Ont. Compliance and Convictions
  - Occurrence Reporting Information System (ORIS)
  - Ontario Pesticide Register
  - Anderson's Waste Disposal Sites (Ont)
  - Scotts Manufacturing Directories (Ont)
  - Ont. Water Well Information System

## **3. Site Visit and Interview**

A site inspection was conducted on March 7, 2001 by Mr. Thom Kewen. Prior to the inspection, Mr. Kewen met with Mr. T. Hearn, Assistant Director of Works to discuss

background information. A walkover of the parking lot was conducted after the interview. A series of photographs documenting site conditions and surrounding neighbourhood are included in Appendix A.

#### **4. Findings**

##### **4.1 Site Description and Surroundings**

The Baker Street Parking Lot is a triangular shaped piece of land approximately 0.8 ha in size. It is located in the downtown core of Guelph and is bounded by Baker Street to the west, Chapel Lane to the south and an unnamed service lane to the northeast.

The lot was originally designated as the "Burying Grounds", Registered Plan 8, Canada Company Survey. The current legal Property Identification Number (PIN) of the lot is 71287-0038 with a small block known as 71287-0058 (Appendix B). The latter block was previously owned by the Board of Light and Heat Commissioners.

The main entrance and cashier station are located mid way along Baker Street. Patrons may also enter near the southeast corner and mid way along the northeast perimeter. The lot presently includes 240 parking spaces and is surrounded by a steel guard rail fence. The site is covered with asphalt and surface drainage is directed to several storm water catch basins. At the time of the site inspection, the parking lot surface was in generally good condition with some surface cracks and typical staining from car parking.

There are several commercial establishments on the west side of Baker Street. The Knox Presbyterian Church, the Chalmers United Church and several commercial stores back onto Chapel Lane but front onto Quebec Street. The unnamed service lane to the east of the parking lot provides rear access to a Canada Postal Service Office, a theater, a bank and numerous stores which front onto Wyndham Street North. There was private parking and numerous disposal bins along the back of these establishments.

##### **4.2 Site History**

During the early years of Guelph, the site was a public burying ground. Internment was no longer permitted after 1853 and the cemetery and bodies were eventually moved to the Union Cemetery located near Woolwich and Woodlawn Roads. For some time afterwards, the former burying grounds were surrounded by a stone wall and used as a public park.

Some time later, Baker Street was created along the west side of these grounds and commercial establishments were developed along both sides of the street. Fire insurance maps (Appendix C) indicate that the north-central portion of the site was occupied by the Steele's Wire Spring Ltd from at least 1907 to the early 1960s. The main building was a two storey brick building. The manufacturing activities including "japanning" and heat treating were conducted in the northeast corner of the building. The machine shop was also located in this area. There were various outside sheds to store wood, coke and oil, especially in the earlier years of plant activities.

Over this period, the southwest corner of the site was occupied by the Guelph Curling Club which was commonly referred to as the Victoria Rink. The first story of this building was apparently brick. The upper storey was made of wood and cladding.

From at least 1946 to the early 1960s, the intervening grounds were used for bowling greens. A small block of land near the southeast corner of the Steele's lands was used for some time by the Board of Heat and Light Commissioners and Guelph Hydro. The 1960 fire insurance map shows transformers located on this block.

During the 1960s, the buildings on-site were demolished and the site was developed into its present use. Historical land use around the site has been primarily commercial. There was a variety of small manufacturers, wood working, auto servicing, a bakery and a creamery along the west side of Baker Street. Some additional commercial redevelopment has occurred since the 1960s including two high rise apartment buildings along Baker Street

The City is considering redevelopment of the Baker Street Parking Lot to include multistorey building(s) and expanded parking. Three development scenarios have been suggested by the City Committee (Appendix D). Parking may include subsurface or above ground facilities. The development must comply by-law regulations relevant to Central Business Zones CBD.1 or CBD.2.

### ***4.3 Current Site Conditions***

#### ***Soils and Drainage***

Regional geology mapping suggests that the site and surrounding neighbourhood was originally underlain by fine-grained glacial soils known as till (Ontario Geological Survey, 1980). More granular materials may exist closer to the flanks of the nearby Speed River. Based on previous land use, the site is now highly disturbed and likely contains considerable amounts of fill.

The depth to the water table and the overall direction of shallow groundwater flow are not documented. Shallow groundwater may flow towards the nearby Speed River (about 100 to 200 m to the northeast of the site) but might also be locally affected by underground utilities or sewers. There are no municipal water wells in the immediate area.

#### ***Site Activities***

A cashier station is located at the main entrance and consists of a small brick building with tar and stone roof. The site is a public parking lot and is restricted from large commercial vehicles. Storage or handling of fuels or wastes is not permitted. There are no record in MOE files of any spills or adverse conditions having occurred on-site (Appendix E).

The nature and quality of soils and groundwater on-site is not known. It is possible that some poor quality soil may exist from former commercial operations on-site and within the small area used by the Board of Heat and Light Commissioners and Guelph Hydro. Waste generator records for this area indicate that Guelph Hydro operated an electric system on-site which generated alkaline metal wastes and oil skimmings.

### Adjacent Sites

The government record search by EcoLog ERIS did not identify any records pertaining to the Baker Street parking lot (Appendix E). It identified 50 records within 350 m of the parking lot. These records refer to commercial activities along Yarmouth, Baker, Quebec and Wyndham Streets and mainly include waste generator information. The commercial wastes principally include print shop solvents, photo processing liquids, dry cleaning solvents, waste oils and medical lab wastes. There are an additional 556 records from 350 m to 2 km away from the site but these are not relevant to the present assessment. Surrounding land uses are not likely to cause environmental effects on the church lot.

## **5. Conclusions**

Based on the information obtained during this Phase I site assessment, it is concluded that -

- a) The Baker Street Parking Lot was constructed during the 1960s. It was used as a public burying ground until the mid 1800s. Following relocation of the cemetery, it was used as a public park and portions were then used by the Steele's Wire Spring Ltd, the Victoria Curling Club, the Board of Heat and Light Commissioners and Guelph Hydro.
- b) The site is now highly disturbed and likely contains considerable amounts of fill.
- c) There are no record in MOE files of any spills or adverse conditions having occurred on-site. The nature and quality of soils and groundwater on-site is not known. It is possible that some poor quality soil may exist from former commercial operations on-site and within the small area used by the Board of Heat and Light Commissioners and Guelph Hydro.

Based on this Phase I environmental site assessment, it is likely that some contamination likely exists on-site from previous land uses. It would be prudent to conduct subsurface sampling to visually inspect this fill and to conduct basic chemical analysis of this material. This investigation could be jointly conducted with any preliminary engineering work that may be done on site.

## **6. Limitations**

This Phase I environmental site assessment was prepared by T. Kewen of Kewen Environmental Limited. His qualifications to conduct this environmental assessment are outlined in Appendix F.

This Phase I environmental site assessment was prepared for the exclusive use of The City of Guelph and is intended to identify any actual or potential contamination associated with the current Baker Street Parking Lot. Any use which a third party makes of this report, or any reliance on or decisions to be made on it, are the sole responsibility of the third party. Kewen Environmental Limited disclaims any responsibility of consequential financial effects on transaction property values, or requirements for followup actions or costs.

The report is based on information obtained during the course of the present environmental site assessment. It is based on the condition of the property at the time of the site visit on

March 7, 2001 supplemented by other information referenced in this report. No soil, water, liquid, gas, product or chemical sampling or analytical testing at or in the vicinity of the subject property was conducted.

In evaluating the property, Kewen Environmental Limited has relied in good faith upon information provided by The City of Guelph and EcoLog ERIS. Kewen Environmental Limited has assumed that the information provided is factual and accurate. Kewen Environmental Limited accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or fraudulent acts of persons interviewed or contacted.

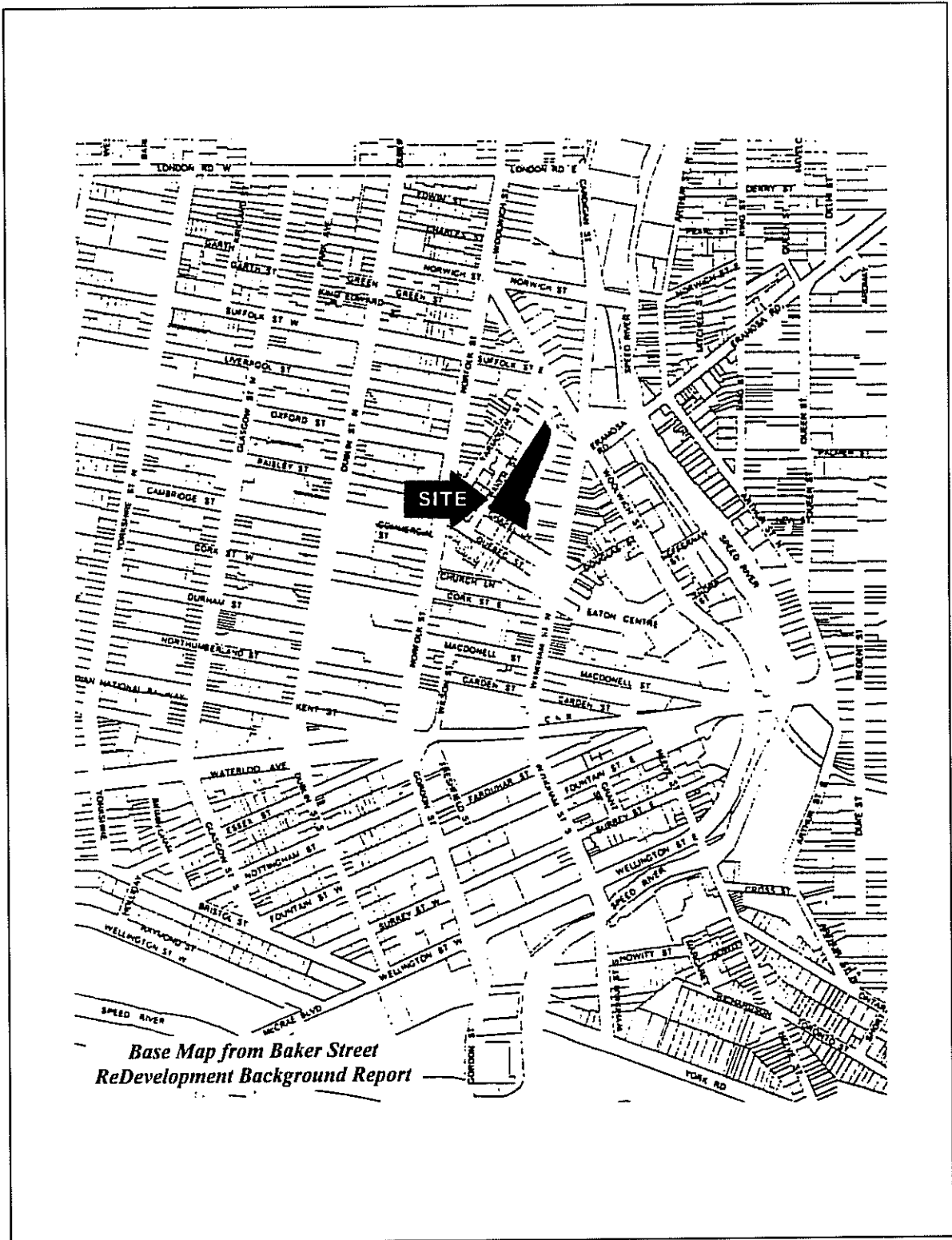
Respectfully Submitted,  
KEWEN ENVIRONMENTAL LIMITED



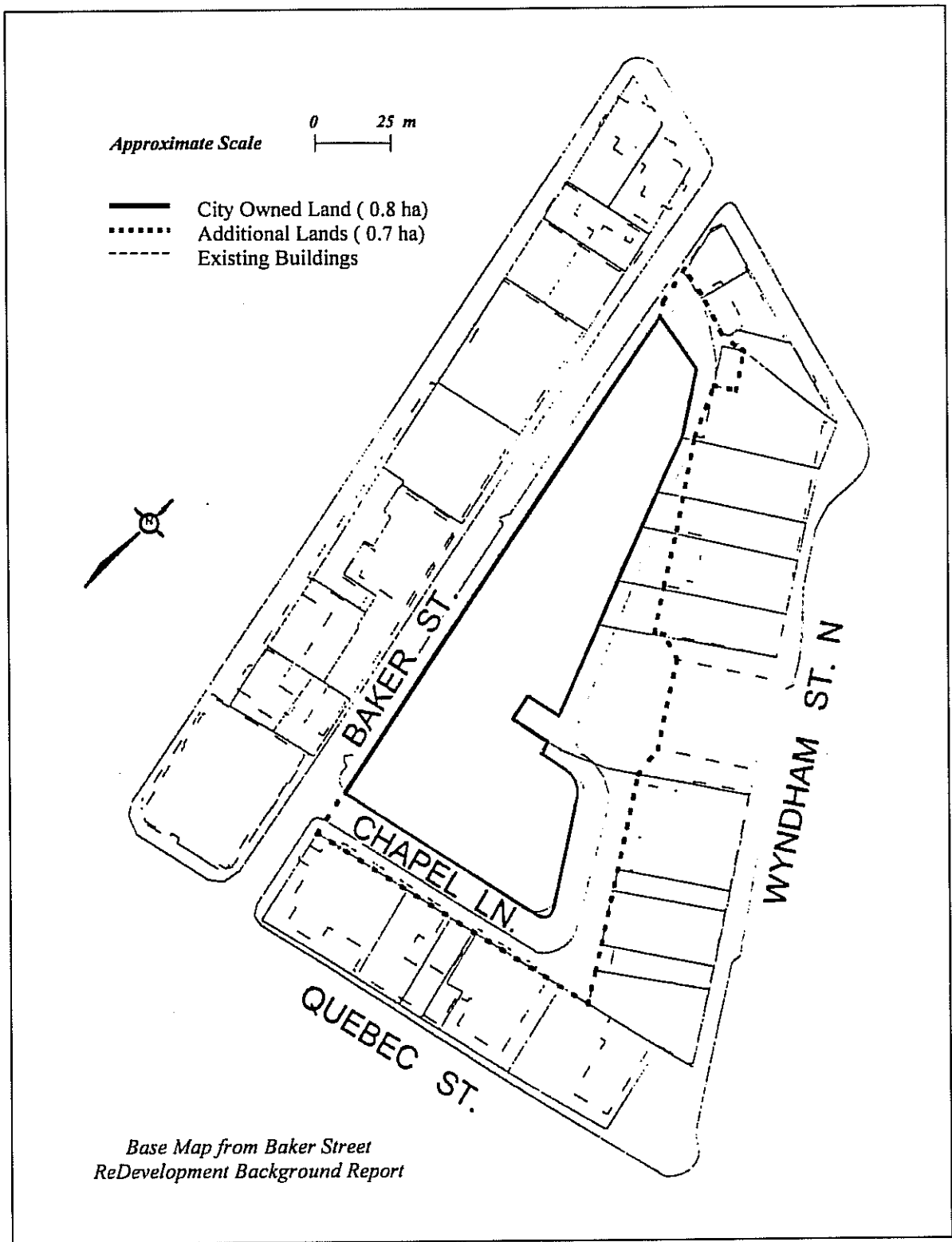
Thom Kewen, M.Sc.

## Figures





**Figure 1**      **Location Map of Baker Street Parking Lot**



**Figure 2 Site Map of Baker Street Parking Lot**

## **Appendix A**

Photographs From Site Inspection  
(Kewen Environmental Limited)



Photo 1 Main Entrance to Baker Street Parking Lot (looking southeast)



Photo 2      Panoramic View from North End of Parking Lot  
(looking south with Knox and Chalmers Church in distance)

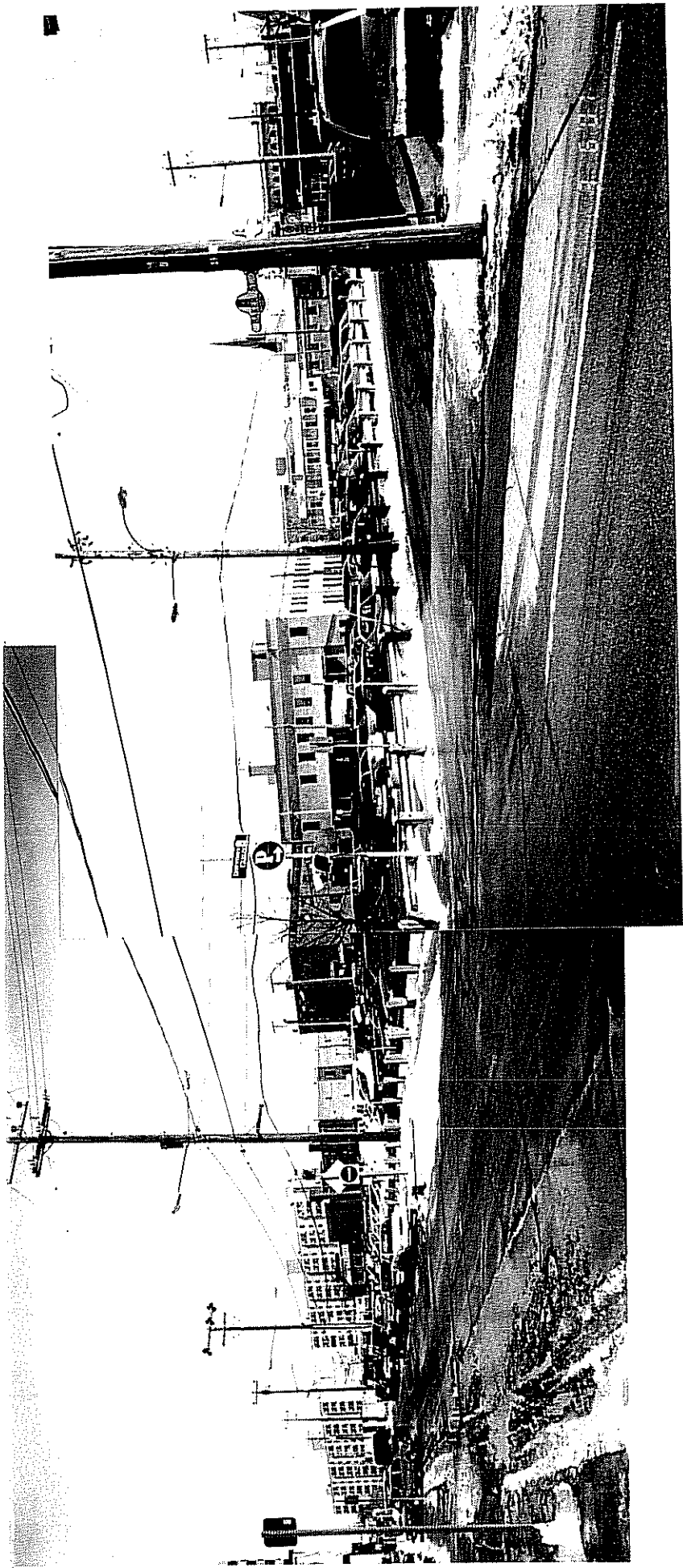


Photo 3      Panoramic View from Southwest Corner of Parking Lot  
(looking north to east with Post Office Building in mid-view)

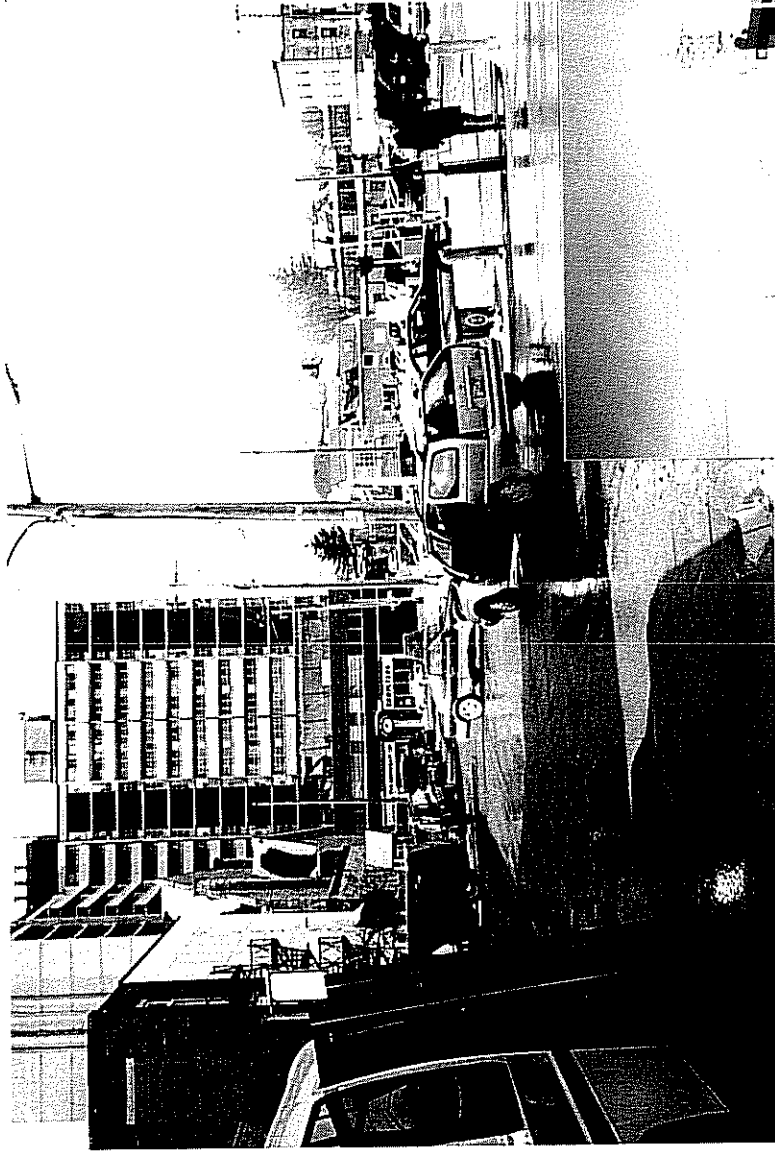


Photo 4  
View from Southeast Corner  
of Parking Lot (looking west)

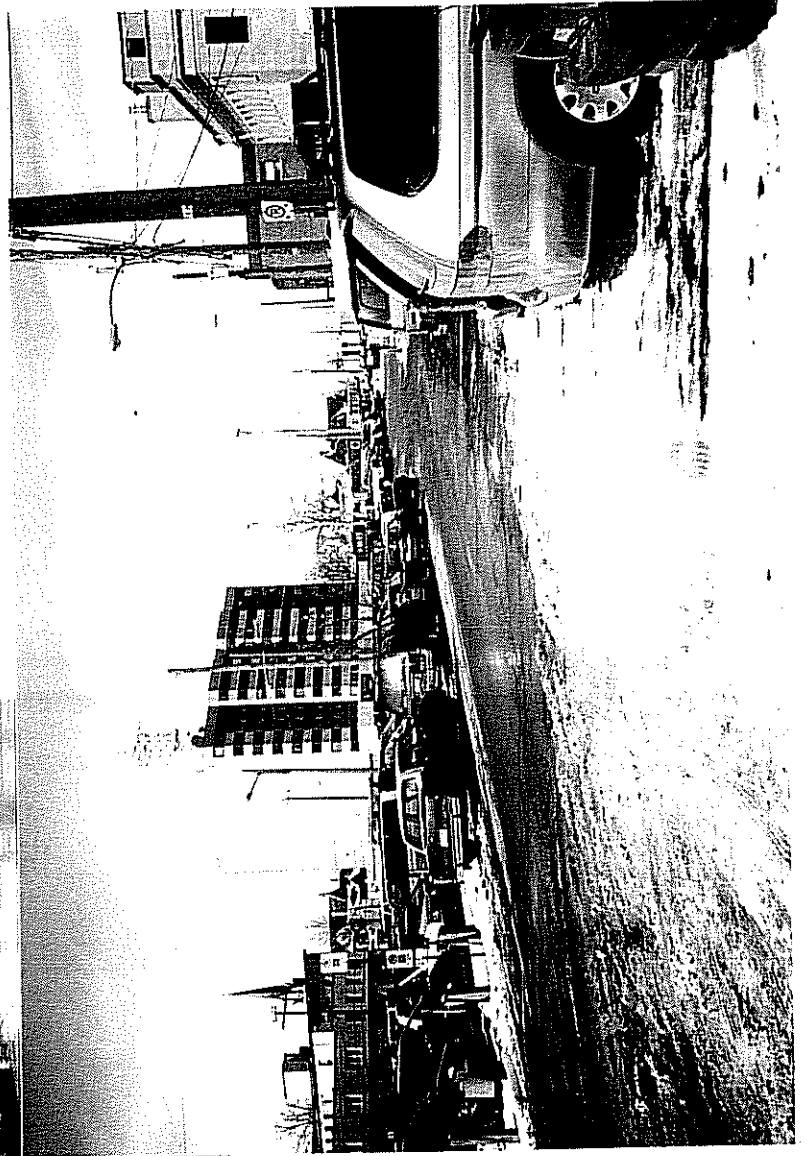
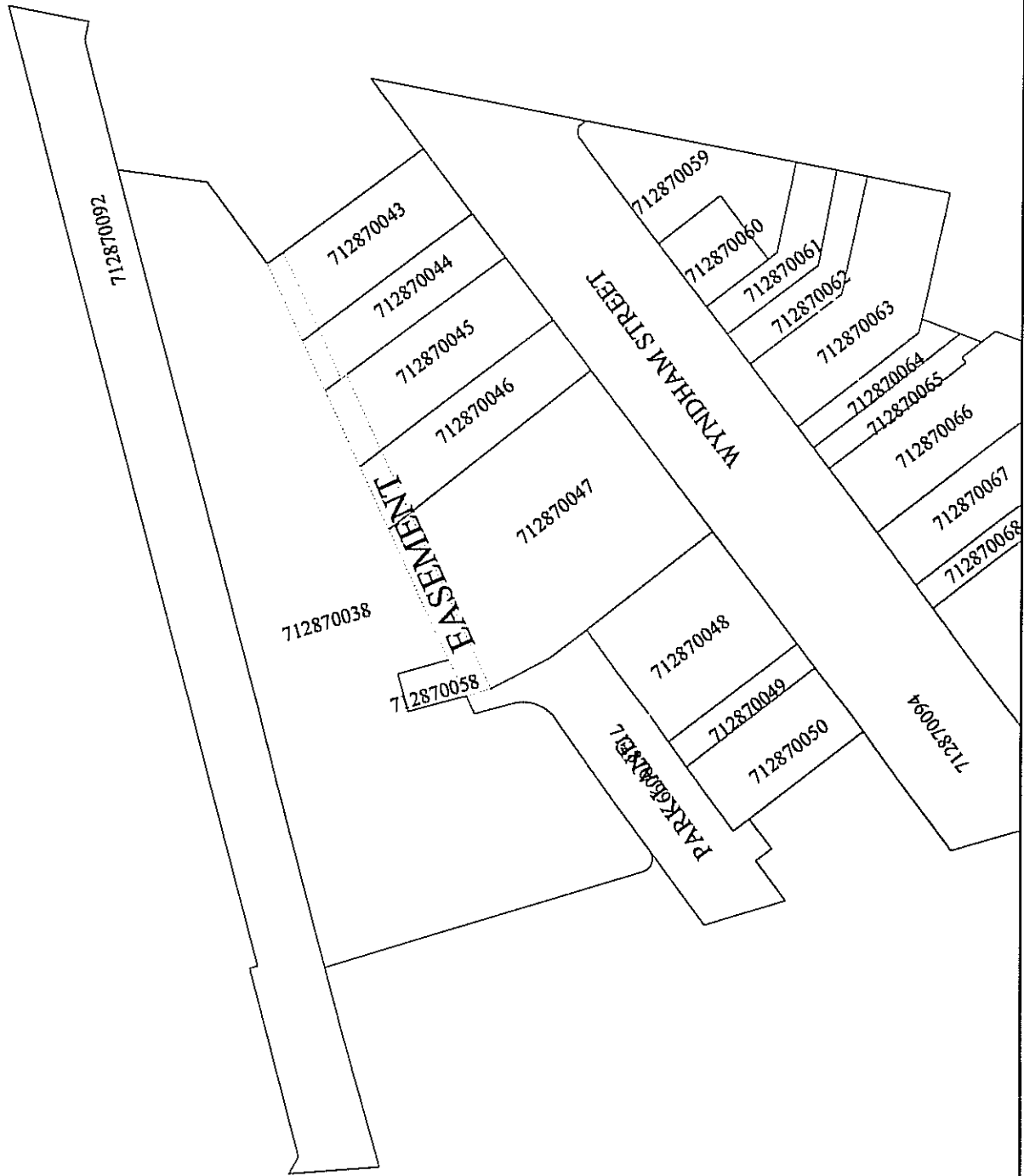


Photo 5  
View from Southeast Corner of Parking Lot  
(looking north along un-named lane)

## **Appendix B**

Land Title Search  
(Teraview)



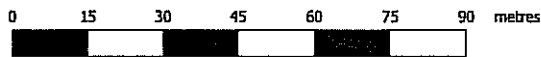


**TERAVIEW**

Mar 20, 2001

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MINISTRY OF  
CONSUMER AND  
COMMERCIAL  
RELATIONS

PARCEL REGISTER (ABBREVIATED) FOR PROPERTY IDENTIFIER

LAND  
REGISTRY  
OFFICE #61

71287-0038 (LT)

PAGE 1 OF 1  
PREPARED FOR mchompson1  
ON 2001/03/19 AT 15:12:37

\* SUBJECT TO RESERVATIONS IN CROWN GRANT \*

PROPERTY DESCRIPTION:  
PT BURYING GROUND, Plan B ; PT LANE THROUGH BURYING GROUND, Plan B , CLOSED BY M80255 ; AS IN M578644, M520082, CS58221 ; S/T INTEREST, IF ANY, IN  
CS58221 ; GUELPH

PROPERTY REMARKS:

ESTATE/QUALIFIER:  
FEE SIMPLE  
LT CONVERSION QUALIFIED

RECENTLY:  
FIRST CONVERSION FROM BOOK

PIN CREATION DATE:  
1998/08/31

OWNERS' NAMES  
THE CORPORATION OF THE CITY OF GUELPH

CAPACITY SHARE  
BENO

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHRD
**EFFECTIVE	2000/07/29	THE NOTATION OF THE "PIN CREATION DATE" OF 1998/08/31 ON THIS PIN**				
**WAS REPLACED WITH THE	"PIN CREATION DATE" OF 1998/08/31**					
** PRINTOUT	INCLUDES ALL DOCUMENT TYPES (DELETED INSTRUMENTS NOT INCLUDED) **					
**SUBJECT,	ON FIRST REGISTRATION UNDER THE LAND TITLES ACT, TO:					
**	SUBSECTION 4(1) OF THE LAND TITLES ACT, EXCEPT			PARAGRAPH 11, PARAGRAPH 14, PROVINCIAL SUCCESSION DUTIES *		
**	AND ESCHEATS OR FORFEITURE TO THE CROWN.					
**	THE RIGHTS OF ANY PERSON WHO WOULD, BUT FOR THE					
**	IT THROUGH LENGTH OF ADVERSE POSSESSION, PRESCRIPTION, MISDESCRIPTION OR BOUNDARIES SETTLED BY					
**	CONVENTION.					
**	ANY LEASE TO WHICH THE SUBSECTION 70(2) OF THE					
**DATE OF CONVERSION TO	LAND TITLES: 1998/08/31 **					
CS58221	1953/04/01	QUIT CLAIM TRNS			THE CORPORATION OF THE CITY OF GUELPH	C
M520082	1961/05/09	TRANSFER	\$1		THE CORPORATION OF THE CITY OF GUELPH	C
M578644	1968/10/25	TRANSFER	\$1		THE CORPORATION OF THE CITY OF GUELPH	C

NOTE: ADJOINING PROPERTIES SHOULD BE INVESTIGATED TO ASCERTAIN DESCRIPTIVE INCONSISTENCIES, IF ANY, WITH DESCRIPTION REPRESENTED FOR THIS PROPERTY.  
NOTE: ENSURE THAT YOUR PRINTOUT STATES THE TOTAL NUMBER OF PAGES AND THAT YOU HAVE PICKED THEM ALL UP.



MINISTRY OF  
CONSUMER AND  
COMMERCIAL  
RELATIONS

PARCEL REGISTER (ABBREVIATED) FOR PROPERTY IDENTIFIER

LAND  
REGISTRY  
OFFICE #61

712B7-0058 (LT)

PAGE 1 OF 1  
PREPARED FOR mthompson1  
ON 2001/03/19 AT 15:15:44

\* CERTIFIED BY LAND REGISTRAR IN ACCORDANCE WITH LAND TITLES ACT \* SUBJECT TO RESERVATIONS IN CROWN GRANT \*

Ontario

PROPERTY DESCRIPTION: PT BURYING GROUND, Plan B , AS IN CS51962 ; GUELPH

PROPERTY REMARKS:  
RECENTLY:  
FIRST CONVERSION FROM BOOK

PIN CREATION DATE:  
1998/08/31

ESTATE/QUALIFIER:  
FEE SIMPLE

LT CONVERSION QUALIFIED  
CAPACITY SHARE  
BENO

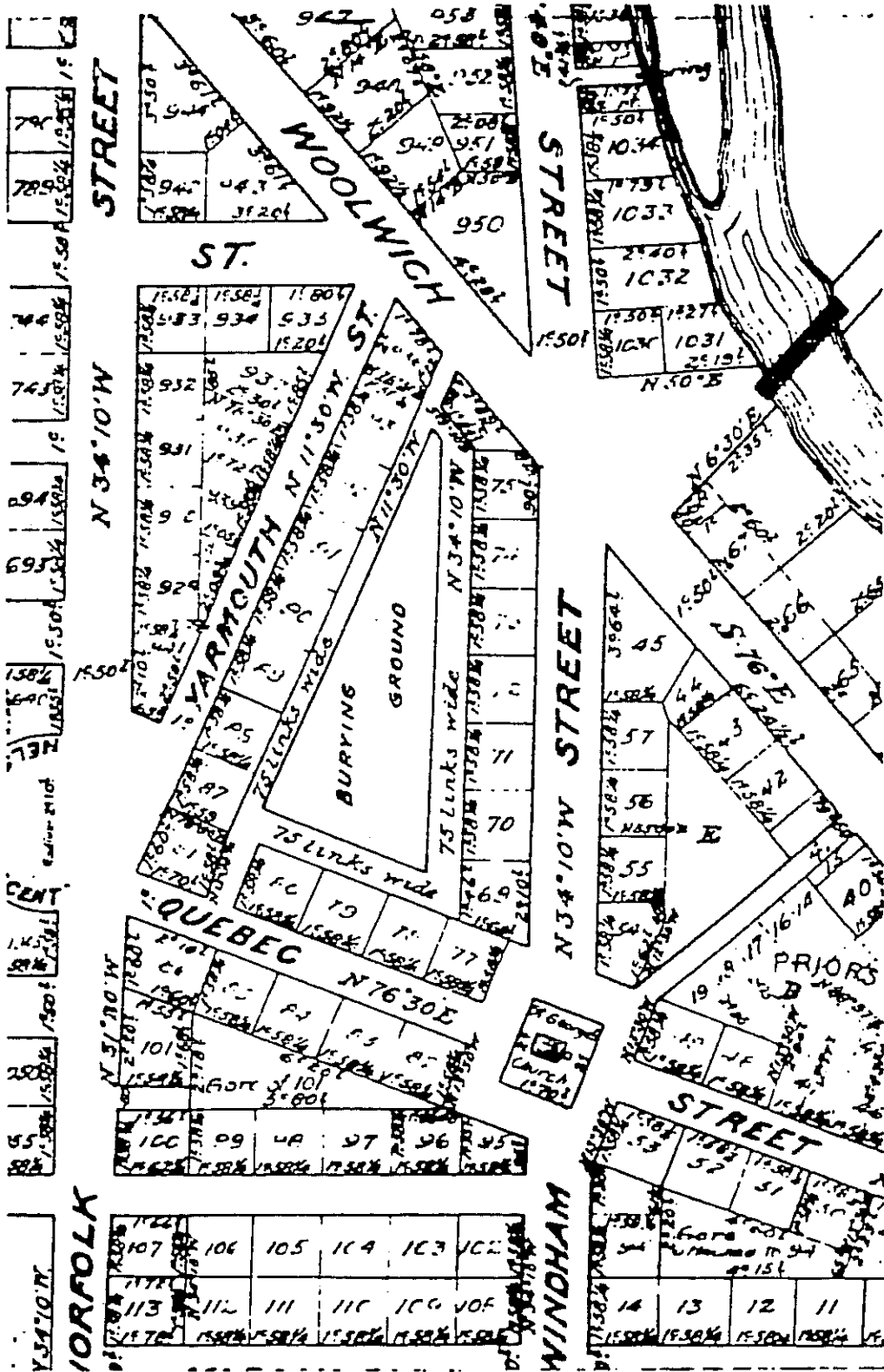
OWNERS' NAMES  
THE CORPORATION OF THE CITY OF GUELPH

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHRD
**EFFECTIVE	2000/07/29	THE NOTATION OF THE	"BLOCK IMPLEMENTATION DATE" OF 1998/08/31 ON THIS PIN**			
**WAS REPLACED WITH THE	"PIN CREATION DATE" OF 1998/08/31**					
** PRINTOUT	INCLUDES ALL DOCUMENT TYPES (DELETED INSTRUMENTS NOT INCLUDED) **					
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**	SUBSECTION 44(1) OF THE LAND TITLES ACT, EXCEPT			PARAGRAPH 11, PARAGRAPH 14, PROVINCIAL SUCCESSION DUTIES *		
**	AND ESCHEATS OR FORFEITURE TO THE CROWN.					
**	THE RIGHTS OF ANY PERSON WHO WOULD, BUT FOR THE			LAND TITLES ACT, BE ENTITLED TO THE LAND OR ANY PART OF		
**	IT THROUGH LENGTH OF ADVERSE POSSESSION, PRESCRIPTION, MISDESCRIPTION OR BOUNDARIES SETTLED BY					
**	CONVENTION.					
**	ANY LEASE TO WHICH THE SUBSECTION 70(2) OF THE			REGISTRY ACT APPLIES.		
**DATE OF CONVERSION TO	LAND TITLES: 1998/08/31 **					
LT0033	1998/11/09	TRANSFER	\$13,000	THE BOARD OF LIGHT AND HEAT COMMISSIONERS OF THE CITY OF GUELPH	THE CORPORATION OF THE CITY OF GUELPH	C

NOTE: ADJOINING PROPERTIES SHOULD BE INVESTIGATED TO ASCERTAIN DESCRIPTIVE INCONSISTENCIES, IF ANY, WITH DESCRIPTION REPRESENTED FOR THIS PROPERTY.  
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## **Appendix C**

### **Historical and Fire Insurance Maps**



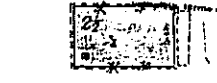
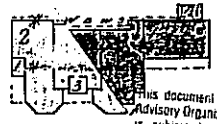
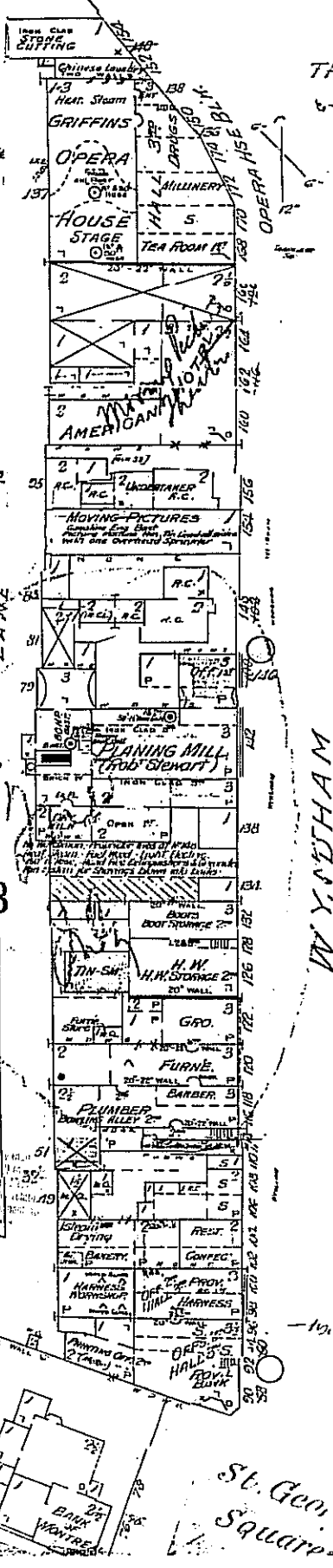
THE HEART OF THE CITY SHOWING BURYING GROUND  
AND ST GEORGE'S CHURCH YARD

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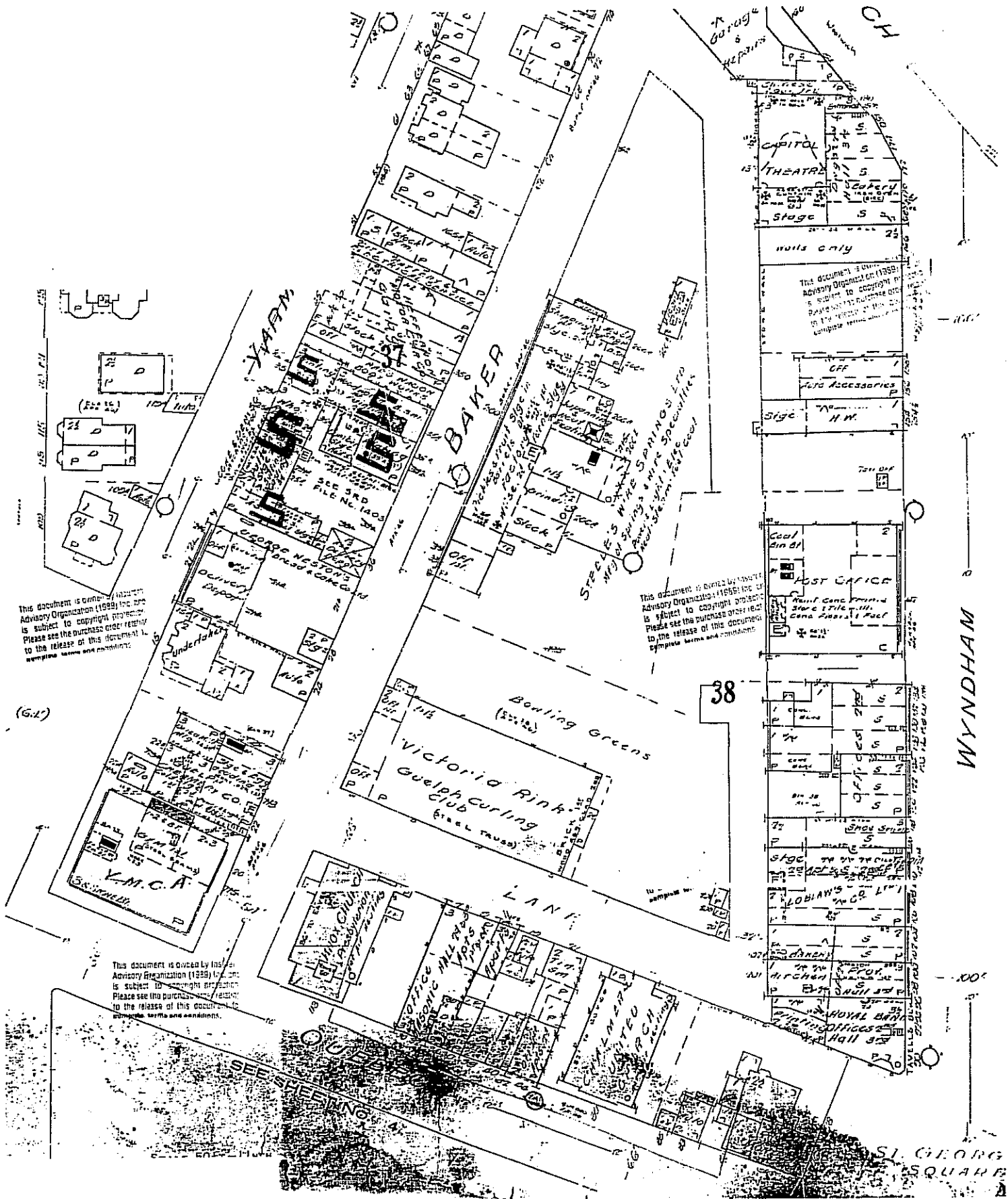
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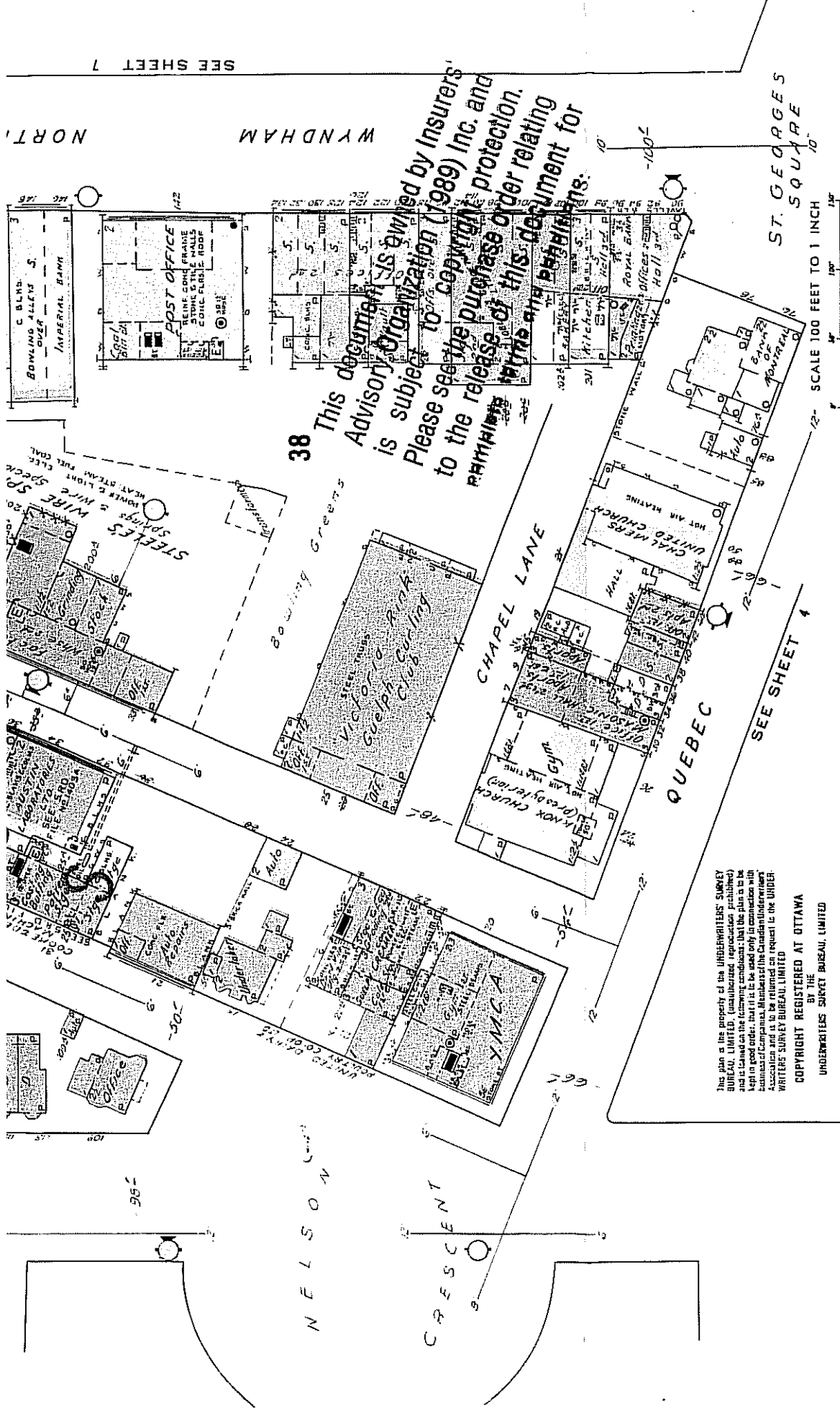
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Fire Insurance Map (1907) - Insurance Advisory Organization



Fire Insurance Map (1946) - Insurance Advisory Organization



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Fire Insurance Map (1960) - Insurance Advisory Organization

SEE SHEET 7

NORTH

WYNDHAM

ST. GEORGES SQUARE

SEE SHEET 4

SCALE 100 FEET TO 1 INCH



# **Appendix D**


Potential Development Scenarios  
(City of Guelph Background Document – Dec 1998)

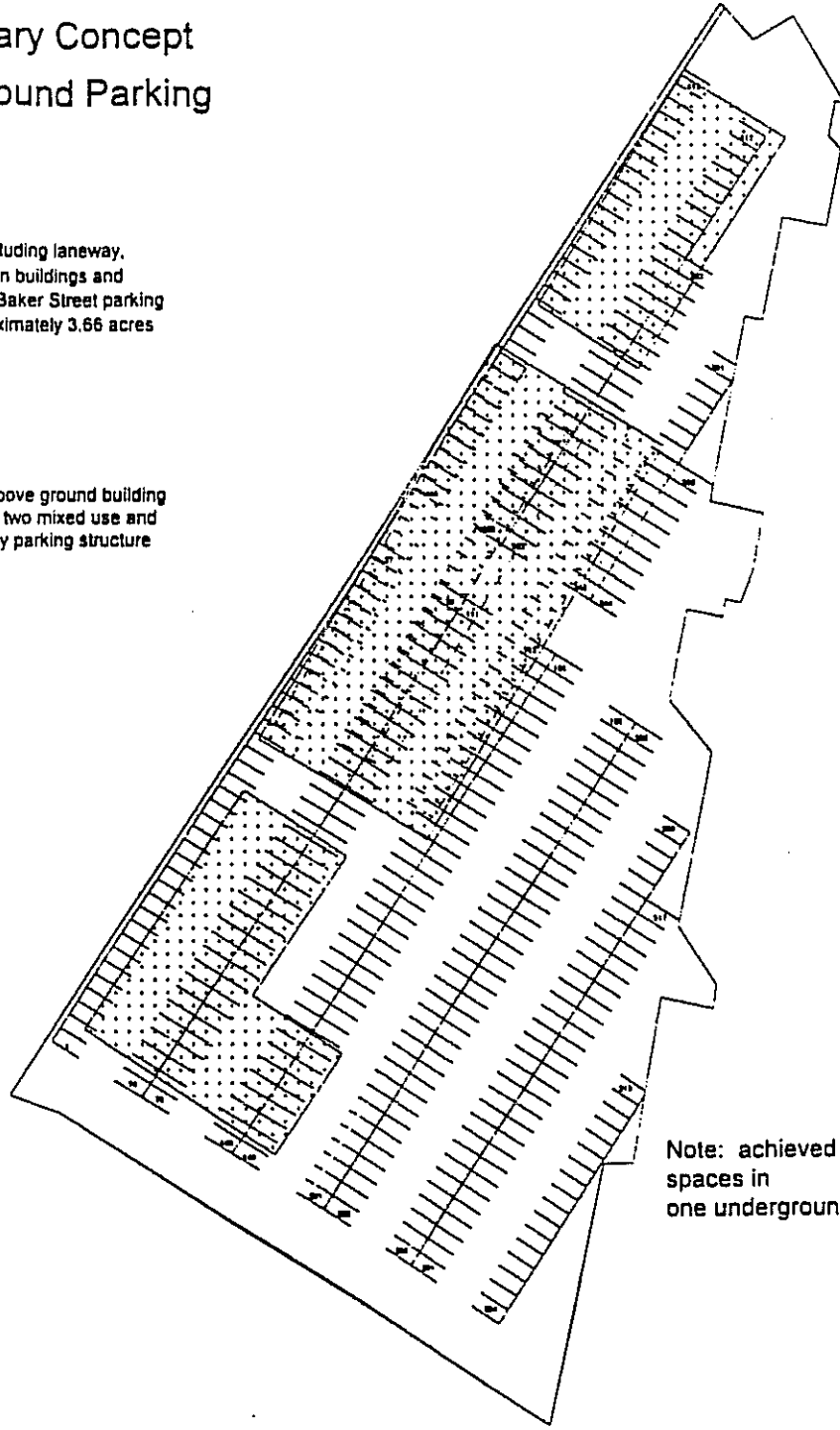
# Appendix 6

## Underground Parking Option

### Preliminary Concept Underground Parking

Total area including laneway,  
space between buildings and  
laneway and Baker Street parking  
area is approximately 3.66 acres

 Potential above ground building  
placement, two mixed use and  
one 4 storey parking structure



Note: achieved 445 parking  
spaces in  
one underground level

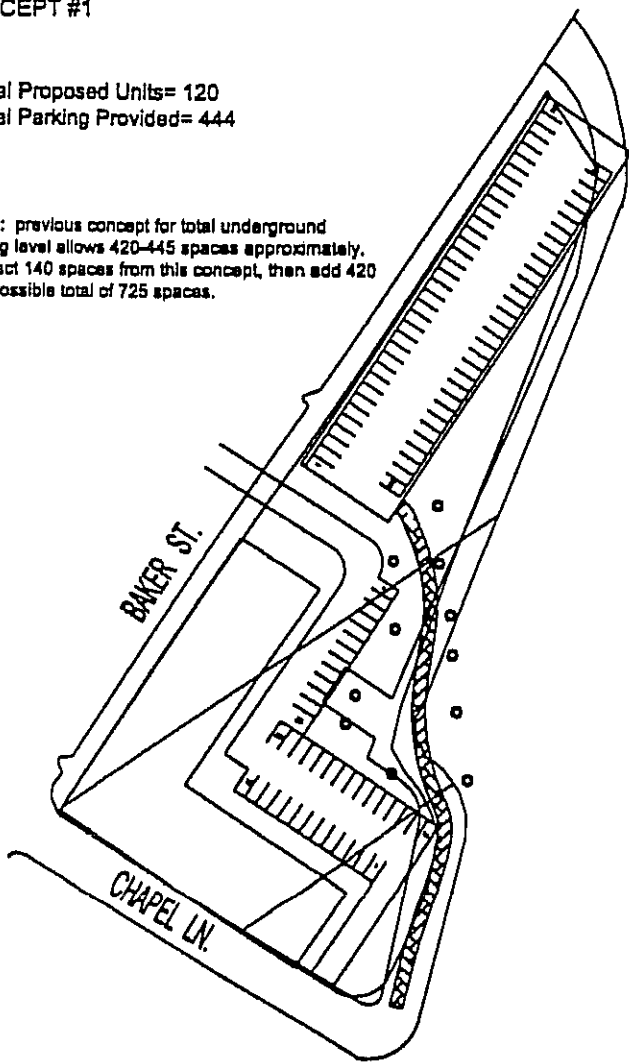
# Appendix 7

## Free Standing Building Option

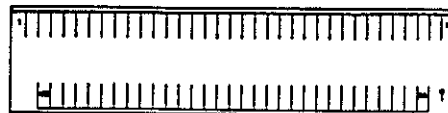
**BAKER STREET  
CONCEPT #1**

Total Proposed Units= 120  
Total Parking Provided= 444

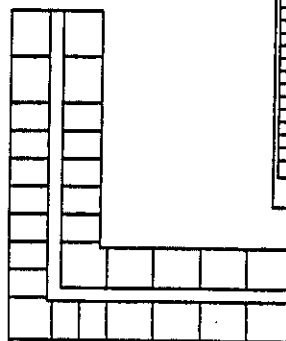
NOTE: previous concept for total underground parking level allows 420-445 spaces approximately.  
-subtract 140 spaces from this concept, then add 420 for a possible total of 725 spaces.



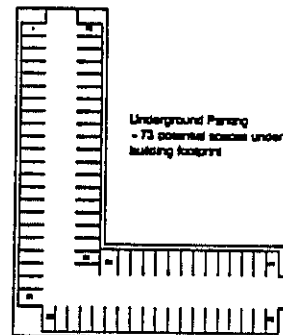
**Parking Structure**  
- 4 story structure (plus 1 level underground) with 86 spaces per floor  
- total of 330 possible spaces



**Building "A"**  
- ground floor commercial/office over 24,000 square feet  
- 5 stories of residential with 28 units per floor (1 and 2 bedroom)  
- total of 120 units



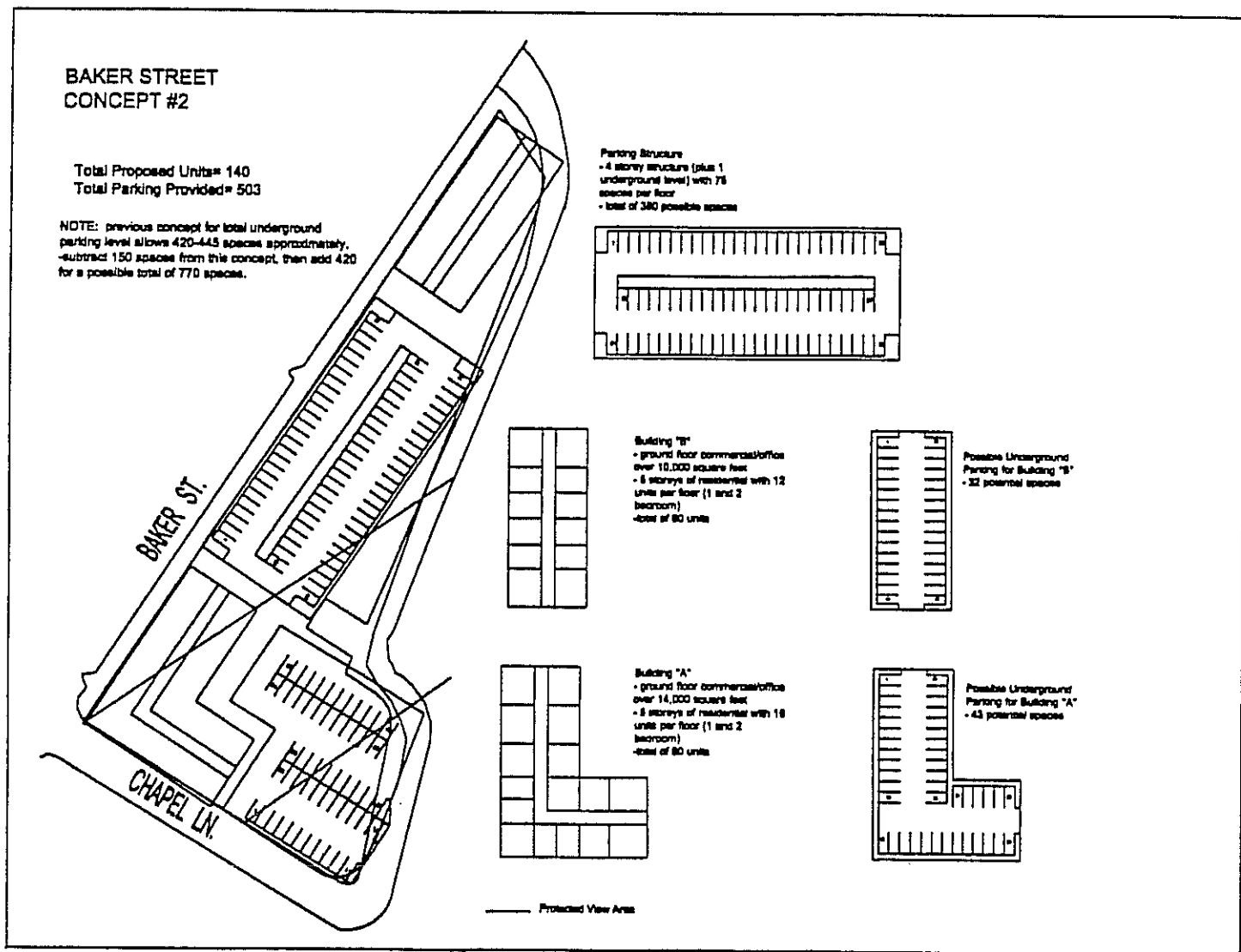
**Underground Parking**  
- 73 potential spaces under building footprints



— Protected View Area

# Appendix 8

## Integrated Building Option



## **Appendix E**

Environmental Database Search Report  
(Southam EcoLog ERIS)



Environmental Risk Information Services Ltd.

1450 Don Mill Road,  
Don Mills, Ontario, M3B 2X7  
Phone: (416) 442-2105  
Fax: (416) 442-2917  
www.ecologeris.com

**Site:** Baker St. Parking Lot  
Baker St. and Chapel Lane  
Guelph ON

**Client:** Thom Kewen  
Kewen Environmental Ltd  
9 Bayberry Street  
Stouffville ON L4A 7Z1

**ERIS Project #:** FO/20010314004

**Date:** March 19, 2001

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Company Address: Baker St. and Chapel Lane Guelph ON

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## Environmental Risk Information Services Ltd.

Environmental Risk Information Services Ltd. (EcoLog ERIS) is an environmental database and information service company. Our clients include consulting and engineering firms, banks, law firms, real estate firms and other organizations concerned with environmental information concerning property and due diligence investigations.

EcoLog ERIS specializes in providing environmental and historical information compiled from government and private source records. To assist in meeting the Canadian Standards Association (CSA) Standard Z768-94 Phase 1 Environmental Site Assessment, EcoLog ERIS will provide you with the government and/or private records available on our system that pertain to your project property and neighbouring properties. However, reports other than the "Complete Report" may not satisfy the CSA Standard Z768-94 given that the information pertains to only a portion of the subject area (i.e. site only) or is generated from only a portion of the entire set of records (i.e. selecting 10 databases). Descriptions and features of the report include:

### 1. Databases Information

The first section briefly describes the databases searched for your report. It provides details about the sources of the information and the years included for each database.

### 2. Site Diagram

The records that were found within a specified distance from the project property (the primary search radius) have been plotted on a diagram to provide you with a visual representation of the information available. Unless otherwise stated the primary search radius will be a 1/4 kilometer around the project property and is referred to as the buffer zone. Sites will be plotted on the diagram if there is sufficient information from the database source to determine accurate geographic coordinates. Each plotted site is marked with an acronym identifying the database in which the record was found (i.e., WDS for Waste Disposal Sites). These are referred to as "Map Keys". A variety of problems are inherent when attempting to associate various government or private source records with locations. **EcoLog ERIS has attempted to make the best fit possible between the available data and their positions on the site diagram.**

### 3. Tabular Report

The first table is a **Statistical Profile**, which outlines the number of records from each database that fall within various distances from your site. The second table describes the records that relate directly to the property that is being researched and is called the **Site Profile**. The rest of the report, the **Detail Report**, presents information, by database, for the records found within the buffer zone. Listed at the end of each database are the sites that could not be plotted on the locator diagram because of insufficient address information. These records will not have map keys. They have been included because they may be found to be relevant during a more detailed investigation.



## Ontario Database Information

Environmental Risk Information Services Ltd. can search the following databases. The information within the EcoLog ERIS system dates back to the mid 1980's and is current as far as what is publicly available.

### Federal Government Source Databases:

**Diagram Identifier:**

#### National PCB Inventory 1988-1998

**NPCB**

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. All federal out-of-service PCB containing equipment and all PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites.

#### National Pollutant Release Inventory (NPRI) 1994-1999

**NPRI**

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers of 178 specified substances.

#### National Contamination Sites Remediation Program 1989-1995 (the "Orphan/Abandoned" Sites Program or NCSRP)

**NCS**

NCSRP was established in October 1989, by the Canadian Council of Ministers of the Environment (CCME). This program was terminated in March 1995. The National Site Classification System was developed to designate contaminated sites into 3 categories according to their level of risk. The program was directed toward the identification and remediation of "abandoned/orphan", high risk sites.

### Provincial Government Source Databases:

#### Ontario Regulation 347 Waste Generators Summary 1986-1999

**GEN**

Regulation 347 of the Ontario EPA defines a waste generation site as any site, equipment and/or operation involved in the production, collection, handling and/or storage of regulated wastes. A generator of regulated waste is required to register the waste generation site and each waste produced, collected, handled, or stored at the site. This database contains the registration number, company name and address of registered generators including the types of hazardous wastes generated. This information is a summary of all years from 1986 including the most currently available data. Some records may contain, within the company name, the phrase "See & Use..." followed by a series of letters and numbers. This occurs when one company is amalgamated with or taken over by another registered company. The number listed as "See & Use", refers to the new ownership and the other identification number refers to the original ownership. This phrase serves as a link between the 2 companies until operations have been fully transferred.

#### Ontario Regulation 347 Waste Receivers Summary 1986-1999

**REC**

Part V of the Ontario Environmental Protection Act ("EPA") regulates the disposal of regulated waste through an operating waste management system or a waste disposal site operated or used pursuant to the terms and conditions of a Certificate of Approval or a Provisional Certificate of Approval. Regulation 347 of the Ontario EPA defines a waste receiving site as any site or facility to which waste is transferred by a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents registered receivers of regulated wastes, identified by registration number, company name and address. This information is a summary of all years from 1986 including the most currently available data.

**Private Fuel Storage Tanks 1989-1996**

**PST**

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks. Public records of private fuel storage tanks are only available since the registration became effective in September 1989. This information is now collected by the Technical Standards and Safety Association.

**Ontario Inventory of PCB Storage Sites 1987-July 2000**

**OPCB**

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of PCB storage sites within the province. Ontario Regulation 11/82 (Waste Management - PCB) and Regulation 347 (Generator Waste Management) under the Ontario EPA requires the registration of inactive PCB storage equipment and/or disposal sites of PCB waste with the Ontario Ministry of Environment. This database contains information on: 1) waste quantities; 2) major and minor sites storing liquid or solid waste; and 3) a waste storage inventory.

**Certificates of Approval 1985-1999**

**CA**

This database contains the following types of approvals: Certificates of Approval (Air) issued under Section 9 of the Ontario EPA; Certificates of Approval (Industrial Wastewater) issued under Section 53 of the Ontario Water Resources Act ("OWRA"); and Certificates of Approval (Municipal/Provincial Sewage and Waterworks) issued under Sections 52 and 53 of the OWRA.

**Compliance and Convictions 1989-1994**

**CONV**

This database summarizes the fines and convictions handed down by the Ontario courts beginning in 1989. Companies and individuals named here have been found guilty of environmental offenses in Ontario courts of law.

**Waste Disposal Site Inventory 1970-1998**

**WDS**

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of known active, inactive and closed disposal sites in the Province of Ontario. Active sites maintain a Certificate of Approval, are approved to receive and are receiving waste. Inactive sites maintain Certificate(s) of Approval but are not receiving waste. Closed sites have no Certificate of Approval and are not receiving waste. Locations of these sites may be cross-referenced with the Anderson database described under ERIS's Private Source Database section.

**Occurrence Reporting Information System (ORIS) 1988-July 2000**

**ORIS**

This database identifies sources, effects/actions and approximate locations of spills and occurrences within Ontario. The locations identified on the locator diagram refer to the facility responsible for the spill. The actual location of the spill can be derived from the descriptions provided in the detailed report.

**Drinking Water Information Management System – Water Treatment Plants 1998**

**WTP**

This database provides comprehensive information regarding design specifications and performance for municipal works water treatment plants.

**Sample Result Data Store – Sewage Treatment Plants 1998**

**STP**

This database provides comprehensive information regarding design specifications and performance for municipal works sewage treatment plants.

**Water Well Information System (WWIS) 1955-1998**

**WWIS**

This database describes locations and characteristics of water wells found within Ontario in accordance with Regulation 903. Geographic coordinates are reliable according to the given percentage. Wells that are identified with lot and concession only are available upon request and would be provided as a separate report.

**Pesticide Register 1988-1998**

**PES**

The Ontario Ministry of Environment maintains a database of all manufacturers and vendors of registered pesticides.

**Wastewater Discharger Registration Database 1990-1998**

**SRDS**

Information under this heading is combination of the following 2 programs. The Municipal/Industrial Strategy for Abatement (MISA) division of the Ontario Ministry of Environment maintained a database of all direct dischargers of toxic pollutants within nine sectors including: Electric Power Generation; Mining; Petroleum Refining; Organic Chemicals; Inorganic Chemicals; Pulp & Paper; Metal Casting; Iron & Steel; and Quarries. All sampling information is now collected and stored within the Sample Result Data Store (SRDS).

**Coal Gasification Plants 1988**

**COAL**

This inventory of all known and historical coal gasification plants was collected by the Ministry of Environment. It identifies sites that produced and continue to produce or use coal tar and other related tars. This information is effective to 1988, but the program has since been discontinued.

**Private Source Databases:**

**Ontario Retail Fuel Storage Tanks 1989-1999**

**RST**

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of licensed retail fuel outlets. The MCCR no longer collects this information. Current information is now collected from private sources. This database includes an inventory of retail fuel outlet locations that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

**Anderson's Waste Disposal Sites (Ontario) 1930-1998**

**AND**

The Anderson database uses historical documentation to locate and characterize the likely positions of former waste disposal sites in Ontario. It aims to identify those sites that are missing from the Ontario Ministry of Environment's *Waste Disposal Site Inventory* (also included in EcoLog ERIS). The Anderson database provides revisions and corrections to the positions and descriptions for sites listed in the MOE database. For most sites, more comprehensive information is available, to which EcoLog ERIS can arrange rapid access at an additional cost. In addition to historic waste disposal facilities, the database also identifies certain auto wreckers and scrap yards that have been extrapolated from documentary sources.

**Scott's Manufacturing Directory (Ontario) 1992-2000**

**SCT**

Scott's Directories is a data bank containing information on over 20,000 manufacturers in Ontario. Even though Scott's listings are voluntary, it is the most comprehensive database of Ontario manufacturers available. Information concerning a company's address, plant size, and main products are included in this database. This database begins with 1992 information and is updated annually.

**Ontario Chemical Register 1992, 1999**

**CHEM**

This database includes information from both a one time study conducted in 1992 and private source and is a listing of facilities that manufacture or distribute chemicals. The production of these chemical substances may involve one or more chemical reactions and/or chemical separation processes (i.e. fractionation, solvent extraction, crystallization, etc.).

**Canadian Mine Locations (Ontario) 1998-2000**

**MINE**

This information is collected from Southam's Canadian Mines Handbook. The Mines database is a national database that provides over 290 listings of public mines dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude).

**Canadian Pulp and Paper (Ontario) 1999**

**PAP**

This information is part of Southam's Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.



**Environmental Risk Information Services Ltd.**  
 1450 Don Mills Rd. Toronto, ON M3B 2X7  
 416-442-2105

**Project Property:** Baker St. Parking Lot  
 Baker St. and Chapel Lane  
 Guelph, ON

**EcoLog - ERIIS Project #:** FO/20010314004

**Date:** March 19/2001

**Length of Report:** 12 pgs

**SITE LEGEND**

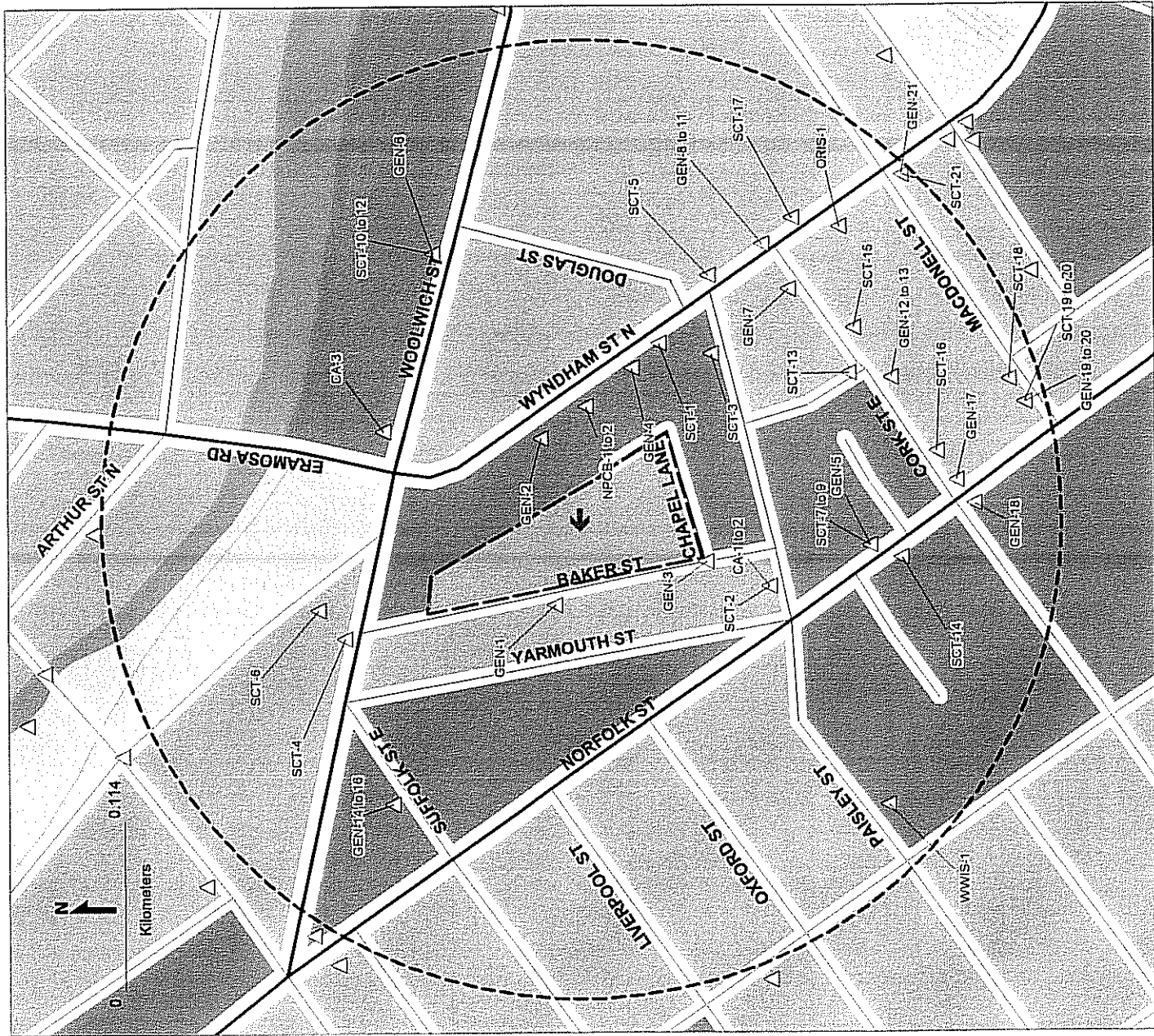
- Database locations & project property
- Points of interest (auto shop, gas station, shopping centre)
- Pipe & transmission line features (pipeline, transmission tower, transmission line, transformer station)
- Other transportation features (embankment, railways, gates, tank)

**TOPOGRAPHIC LEGEND**

- Hydrographic features (permanent and intermittent waterways) (wetland/bog, reservoir, dam)
- Land uses (residential, industrial, commercial, institutional, special use)
- Recreational uses (golf course, park, open area)
- Vegetation (orchard, vineyard, wooded area)
- Miscellaneous uses (cemetery, open reservoir)
- Industrial resources (rock cut, pit/quarry, stockpile)

*This diagram is to be used solely for relative street location purposes. It may not accurately portray street or site positions.*

**SITE DIAGRAM**



Note: Search radius expanded to 0.35 km

# Statistical Profile

ERIS Order Number: 20010314004  
 Company Name: Baker St. Parking Lot  
 Company Address: Baker St. and Chapel Lane Guelph ON

## Number of Mappable Records Surrounding the Site

Database	Within 0.35km Buffer	0.35km To 2.0km	Total
GEN	22	173	195
SCT	21	121	142
CA	3	92	95
NPCB	2	19	21
ORIS	1	37	38
WWIS	1	24	25
RST	0	40	40
PST	0	13	13
PES	0	13	13
OPCB	0	7	7
REC	0	6	6
NPRI	0	4	4
AND	0	2	2
WDS	0	2	2
PAP	0	2	2
CHEM	0	1	1
SRDS	0	0	0
STP	0	0	0
NCS	0	0	0
MINE	0	0	0
CONV	0	0	0
COAL	0	0	0
WTP	0	0	0
<b>Totals</b>	<b>50</b>	<b>556</b>	<b>606</b>

Total Number of Detail Pages: 12

BASIC REPORTS (10 Databases): The databases chosen by the client as per the submitted order form are denoted by an "\*" in the above table. Counts have been provided for the remaining databases for cursory examination only. These records have not been examined or verified, therefore, they are subject to change.

## Site Profile

ERIS Order Number: 20010314004

Company Name: Baker St. Parking Lot

Company Address: Baker St. and Chapel Lane Guelph ON

A search has been conducted for this site (address) and company name. No records were found, within the database, that meet either of these criteria.

## Detail Report

ERIS Order Number: 20010314004  
Company Name: Baker St. Parking Lot  
Company Address: Baker St. and Chapel Lane Guelph ON

If information is required for sites located beyond the buffer area but within the 2.0km range, please contact your local representative.

NATIONAL PCB INVENTORY  
ONTARIO REG. 347 WASTE GENERATORS SUMMARY  
CERTIFICATES OF APPROVAL  
COMPLIANCE AND CONVICTIONS  
OCCURRENCE REPORTING INFORMATION SYSTEM (ORIS)  
COAL GASIFICATION PLANTS  
SCOTT'S MANUFACTURING DIRECTORY (ONTARIO)  
WATER WELL INFORMATION SYSTEM

National PCB Inventory

Map Key	Company	Address	City	Date Entered	Company Code
NPCB-1	CANADA POST	C/O ROYAL LEPAGE MANAGEMENT, 75 FARQUHAR DRIVE BASEMENT BESIDE BOILER ROOM, 138 WYNDHAM STREET	GUELPH	2/14/86	O3192
Description of Inventory: Number of Items =					
NPCB-2	PUBLIC WORKS CANADA	138 WYNDHAM STREET	GUELPH	6/11/91	O3192
Description of Inventory: Number of Items = 1					



## Ontario Regulation 347 Waste Generators Summary

Map Key	Company	Address	SIC Description	Company Number	Description of Inventory (waste codes)
GEN-1	CANADIAN MEDICAL LABORATORIES LIMITED	40 BAKER STREET GUELPH	8681 MEDICAL LABORATORIES	ON0245129	312 PATHOLOGICAL WASTES
GEN-2	BOIYN SCREEN PRINTING	4-146 WYNDHAM ST. N. GUELPH	2819 OTHER COMM. PRINTING	ON0660600	219 PETROLEUM DISTILLATES
GEN-3	GUELPH HYDRO	BAKER ST. AT CHAPEL LANE GUELPH	4911 ELECT. POWER SYS.	ON0558305	122 ALKALINE WASTE - OTHER METALS 122 ALKALINE WASTES - OTHER METALS 251 OIL SKIMMINGS & SLUDGES
GEN-4	WITTINGTON PROPERTIES LTD.	112 WYNDHAM ST. GUELPH C/O 1491 YONGE ST. SUITE 205 TORONTO	7214 INVESTMENT COMPANIES	ON1304414	221 LIGHT FUELS
GEN-5	MDS LABORATORY SERVICES	85 NORFOLK STREET GUELPH	8681 MEDICAL LABORATORIES	ON0116724	312 PATHOLOGICAL WASTES
GEN-6	AMPERSAND PRINTING	123 WOOLWICH STREET GUELPH	2831 BOOK PUBLISHING IND.	ON0547700	211 AROMATIC SOLVENTS 213 PETROLEUM DISTILLATES 264 PHOTOPROCESSING WASTES
GEN-7	BELL CANADA	20 CORK ST. (BASEMENT) GUELPH	4821 TELECOMMUN. CARRIER	ON0473615	243 PCB'S
GEN-8	PIONEER PROPERTY GROUP	55 WYNDHAM STREET NORTH GUELPH	9959 OTHER SERV. TO BLDG.	ON2361900	
GEN-9	PHARMA PLUS DRUGS LTD.	55 WYNDHAM STREET, GUELPH C/O 5935 AIRPORT ROAD STE. 500 MISSISSAUGA	6031 PHARMACIES	ON1553314	261 PHARMACEUTICALS 312 PATHOLOGICAL WASTES
GEN-10	JAPAN CAMERA, O/A DEPTRON INC.	55 WYNDHAM STREET NORTH GUELPH EATON CENTRE GUELPH	6571 CAMERA/PHOTO. SUPPLY	ON0889816	264 PHOTOPROCESSING WASTES
GEN-11	BLACK PHOTO CORPORATION	55 WYNDHAM STREET NORTH GUELPH EATON CENTRE GUELPH	6571 CAMERA/PHOTO. SUPPLY	ON1398128	264 PHOTOPROCESSING WASTES

## Ontario Regulation 347 Waste Generators Summary

Map Key	Company	Address	SIC Description	Company Number	Description of Inventory (waste codes)
GEN-12	985671 ONTARIO INC.	43 CORK STREET, EAST GUELPH	6542 BICYCLE SHOPS	ON1176209	213 PETROLEUM DISTILLATES
GEN-13	CYCLEPATH, THE	43 CORK STREET EAST GUELPH	6542 BICYCLE SHOPS	ON1176209	
GEN-14	DANIEL'S DRY CLEANERS LTD.	22 SUFFOLK STREET EAST GUELPH	9721 POWER LAUND./CLEANER	ON0943400	241 HALOGENATED SOLVENTS
GEN-15	PARKERS CLEANERS (OUT OF BUSINESS)	22 SUFFOLK STREET EAST GUELPH	9721 POWER LAUND./CLEANER	ON0208907	241 HALOGENATED SOLVENTS
GEN-16	PARKERS CLEANERS LTD.(OUT OF BUS)	22 SUFFOLK ST E GUELPH	9721 POWER LAUND./CLEANER	ON0208907	241 HALOGENATED SOLVENTS
GEN-17	TRUSCAN REALTY LTD.	55 CORK STREET GUELPH	4022 COMMERCIAL BUILDING	ON0363801	252 WASTE OILS & LUBRICANTS 253 EMULSIFIED OILS
GEN-18	WELLINGTON COUNTY SEPARATE SCHOOL BOARD	66 NORFOLK STREET BISHOP MACDONELL HIGH SCHOOL GUELPH	8511 ELEMNT./SECON. EDUC.	ON1200302	113 ACID WASTE - OTHER METALS 148 INORGANIC LABORATORY CHEMICALS 263 ORGANIC LABORATORY CHEMICALS
GEN-19	DAILY MERCURY, THE	DIVISION OF THOMSON NEWSPAPERS CO. LTD. 8-14 MACDONNELL STREET GUELPH	2841 NEWSPAPER, ETC. IND.	ON0508114	145 PAINT/PIGMENT/COATING RESIDUES 211 AROMATIC SOLVENTS 252 WASTE OILS & LUBRICANTS 264 PHOTOPROCESSING WASTES
GEN-20	GUELPH MERCURY, THE	8-14 MACDONELL STREET GUELPH	2841 NEWSPAPER, ETC. IND.	ON2084801	145 PAINT/PIGMENT/COATING RESIDUES 211 AROMATIC SOLVENTS 252 WASTE OILS & LUBRICANTS 264 PHOTOPROCESSING WASTES
GEN-21	SPRINT PRINTING AND GRAPHICS	83 MACDONELL STREET GUELPH	2819 OTHER COMM. PRINTING	ON1659501	264 PHOTOPROCESSING WASTES

Ontario Regulation 347 Waste Generators Summary

Map Key	Company	Address	SIC Description	Company Number	Description of Inventory (waste codes)
n/a	CITY OF GUELPH	CP RAIL LANDS WOOLWICH STREET GUELPH	4531 RAILWAY TRANS. IND.	ON0349014	131 NEUTRALIZED WASTE - HEAVY METALS
					131 NEUTRALIZED WASTES - HEAVY METALS

## Certificates of Approval

Map Key	Company	Address	Description	Status	Application Year	Certificate #
CA-1	LOOK COMMUNICATIONS INC.	2 QUEBEC ST., PT.LOT 81 GUELPH CITY	Industrial air	Approved	99	2076
CA-2	LEX SCIENTIFIC INC.	2 QUEBEC STREET GUELPH CITY	Industrial air	Approved	94	2179
CA-3	MATRIX AFFORDABLE HOMES FOR THE DIS. INC	141 WOOLWICH STREET GUELPH CITY	Industrial air		96	2237
n/a	GUELPH CITY	EASEMENT-WOOLWICH ST. GUELPH CITY	Municipal sewage	Approved	87	1633
n/a	CANADIAN TIRE CORP. LTD.-PT.LOT 1,CONC.2	WOOLWICH ST. GUELPH CITY	Municipal water	Approved	91	1066
n/a	GUELPH CITY - PAISLEY ST. RECONSTRUCTION	PAISLEY/NORFOLK/DUBLIN STS. GUELPH CITY	Municipal sewage	Approved in 1990	89	2505

Compliance and Convictions

Map Key	Company	City	Description	Act 1	Act 2	Act 3	Total Fine \$	Date
n/a	GUELPH TURF SPECIALIST LTD. O/A WEED MAN	GUELPH	FAIL TO POST SIGNS AT POINTS OF ACCESS & FAIL TO POST SIGNS 24 HRS.-LAND EXTERM.	PA			500	94/10/05
n/a	CRAWFORD TRANSPORT INC.	GUELPH	POSSESSED SUBJECT WASTE W/O MANIFEST	EPA				08/02/94
n/a	GUY, LIONEL ARMAND	GUELPH	DUMPING WASTE ON UNAPPROVED SITE	EPA	EPA	EPA	12,000	92/11/05
n/a	BELLON, JOSEPH J.	GUELPH	DUMPING WASTE ON UNAPPROVED SITE	EPA	EPA	EPA	4,000	92/11/05

Occurrence Reporting Information System (ORIS)

Map Key	Spill ID	Source of Spill	Municipality	Specific Source and Location	Date of Occurrence	Medium	Environmental Impact
ORIS-1	59746	TRUSCAN REALTY LTD.	GUELPH CITY	CANADA TRUST BUILDING 34 WYNDHAM ST NORTH/CORNER OF CORIK ST TRUSCAN REALTY LTD - 450LHYDRAULIC OIL SEEPING INTO SOIL & GROUND WATER.	8/2/91	LAND / WATER	CONFIRMED
<b>Cause:</b>		UNDERGROUND TANK LEAK CORROSION		<b>Synopsis:</b>		<b>Nature of Impact:</b>	Groundwater pollution

Inventory of Coal Gasification Plant Waste Sites

Map Key	Company	Address	Years of Operation	City	Facility Type
n/a	BOARD OF LIGHT AND HEAT GUELPH Company Alias:		1925 to 1935 Landuse:	GUELPH	PROBABLE COAL TAR PRODUCERS

## Scott's Manufacturing Directory

Map Key	Company	Address	Plant Size (ft2)	Employment	Established	Industry Description (SIC)
SCT-1	BIO-PED FOOT CARE CENTRE	102 Wyndham St N Guelph			0000	339110 Medical Equipment and Supplies Manufacturing
SCT-2	TORONTO STAR NEWSPAPERS LTD.	2 QUEBEC ST SUITE 203 GUELPH		3	0000	5192 BOOKS, PERIODICALS, AND NEWSPAPERS
SCT-3	KI DESIGN	40 Quebec St Guelph	2,000	1	1986	418990 All Other Wholesaler-Distributors
SCT-4	CAMERON INSTRUMENTS INC.	173 Woolwich St Unit 103 Guelph		2	1969	417230 Industrial Machinery, Equipment and Supplies Wholesaler-Distributors
SCT-5	ID MAGAZINE	69 WYNDHAM ST N GUELPH		10	1991	2721 PERIODICALS: PUBLISHING, OR PUBLISHING & PRINTING
SCT-6	GECKOS INTERNATIONAL INC.	28 GARDIGAN ST GUELPH	3,000	2	1994	2329 MEN'S & BOYS' CLOTHING, N.E.C. 2339 WOMEN'S, MISSES', & JUNIORS' OUTERWEAR, N.E.C. 5131 PIECE GOODS, NOTIONS, & OTHER DRY GOODS 339110 Medical Equipment and Supplies Manufacturing
SCT-7	APPLIED BIOMECHANICS	85 Norfolk St Suite 207 Guelph	1,200	1	1995	
SCT-8	NORFOLK PHARMACY & SURGICAL	85 Norfolk St Guelph		5	1984	414520 Toiletries, Cosmetics and Sundries Wholesaler-Distributors 417930 Professional Machinery, Equipment and Supplies Wholesaler-Distributors
SCT-9	APPLIED BIOMECHANICS CUSTOM	85 NORFOLK ST SUITE 207 GUELPH		1	0000	3842 ORTHOPEDIC, PROSTHETIC, AND SURGICAL APPLIANCES AND SUPPLIES
SCT-10	AMPERSAND PRINTING	123 WOOLWICH ST GUELPH	4,000	12	1975	2732 BOOK PRINTING 2752 COMMERCIAL PRINTING, LITHOGRAPHIC 2759 COMMERCIAL PRINTING, NOT ELSEWHERE CLASSIFIED 323114 Quick Printing 323115 Digital Printing 323119 Other Printing
SCT-11	AMPERSAND PRINTING	123 Woolwich St Guelph	5,000	12	1975	



## Scott's Manufacturing Directory

Map Key	Company	Address	Plant Size (ft <sup>2</sup> )	Employment	Established	Industry Description (SIC)
SCT-12	ID MAGAZINE	123 WOOLWICH ST FLOOR 2 GUELPH		15	1991	2721 PERIODICALS: PUBLISHING, OR PUBLISHING AND PRINTING
SCT-13	THE PRINTERY	46 CORK ST E UNIT 1 GUELPH	1,550	5	1990	2752 COMMERCIAL PRINTING, LITHOGRAPHIC 2759 COMMERCIAL PRINTING, NOT ELSEWHERE CLASSIFIED 323114 Quick Printing 323115 Digital Printing 323119 Other Printing
SCT-14	CENTRAL PRINTING SERVICES	72 NORFOLK ST GUELPH	2,200	3	1961	2752 COMMERCIAL PRINTING, LITHOGRAPHIC 2759 COMMERCIAL PRINTING, NOT ELSEWHERE CLASSIFIED 323114 Quick Printing 323115 Digital Printing 323119 Other Printing
SCT-15	JUSTIFIED TYPE INC.	19 CORK ST GUELPH	450	2	1987	418210 Stationery and Office Supplies Wholesaler- Distributors 323120 SUPPORT ACTIVITIES FOR PRINTING
SCT-16	LATINO'S	51 CORK ST E GUELPH		11	1988	2024 ICE CREAM & FROZEN DESSERTS 2051 BREAD & OTHER BAKERY PRODUCTS, EXCEPT COOKIES & CRACKERS 2098 MACARONI, SPAGHETTI, VERMICELLI, & NOODLES 2099 FOOD PREPARATIONS, N.E.C.
SCT-17	KWIK KOPY PRINTING	27 WYNDHAM ST N GUELPH	2,000	5	1984	2752 COMMERCIAL PRINTING, LITHOGRAPHIC 2791 TYPESETTING 323114 Quick Printing 323115 Digital Printing 323119 Other Printing
SCT-18	MEDUCOM INTERNATIONAL INC.	18 MacDonell St Suite 200 Guelph		5	1995	323120 Support Activities for Printing 511190 Other Publishers
SCT-19	THE GUELPH MERCURY (DIV. OF TD	14 MACDONELL ST UNIT 8 GUELPH		94	1857	511110 NEWSPAPER PUBLISHERS

## Scott's Manufacturing Directory

Map Key	Company	Address	Plant Size (ft <sup>2</sup> )	Employment	Established	Industry Description (SIC)
SCT-20	THE GUELPH MERCURY STERLING	14 MACDONELL ST UNIT 8 GUELPH		94	0000	2711 NEWSPAPERS: PUBLISHING, OR PUBLISHING AND PRINTING
SCT-21	SPRINT PRINTING & GRAPHICS	83 MACDONELL ST GUELPH		5	1986	2752 COMMERCIAL PRINTING, LITHOGRAPHIC

Water Well Information System

Map Key	Well Record ID	County	Municipality	Location Reliability	Well Depth (ft)	Date Drilled	Primary Water Use	Secondary Use
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WWIS-1	6700866	WELLINGTON	GUELPH CITY	margin of error : 100 m - 300 m	212	5/15/52	INDUSTRIAL	
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Easting      560282  
 Northing     4821373  
 Zone            17

## **Appendix F**

### Qualifications for Environmental Assessor

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***THOM KEWEN, M.Sc.***  
*Senior Environmental Consultant*

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***EDUCATION AND TRAINING***

- ◆ M.Sc (Earth Sciences) University of Waterloo, 1978
- ◆ 40 Hour OSHA Training Course (US 29CFR 1910.120)
- ◆ WHMIS, Confined Space Entry, Emergency Preparedness Training
- ◆ OPPI Alternative Dispute Resolution Training (Negotiation, Mediation & Facilitation)

***PROFESSIONAL EXPERIENCE***

***Solid Waste/Landfill Management***

- ◆ Detailed hydrogeological studies leading to expansion of the City of Guelph Eastview Landfill including historical site research, contaminant definition and ground water modelling to develop leachate management system, trigger concentrations and contingency plans; extensive public consultation; expert testimony before the Ontario Environmental Assessment Board
- ◆ Site characterization and leachate management planning for expansion of the BFI Ridge Landfill including detailed groundwater modelling beneath existing waste cells
- ◆ Evaluation of a former open pit mine as a candidate landfill site for the City of Halifax; site identified as late “opportunity” in very lengthy environmental process for Metropolitan Halifax
- ◆ Detailed site investigations and groundwater modelling to defend City of Kingston against federal Fisheries Act charges originating from landfill seepage into adjacent Cataraqui River
- ◆ Peer review of IWA site investigations for potential municipal landfill sites for Metropolitan Toronto; consultation with City of Vaughan and Town of Pickering on strengths and weaknesses of candidate sites
- ◆ Senior member of approvals team assessing ground water effects from proposed expansion of Laidlaw (now Safety Kleen) hazardous waste landfill – data evaluation and management of groundwater modelling to predict possible contaminant effects
- ◆ Closure plans for several solid waste industrial landfills; one site included an adjacent landfill with significant off-site DNAPL migration; another involved land severance as well as encroachment into unstable area on edge of provincial “environmentally sensitive area”

***Municipal and Urban Development***

- ◆ Senior member of City of Guelph management team implementing MOE Cleanup Order and long term redevelopment of former IMICO foundry site acquired after tax default by owner
- ◆ Peer review of various contaminated industrial site investigations and negotiation with landowner, municipality and MOE to manage effects from chlorinated solvent releases into fractured bedrock near municipal water supply wells

- 
- ◆ Peer review of environmental assessments for various municipal projects; hydrogeologic assessments of proposed residential developments in Guelph, Caledon and Pickering areas
  - ◆ Detailed hydrogeologic investigation of proposed residential development adjacent to “provincially significant” wetland adjacent to Rouge River Park; expert testimony at Ontario Municipal Board hearing to support application

### ***Resource Management***

- ◆ Regional aquifer mapping and well field development in Judith River Formation of south-central Saskatchewan
- ◆ Ground water flow system modeling to aid in uranium exploration in Athabasca Formation in northern Saskatchewan
- ◆ Ground water management at two large coal strip mines near Edmonton - well protection planning, mine dewatering considerations, water quality protection; multi-year field, laboratory and modelling studies of the effects of large scale coal ash disposal in these mines

### ***Industrial Site Management***

- ◆ Extensive review of environmental issues, site assessments and monitoring programs for small and large industrial/commercial facilities
- ◆ Management of extensive variety of detailed Phase II investigations and Phase III management plans for large Ontario facilities for companies such as Domtar, DuPont, ICI, IBM, Owens Corning, Ontario Power Generation and CanadianOxy. Concerns included coal tars, wood preservatives, chlorinated DNAPLs, solvents, PCBs, sodium chlorate, metals, surfactants and fluorochemicals. Major programs completed at the following sites:
  - a) high capacity coal tar facility located in granular fill near large harbour
  - b) 70 year old coal tar processing facility with spillages extending into adjacent creek
  - c) wood preserving facility with spillages penetrating through fractured rock into nearby river
  - d) chemical distribution facility with large spill of cleaning solvents from railway tanker
  - e) 2 large manufacturing facilities with extensive degreaser spills spread by sewer bedding
  - f) 100 year old manufacturing facility with PCB and surfactant leakages
  - g) large chlorate facility with spills extending into adjacent “environmentally sensitive area”
  - h) chemical producer with over 30 years of periodic DNAPL leakage into fractured bedrock.
  - i) large coal storage and handling area on federal harbour lands
  - j) large manufacturing facility on fractured bedrock with styrene spillages and off-site solvents
- ◆ Hydrogeological studies and remedial planning for the first major chemical plant, sour gas plant and oil refinery decommissionings in Alberta. These projects involved:
  - a) large explosives complex situated on gravely river deposits (this facility once produced mercury compounds and required cleanup of manufacturing, lab and disposal areas)
  - b) highly controversial natural “sour” gas facility with large sulphur storage area, several hydrocarbon condensate ponds and a hazardous waste landfill
  - c) historic oil refinery near Turner Valley and large refinery in Edmonton
- ◆ Conceptual design, field testing and performance monitoring of various remedial systems including:
  - a) collector trenches and recovery wells at several coal tar and wood preserving plants

- 
- b) several chlorinated solvent recovery trenches in fractured glacial deposits
  - c) recovery well network in fractured bedrock
  - d) 2PHASE recovery well systems for solvents and chlorinated DNAPL contaminants

### ***Legal Support / Dispute Resolution***

- ◆ Numerous project and technical reviews; “data worth” and critical data gap analysis
- ◆ Detailed evaluation of project management and performance of 5 year old subsurface solvent recovery system to defend client against litigation
- ◆ Detailed evaluation of previous site investigations of hydrocarbon contamination at proposed commercial development to provide evidence for litigation against previous owner
- ◆ Detailed evaluation of subsurface conditions to defend landowner against litigation related to off-site migration of dissolved metals and chlorinated solvents
- ◆ Multi-year evaluation and detailed consultation to resolve cross boundary contaminant issues between two large industrial neighbours

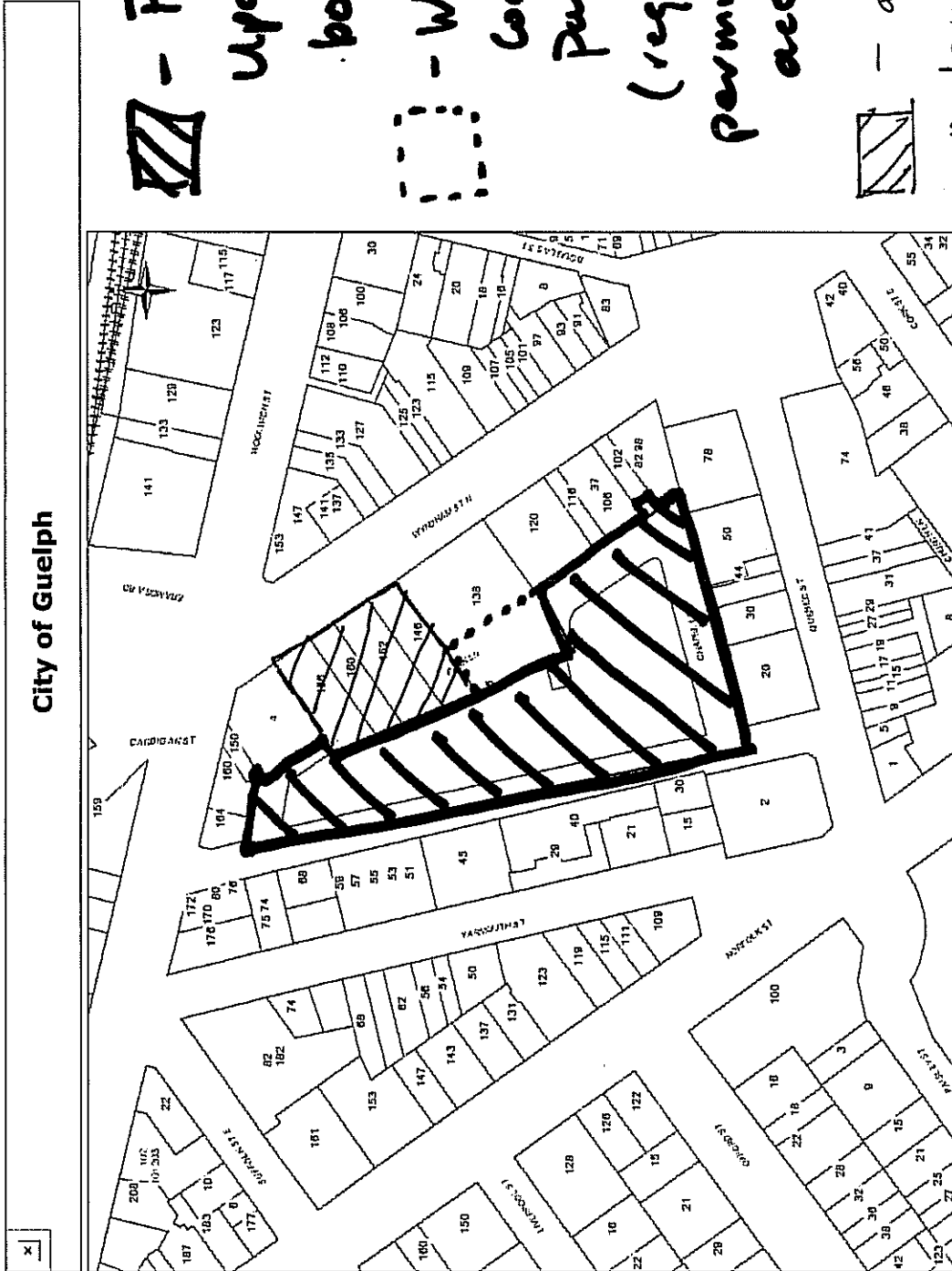
### ***PROFESSIONAL POSITIONS***


- ◆ Kewen Environmental Limited 1994 -  
Principal/Senior Hydrogeologist
- ◆ Gartner Lee Limited - Markham, Ontario 1987 - 1994  
Senior Consultant and Shareholder
- ◆ GeoTrans Inc - Herndon, Virginia 1986 - 1987  
Principal Hydrogeologist
- ◆ Monenco Consultants Limited - Calgary, Alberta 1980 - 1986  
Discipline Leader, Hydrogeology Group 1985 - 1986  
Senior Hydrogeologist 1980 - 1985
- ◆ Saskatchewan Research Council - Saskatoon, Saskatchewan 1978 - 1980  
Research Scientist


### ***PROFESSIONAL AFFILIATIONS***


- ◆ American Geophysical Union
- ◆ Canadian Geotechnical Society
- ◆ Association of Geoscientists of Ontario
- ◆ International Association of Hydrogeologists
- ◆ National Ground Water Association (Certified Ground Water Professional)

Figure 1



 - Phase 1 ESA Update Site boundary.

 - Wellington County bldg parking lot (requesting permission to access)

 - additional redevelopment lands (not accessible for Phase 1 ESA Update).

Map printed on: Thu Sep 11 10:11:09 2008

<http://maps.guelph.ca/Guelph/go>

11/09/2008

accessible for Phase 1 ESA Update).



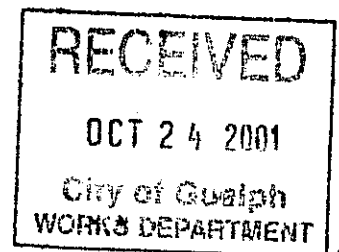
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*Baker Street Parking Lot  
City of Guelph, Ontario*

*Phase II Environmental  
Site Assessment*

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*Prepared for:  
The City of Guelph  
August 2001  
Project 01-114*



*Kewen Environmental Limited  
9 Bayberry Street, Stouffville ON L4A 7Z1  
905-640-9454 kewen@kewen.com*

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Appendix C	Soil Grain Size Analyses
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## **1. Introduction**

In March-2001, Kewen Environmental Limited (KEL) completed a Phase I environmental site assessment on behalf of the City of Guelph of the Baker Street Parking Lot in downtown Guelph. Based on the results of this assessment, it was recommended that followup Phase II investigations be conducted to document actual environmental conditions. This report provides an overview of the outcome of these investigations.

The goal of this work was to provide representative soil and groundwater information beneath the parking lot to aid in planning for the proposed re-development of the Baker Street Parking Lot. Three development scenarios have been suggested by the City Committee and presently include multistory building(s) and expanded parking facilities.

The Phase II investigation is intended to identify what soil and groundwater quality issues may be present on-site. The results of this investigation may provide useful information to infer general engineering conditions but must be confirmed prior to any preliminary or detailed engineering design. The original scope of work outlined in the May 11-2001 proposal was adjusted according to field conditions and finally included soil sampling at 7 locations, monitoring well installations at 3 locations, grain size analyses of 4 soil samples, chemical analysis of 11 soil samples and chemical analysis of 1 groundwater sample.

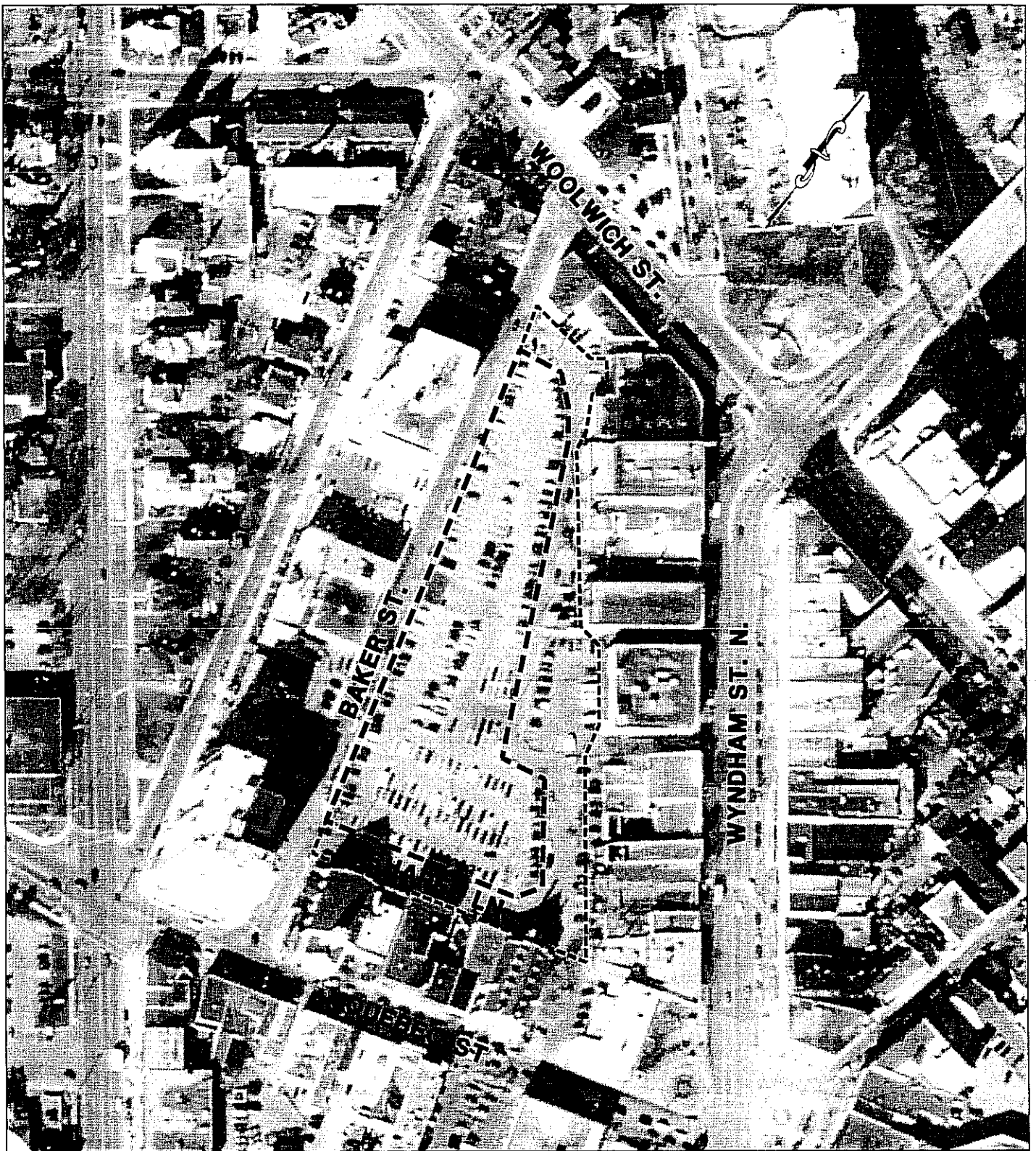
## **2. Historical Site Activities**

The Baker Street Parking Lot is a triangular shaped piece of land approximately 0.8 ha in size (Figure 1). It is bounded by Baker Street to the west, Chapel Lane to the south and an unnamed service lane to the northeast. The Baker Street Parking Lot was constructed during the 1960s. It was used as a public burying ground until the mid 1800s (Appendix A). Following relocation of the cemetery, it was used as a public park and portions were then used by the Steele's Wire Spring Ltd, the Victoria Curling Club, the Board of Heat and Light Commissioners and Guelph Hydro (Appendix A). Further information is provided in KEL (March 2001).

It appears that the site was originally underlain by native soils and dolostone bedrock. Based on previous land use, the site is now highly disturbed and contains considerable amounts of fill. The nature and quality of soils and groundwater on-site are not known. There are no records in MOE files of any spills or adverse conditions having occurred on-site. However, it is possible that some poor quality soil may exist from former site activities.

The Steele's manufacturing activities including "japanning" and heat treating were conducted in the north-central portion of the site. The machine shop was also located in this area. There were various outside sheds to store wood, coke and oil, especially in the earlier years of plant activities.

A small block of land near the southeast corner of the Steele's lands was used for some time by the Board of Heat and Light Commissioners and Guelph Hydro. The 1960 fire insurance

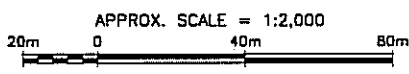


**NOTE:**

AIR PHOTO BASE MAP FROM NORTHWAY-PHOTOMAP INC.  
 - DATE OF PHOTO NOV. 11, 1998

**Legend:**

- CITY OWNED LAND (0.8 ha)  
PERIMETER OF LOT
- ADDITIONAL LANDS (0.7 ha)



Baker Street Parking Lot  
 City of Guelph

**SITE LOCATION**

Scales		
Date Issued:	AUGUST 2001	Project No. 01-114
Site Name:	BAKER ST.	File Name: FGD1A.DWG

KEWEN ENVIRONMENTAL  
 LIMITED

Figure No.

**1**

map shows transformers located on this block. Waste generator records for this area indicate that Guelph Hydro operated an electric system on-site which generated alkaline metal wastes and oil skimmings. The transformers were removed in 1989 and surficial soil cleanup completed around the former transformers in 1998.

### **3. Site Investigation Methodology**

Site investigations were conducted according to the Ministry of the Environment (MOE) "Guideline for Use at Contaminated Sites in Ontario" (Feb 1997). Sampling was conducted according to the MOE "Guideline on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario" (Dec 1996) except that "blind" field duplicate samples for chemical analysis were not included. The field work was completed between June 26 and July 6, 2001.

The field work was conducted by Environmental Field Services. Procedures and field decisions were discussed with Kewen Environmental Limited, as appropriate. Detailed written observations, notes, measurements and test results were recorded on standardized field forms. These observations, notes, measurements and test results were checked and interpreted by Kewen Environmental Limited.

Each sampling location was inspected with City staff prior to drilling (Figure 2). Utility locates were performed at each site for cable, telephone, hydro, gas and municipal services. Boreholes were completed using a CME Model 75 drill rig with 20 cm ID hollow stem augers. The drilling contractor was Strata Drilling Inc from Kitchener, Ontario.

Augers, drill bits and sampling equipment were cleaned before arrival at site and between each successive borehole. The sampling equipment was washed in water with Alconox, rinsed with distilled water and left to drip dry. Drill cuttings were stored in 215 L steel drums and placed in a safe location on the parking lot for final disposal by the City.

Soil samples were collected to determine the nature of subsurface materials and to determine the appropriate depth(s) for well installations. Continuous split spoon sampling was conducted to "refusal" at each location. It was reasonably assumed that refusal occurred at the top of bedrock. Standard SPT testing was also conducted during this sampling. Soil samples were visually examined according to texture, colour and evidence of contamination. Field descriptions were written in a field book and later used to prepare full borehole "logs" (Appendix B). The major soil types encountered were fill, a silty sand till and a sandy silt till. Four soil samples were submitted for grain size analysis including silty sand till from boreholes 1 and 3 and sandy silt till from boreholes 6 and 7 (Appendix C).

Soil samples were stored in plastic sample bag and tested for headspace vapour readings after 1 to 2 hours, depending upon drilling activities at each borehole. Readings were obtained at ambient temperature using a MiniRae Plus PID meter. PID readings ranged from 6 to 9 ppm but were not considered anomalous. It is thought that these readings reflect moisture in the

sample bags rather than sample vapours. Where required, soil samples were "split" and a separate portion placed in glass bottles for later chemical analysis. These bottles were stored in a cooler until delivered for chemical analysis at Philip Analytical Services. The laboratory results were compared to the Ministry of Environment Table "A" guidelines (Appendix D). The results are included in Appendix E.

Monitoring wells were installed at sites 2, 4 and 6. During the course of drilling, free groundwater was not encountered at sites 2 and 4 and only slight seepage was noted at site 6. The monitoring wells consisted of 51 mm diameter PVC casing with 1.4 m screen and were installed through the hollow stem augers. The annular space around the screen was filled with clean silica sand. The annular space above the sand was sealed to surface with bentonite pellets. Each monitoring well was secured at surface with a flush mounted lockable steel casing.

Ground surface and well casing elevations were surveyed on July 6. Groundwater level measurements were conducted on the same day. Well 6 was also developed and sampled. The sample from well 6 was stored in a cooler until delivered for chemical analysis to Philips Analytical Services. The laboratory results were compared to Ministry of Environment Table "A" guidelines (Appendix D). The results are included in Appendix F.

#### ***4. Results and Discussion***

##### ***4.1 Soil and Groundwater Conditions***

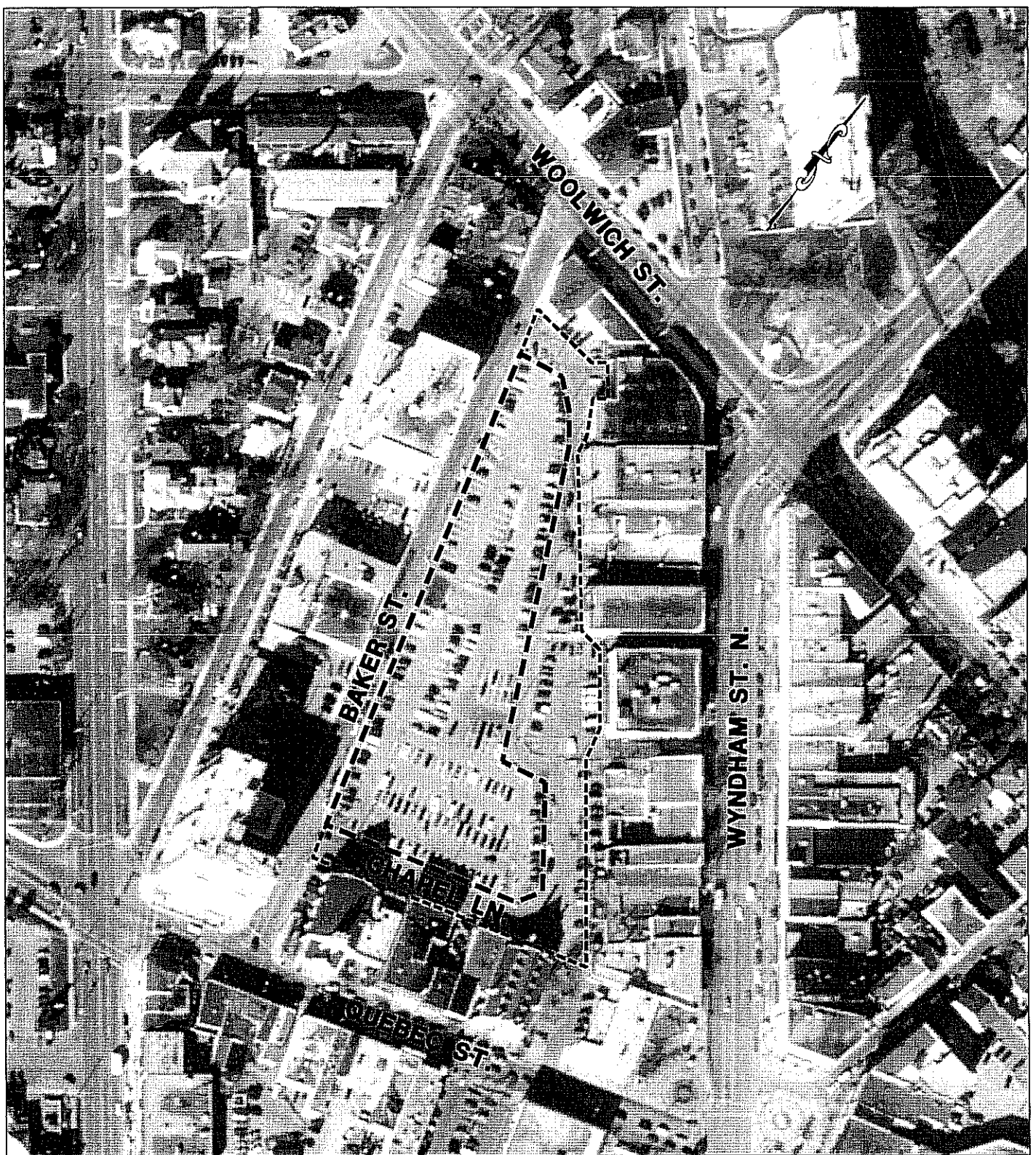
The Baker Street parking lot, borehole locations and monitoring well locations are shown in Figure 2. A cross section of soil and rock encountered along the north-south axis of the lot is shown in Figure 3. Samples collected are summarized in Table 1. Results of inorganic chemical analyses of soil samples are included in Table 2.

The parking lot is underlain by fill and silty sand to sandy silt till resting on bedrock. The depth to bedrock ranges from about 4.9 to 6.1 m below ground surface.

The fill consists of brown non-uniform sandy silt to silty sand. It was dry, stony and difficult to sample at some locations. It occasionally included brick or reddish soils. No anomalous headspace vapour readings were detected (as discussed in Section 3) and there was relatively little evidence of debris in the fill.

The tills were brown, dense silty sand to sandy silt with gravel. They were generally moist and were only saturated in the lower portion of borehole 7. The latter included occasional sand seams up to 4 cm thick. Auger refusal was encountered from 4.9 to 6.1 m below ground at the assumed top of bedrock. The elevation of the bedrock surface appears to vary slightly.

The fill and most of the till are unsaturated. Groundwater was only encountered above the bedrock surface in well 6 at the north end of the site. The water level at this location on July 6-2001 was 3.86 m below ground surface. It is assumed that higher water levels exist to the north and/or west and that overall groundwater flow is towards the Speed River.



**NOTE:**

AIR PHOTO BASE MAP FROM NORTHWAY-PHOTOMAP INC.  
 - DATE OF PHOTO NOV. 11, 1998

**Legend:**

- CITY OWNED LAND (0.8 ha)  
PERIMETER OF LOT
- ADDITIONAL LANDS (0.7 ha)



Baker Street Parking Lot  
 City of Guelph

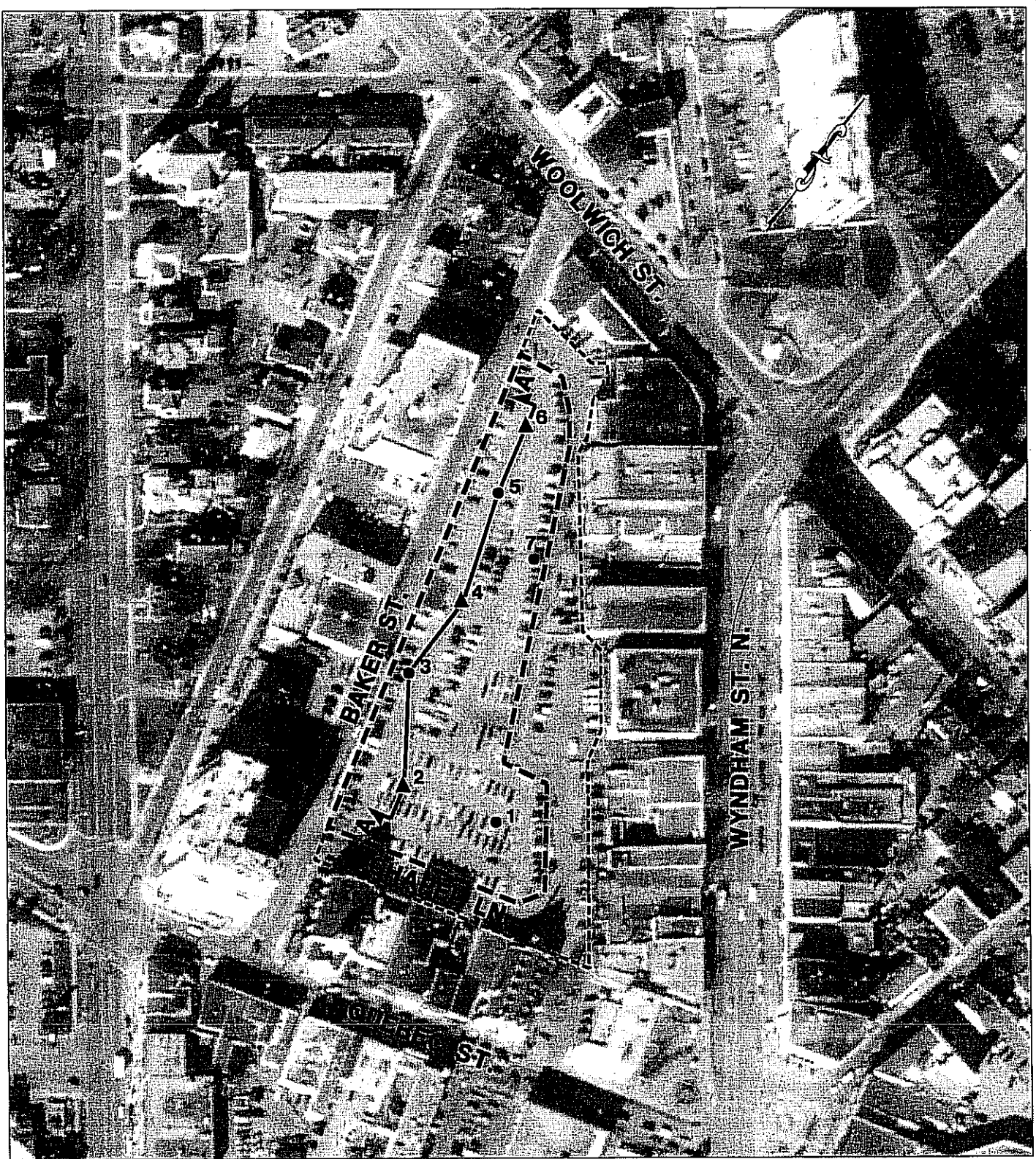
**SITE LOCATION**

Scales	
Date Issued: AUGUST 2001	Project No. 01-114
Site Name: BAKER ST.	File Name: FG01A.DWG

KEWEN ENVIRONMENTAL  
 LIMITED

Figure No.

**1**



**NOTE:**  
 AIR PHOTO BASE MAP FROM NORTHWAY-PHOTOMAP INC.  
 - DATE OF PHOTO NOV. 11, 1998

**Legend:**

- CITY OWNED LAND (0.8 ha)  
PERIMETER OF LOT
- ADDITIONAL LANDS (0.7 ha)
- SOIL SAMPLE BOREHOLE
- SOIL SAMPLE BOREHOLE WITH MONITORING WELL
- LOCATION OF GEOLOGIC CROSS SECTION

APPROX. SCALE = 1:2,000

20m 0 40m 80m

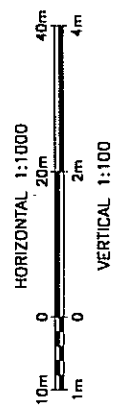
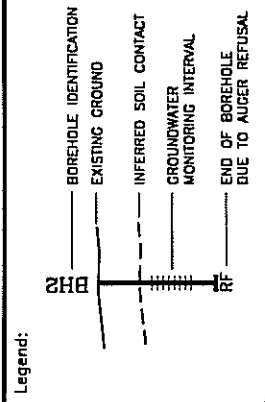
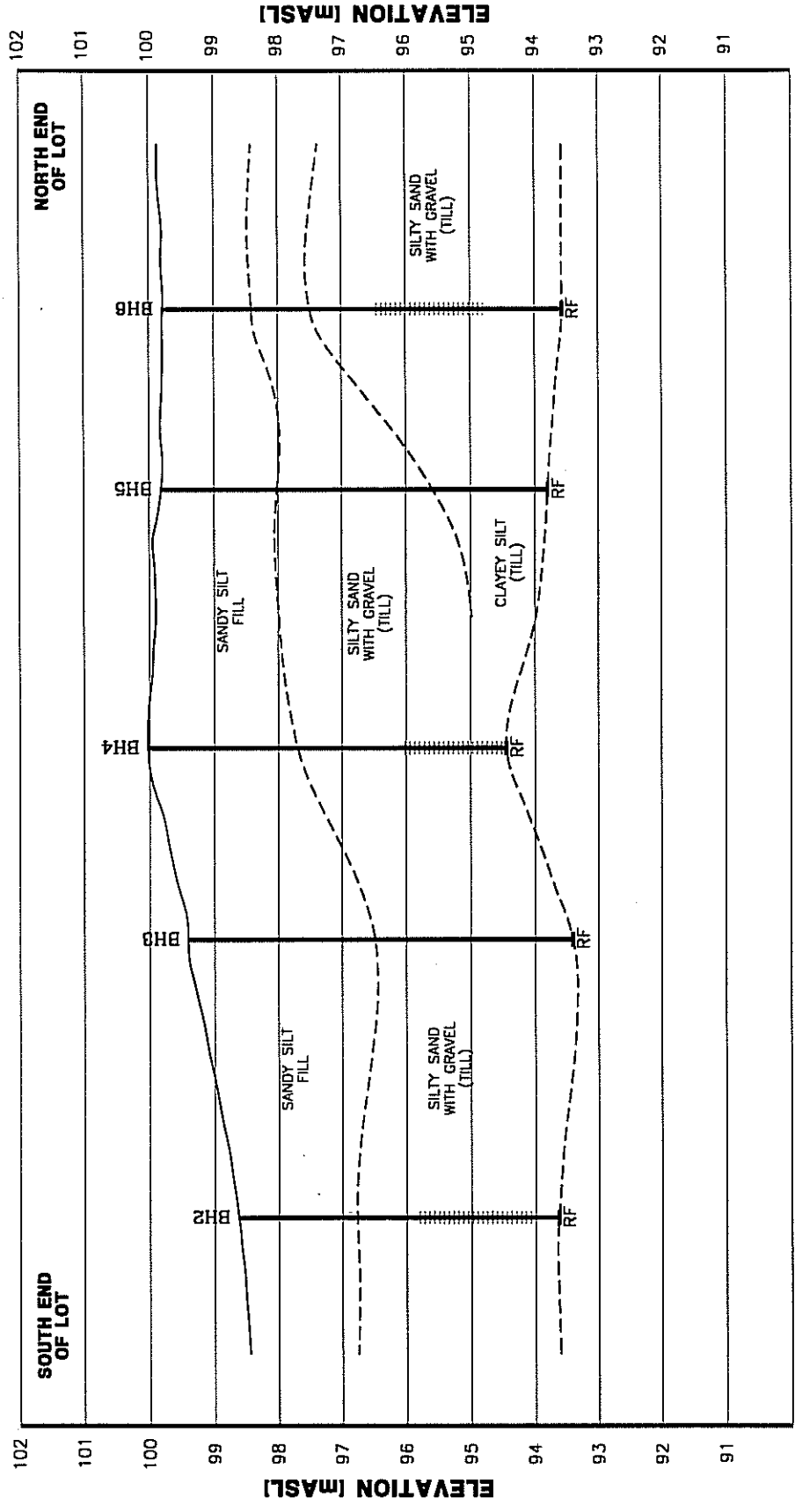
Scales		
Date issued:	AUGUST 2001	Project No. 01-114
Site Name:	BAKER ST.	File Name: FG01A.DWG

Baker Street Parking Lot  
 City of Guelph

**SAMPLING LOCATIONS**

KEWEN ENVIRONMENTAL LIMITED	Figure No.
	<b>2</b>





Scales	
Date Issued:	AUGUST 2001
Project No.	01-114
Site Name:	BAKER ST.
File Name:	FG02A.DWG

Baker Street Parking Lot  
City of Guelph

# GEOLOGIC CROSS SECTION A-A'

KEWEN ENVIRONMENTAL LIMITED

Figure No. **3**

Table 1 Summary of Samples and Chemical Analyses

Location	Site Features	Sample Media	Sample Number	Sample Depth (m)	pH	Cond	General Inorganics	Metals	VOCs
1	Former curling rink area	soil	BH1-2	0.8-1.3	x	x		x	
		soil	BH1-4	2.3-2.9	x	x		X	
2	Former curling rink area	soil	BH2-2	0.8-1.4	x	x		x	
3	Former Steele's manufacturing (SW corner)	soil	BH3-2	0.8-1.4	x	x		x	
		soil	BH3-4	3.0-3.3	x	x		x	
4	Former Steele's manufacturing (central facility)	soil	BH4-2	0.8-1.4	x	x		x	
5	Former Steele's manufacturing (machine shop)	soil	BH5-2	0.8-1.4	x	x		x	x
		soil	BH5-4	3.8-4.3	x	x		x	
6	Former Steele's manufacturing (N of facility)	soil	BH6-2	0.8-1.4	x	x		x	
		water	BH6	3.0-4.6	x	x		x	
7	Former Steele's manufacturing (E of facility)	soil	BH7-2	0.8-1.4	x	x		x	x
		soil	BH7-4	2.3-2.7	x	x		x	

Table 2 Summary of Soil Inorganic Chemical Results

Sample Number	BH1-2	BH1-4	BH2-2	BH3-2	BH3-4	BH4-2	BH5-2	BH5-4	BH6-2	BH7-2	BH7-4		
Sample Depth (m)	0.8-1.3	2.3-2.9	0.8-1.4	0.8-1.4	3.0-3.3	0.8-1.4	0.8-1.4	3.8-4.3	0.8-1.4	0.8-1.4	2.3-2.7		
General Chemistry	Criteria <sup>(2)</sup>												
pH Value	0.01 units	8.87	8.91	9.14	9.26	10.5	9.33	9.36	9.47	8.61	9.19	9.17	
Conductivity on Extract	10 uS/cm	703	454	1149	761	789	1770	877	1940	1540	111	1520	
Trace Metals	Criteria <sup>(2)</sup>												
Barium (Ba)	4 ug/g	1500(2000) ug/g	17	13	15	64	20	35	15	19	41	49	53
Beryllium (Be)	1 ug/g	1.2 ug/g	<0.2	<0.2	<0.2	0.3	<0.2	0.2	<0.2	<0.2	0.4	0.3	0.3
Cadmium (Cd)	0.5 ug/g	12 ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium (Total Cr)	2 ug/g	750(1000) ug/g	6	5	3	10	7	12	6	7	15	14	14
Cobalt (Co)	2 ug/g	80(100) ug/g	<2	<2	2	2	2	<2	2	3	4	5	5
Copper (Cu)	2 ug/g	225(300) ug/g	8	7	14	27	9	39	7	10	12	16	14
Lead (Pb)	4 ug/g	1000 ug/g	20	<5	7	169	8	45	<5	<5	13	<5	<5
Molybdenum (Mo)	2 ug/g	40 ug/g	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Nickel (Ni)	5 ug/g	150(200) ug/g	4	3	4	7	4	7	5	4	10	12	12
Silver (Ag)	1 ug/g	40(50) ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium (V)	2 ug/g	200 (250) ug/g	15	10	17	13	11	15	14	14	28	20	22
Zinc (Zn)	1 ug/g	600(800) ug/g	141	90	833	168	54	97	73	57	83	79	53

Notes: (1) EQL : estimated quantification limit. (2) Table B : Guideline for the Clean-up of Contaminated Sites in Ontario, Feb 1997 (industrial site with non-potable groundwater); criterion value in brackets applies to medium and fine textured soils (3) Shaded values exceed Table A criteria

#### 4.2 Soil and Groundwater Quality

Selected soil samples were analyzed for various chemical parameters (Table 1). The samples included fill in each borehole (samples BH1-2 to BH7-2) and underlying till in four boreholes (samples BH1-5, BH3-5, BH6-5 and BH7-5). One groundwater sample was analyzed. The latter was obtained from well 6. Routine quality assurance for laboratory analyses was conducted by Philips including blanks, lab "qc" standards and repeat analyses. No anomalous laboratory affects were noted. A "blind field duplicate" was not submitted and therefore, no separate measure of the overall reproducibility of sample analyses was obtained.

Laboratory results are included in Appendix E (soils) and Appendix F (groundwater). The results were compared to Table "A" industrial/commercial criteria from Ministry of the Environment (MOE) "Guideline for Use at Contaminated Sites in Ontario" (Feb 1997). Table "A" refers to soil and groundwater criteria for sites in areas with potable groundwater.

In the 11 soil samples analyzed, there were relatively few exceedances of Table "A" criteria (Table 2; Appendix E). There were several soil pH values slightly greater than the Table "A" criteria of 9.0 but these are not likely to be significant. One soil pH value of 10.5 was obtained from borehole 3 (sample BH3-4 from 3.0 to 3.3 m below ground surface). It exceeds Table "A" but is less than Table "C" criteria (for soils greater than 1.5 m below ground).

There was one exceedance for zinc in fill from borehole 2 in the southeast corner of the site (sample BH2-2 from 0.8 to 1.4 m below ground surface). The zinc value was 833 mg/L compared to Table "A" criteria of 600 mg/L for coarse grained soils and 800 mg/L for fine-grained soils. It is possible that background soil zinc concentrations in the Guelph area may be slightly elevated and if so, the apparent zinc exceedance may not be significant.

Volatile organic compounds were analyzed in only samples BH5-2 and BH7-2 from fill at the north end of the site. Trace concentrations near method detection limits were reported for BTEX (benzene, toluene, ethylbenzene and xylenes). There was no evidence of other volatile compounds.

The groundwater sample from well 6 was characterized by neutral pH, elevated conductivity (19,800 uS/cm), elevated total dissolved solids (9310 mg/L) and relatively high sodium (3110 mg/L) and high chloride concentrations (5440 mg/L). This sample is most likely affected by road salt contamination. Chloride concentrations greatly exceed the Table criteria of 250 mg/L. Other chemicals concentrations in this sample were less than Table "A" criteria (Appendix F).

#### 5. Summary

This Phase II assessment was conducted to assess current soil and groundwater quality beneath the Baker Street Parking Lot to aid in planning for the proposed re-development of the lot. The main results from these investigations are that –

- ▶ the lot is underlain by fill and silty sand to sandy silt till resting on bedrock
- ▶ the assumed top of bedrock ranges from about 4.9 to 6.1 m below ground surface
- ▶ fill and most of the till are unsaturated
- ▶ groundwater was only encountered above the bedrock at the north end of the site
- ▶ eleven soil samples and one groundwater sample were analyzed for chemical quality and the results compared to MOE Table "A" criteria for soils and groundwater at sites in areas with potable groundwater
- ▶ there is localized soil zinc above Table "A" at borehole 2 in the southeast of the lot, localized high soil pH at borehole 3 in the south-central site and road salt contamination in groundwater in well 6 at the north end of the lot.

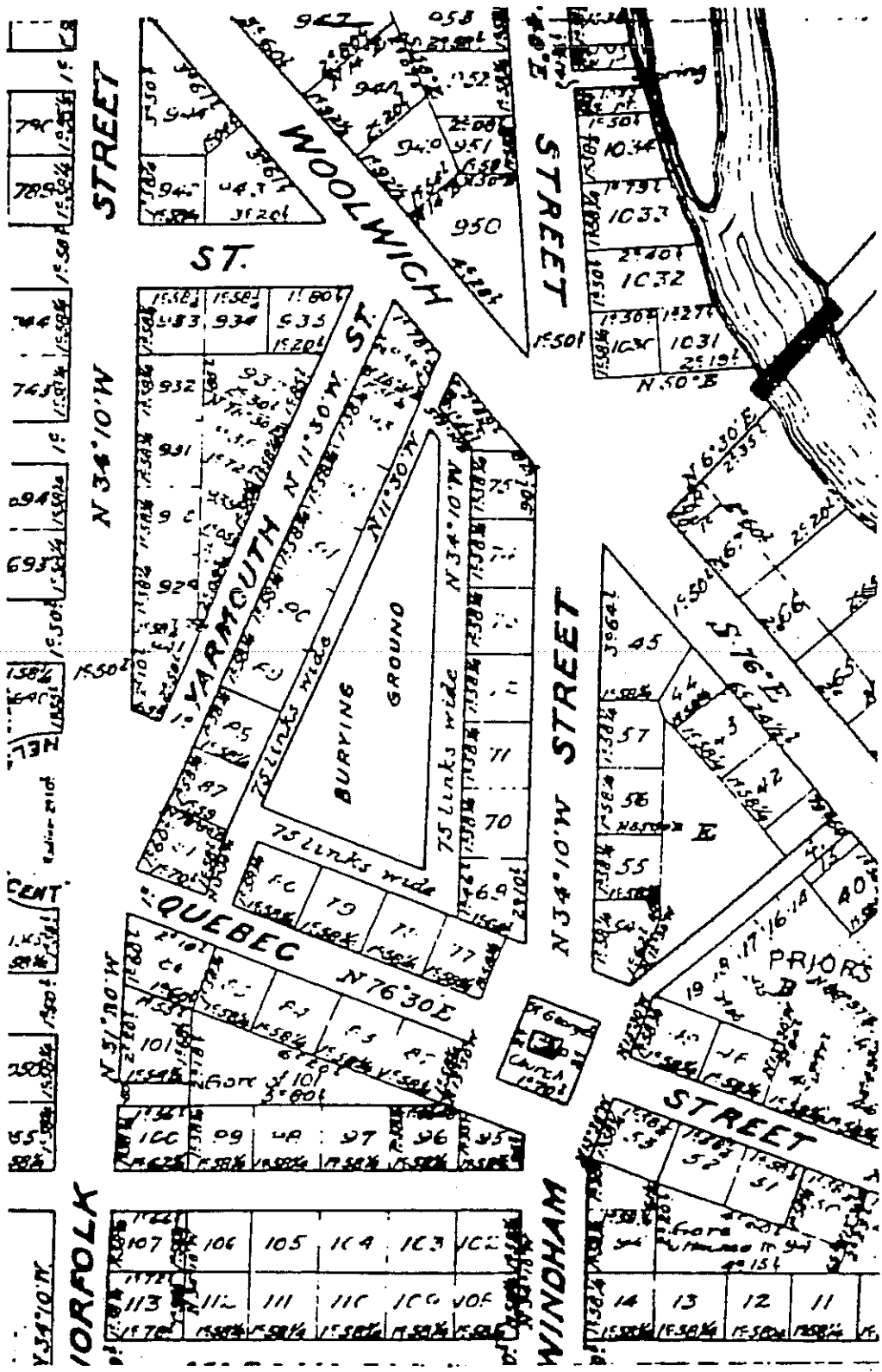
There appears to be little evidence of soil and groundwater quality effects from historical site activities other than road salting. However, site conditions between sampling locations are not known and care should be exercised when planning any future site redevelopment. It is recommended that the top of bedrock be "proved" by coring prior to any detailed engineering considerations. Periodic monitoring is recommended to determine where water levels may exceed the bedrock surface throughout the year.

## **6. Limitations**

This site assessment was conducted to assess current soil and groundwater quality on-site. The results of this investigation may provide useful information to infer general engineering conditions but must be confirmed prior to any preliminary or detailed engineering design. The services performed by Kewen Environmental Limited were conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the environmental consulting profession. Any use which a third party makes of this report, or any reliance on or decisions to be made on it, are the sole responsibility of the third party.

The report is based on information obtained during the course of site assessment from June 2001 to July 2001 and is supplemented by other information referenced in this report. It does not exhaustively cover all possible environmental conditions or circumstances that may exist on the property. The passage of time may affect the information provided in this report and environmental conditions may change. Opinions relating to site conditions are based upon information that existed at the time the conclusions were formulated.

In evaluating the property, Kewen Environmental Limited has relied in good faith upon information provided by all referenced sources. Kewen Environmental Limited has assumed that the information provided is factual and accurate. Kewen Environmental Limited accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or fraudulent acts of persons contacted.



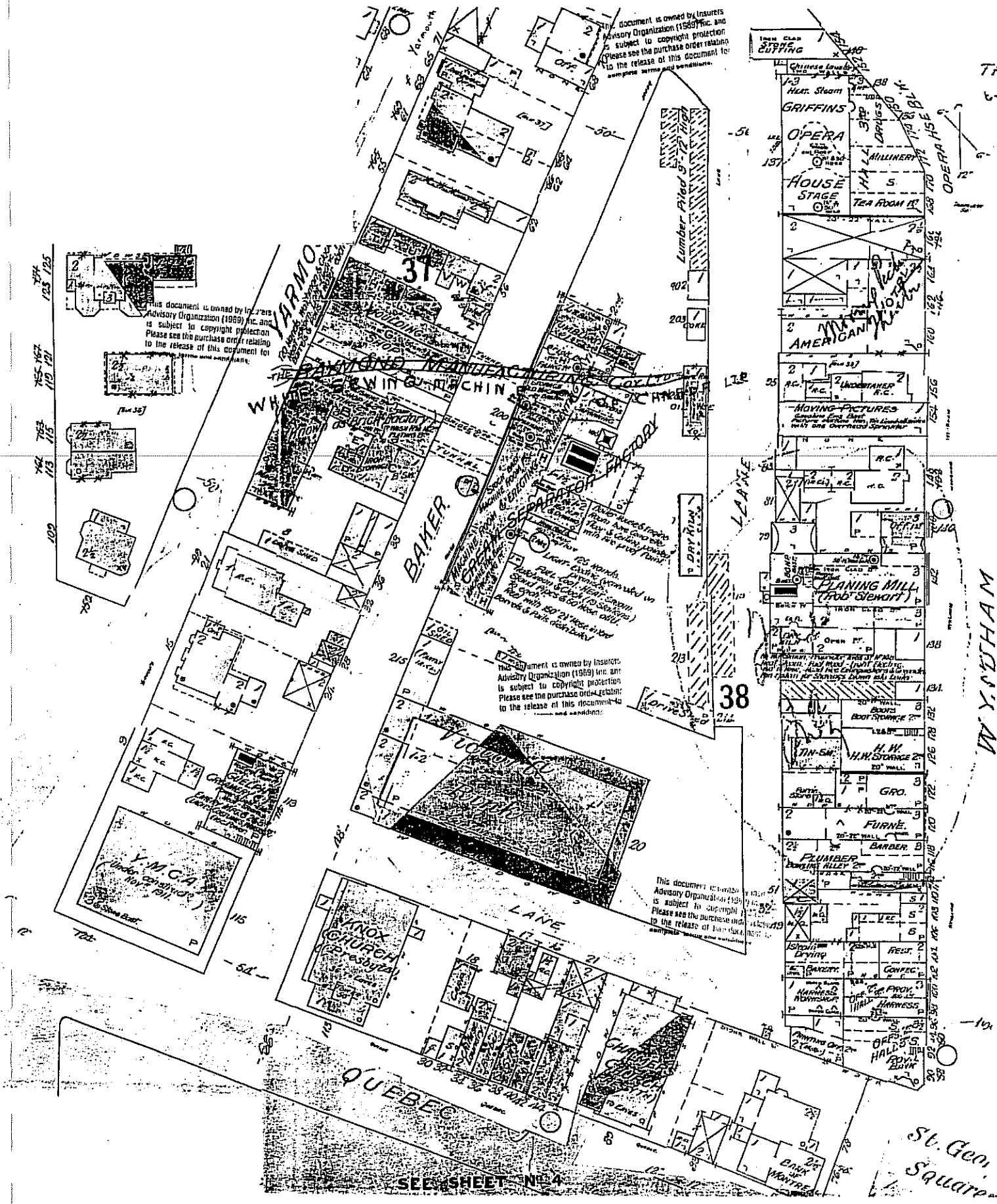
THE HEART OF THE CITY SHOWING BURYING GROUND  
AND ST GEORGE'S CHURCH YARD

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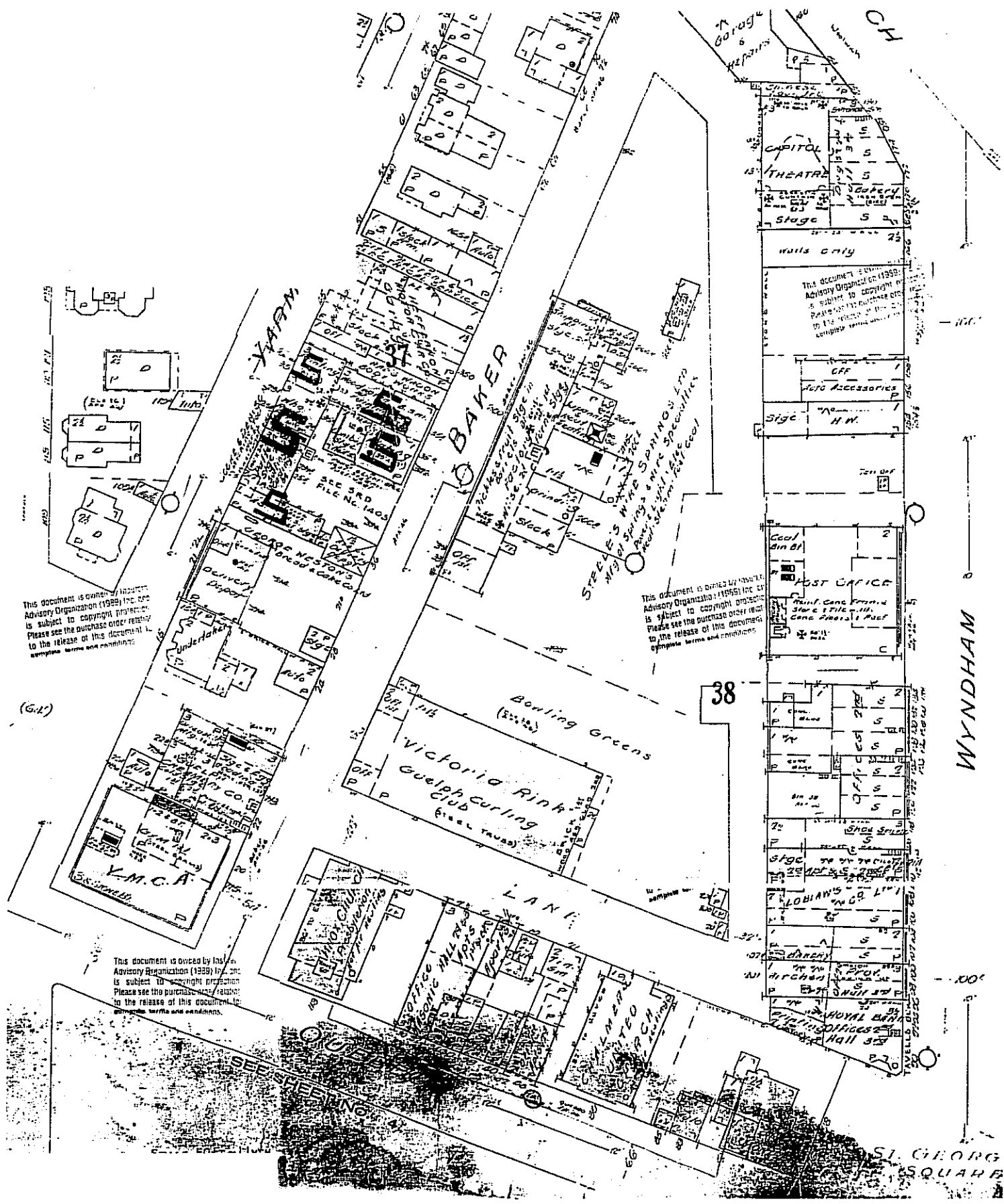
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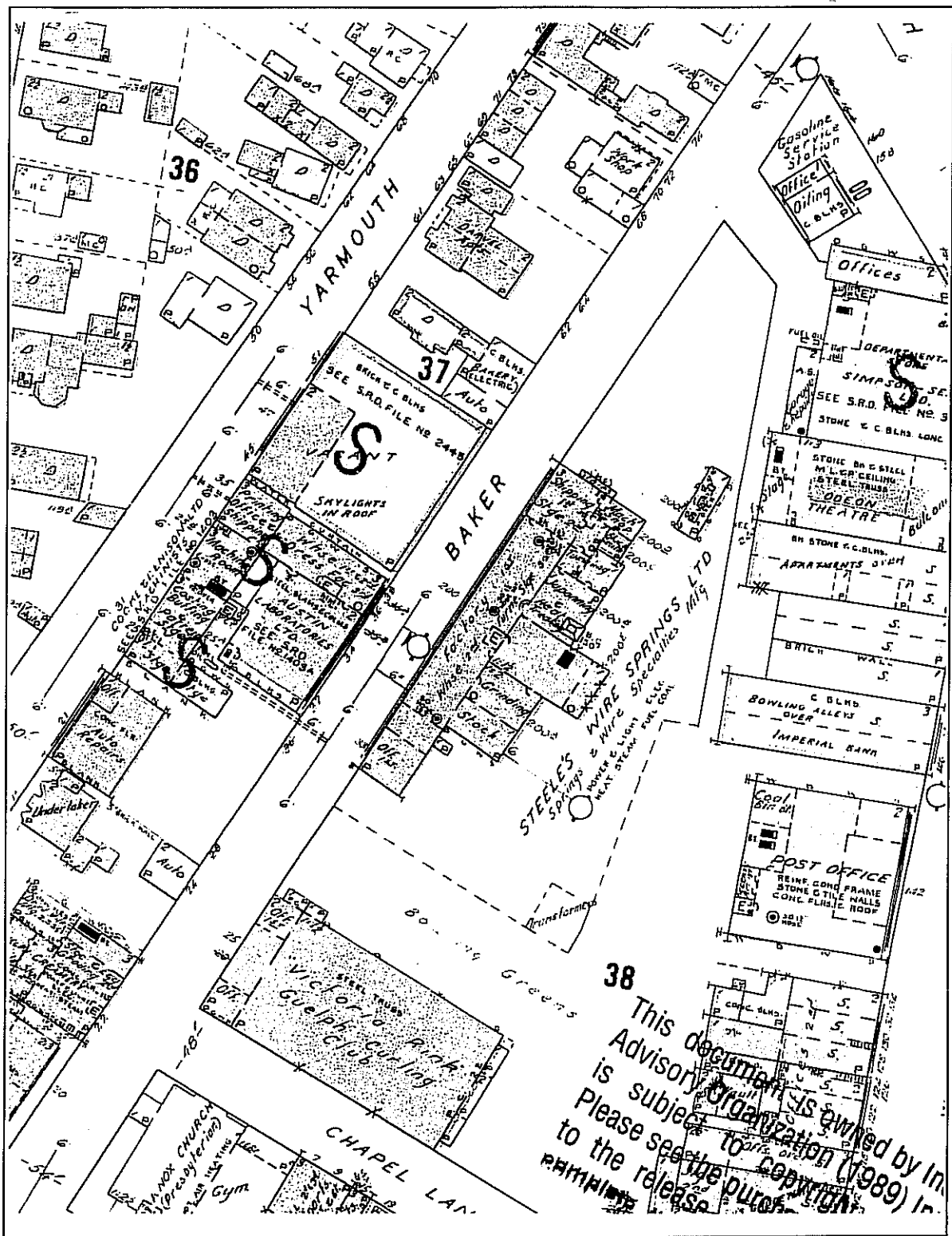
SEE SHEET N-4

Fire Insurance Map (1907) - Insurance Advisory Organization



Fire Insurance Map (1946) - Insurance Advisory Organization























Fire Insurance Map (1960) - Insurance Advisory Organization

*Appendix B*

















*Borehole Logs*

# Borehole / Monitor Log Symbols









## Soils and Rock

	Topsoil		Sand		Till - sandy with gravel		Shale
	Peat		Silty sand or sandy silt		Till - silty sand or sandy silt with gravel		Limestone or dolostone
	Fill, rubble or waste		Silt		Till - clayey silt with gravel		Sandstone
	Gravel		Clayey silt or silty clay		Till - silty clay with gravel		Other material or formation
	Sand and gravel		Clay				

## Well Materials

	PVC pipe (50 mm)		PVC pipe with grout or cement		PVC pipe with bentonite seal		PVC pipe with sand
	PVC screen with # 10 slot		PVC screen with caved native material		PVC screen with filter or sand pack		Steel screen with filter or sand pack
	Steel casing		150 mm steel casing with grout		PVC pipe grouted in steel casing		100 mm steel casing with grout
	Open hole in bedrock		Backfill or caved native material below well		Sand pack below well		Bentonite seal below well

## Sample Types

	Surface or grab sample		Auger or drill cuttings		Split spoon sample (SS)		Shelby tube sample (ST)
	Continuous soil core (CS)		Bedrock core (NQ - 48 mm) (HQ - 64 mm)		Undisturbed		No Recovery

# EFS Environmental Field Services

## Borehole / Monitor Well Log BH - 1












<i>Client</i> : City Of Guelph	<i>Project No.</i> : 01-114
<i>Project</i> : Baker Street Parking Lot	<i>Location</i> : Guelph, ON
<i>Driller / Rig Type</i> : Strata Drilling Inc, CME 75	
<i>Installation Date</i> : June 25, 2001	
<i>Ground Elevation</i> : 98.65 (relative)	<i>Geologist</i> : EK
<i>Monitor Elevation</i> : na	<i>Reviewed by</i> : TK

Depth (m)	Stratigraphy	Description	Monitor Details	Sample Number	Type of Sample	N (blows per ft)	% Recovery	Remarks
0		Ground Surface						
	<b>ASPHALT</b>							
	<b>FILL</b>							
		Brown sandy silt fill, with pieces of construction paper, stony with random pebbles. Moist.		1	SS	42	70	MiniRae PID Reading 7.9 ppm
1				2	SS	76	67	7.6 ppm (chemical analysis)
				3	SS	52	78	7.3 ppm
2				4	SS	30	67	7.4 ppm (chemical analysis)
	<b>SILTY SAND WITH GRAVEL</b>							
3		Brown silty sand (till like) with gravel. Moist.		5	SS	25-2in		
4		Auger refusal at 5.2 m.		5A	SS	42	61	6.8 ppm (grain size analysis)
5				6	SS	72	67	6.7 ppm
		End of Borehole						Borehole sealed with bentonite
6								
7								
8								
9								
		This log was prepared for environmental purposes and should not be relied upon for engineering use						

# EFS Environmental Field Services

## Borehole / Monitor Well Log BH - 2


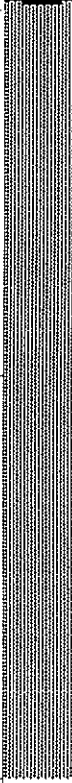


Client : City of Guelph	Project No. : 01-114
Project : Baket Street Parking Lot	Location : Guelph, ON
Driller / Rig Type : Strata Drilling Inc, CME 75	
Installation Date : June 25, 2001	
Ground Elevation : 98.583 (relative)	Geologist : EK
Monitor Elevation : 98.463 (relative)	Reviewed by : TK

Depth (m)	Stratigraphy	Description	Monitor Details	Sample Number	Type of Sample	N (blows per ft)	% Recovery	Remarks
0		Ground Surface						
		<b>ASPHALT</b>						
		<b>FILL</b> Brown sandy silt to silty sand fill, with stones and trace cobbles. Hard drilling - augers bouncing on cobbly material. Moist.		1	SS	28	72	MiniRae PID Reading 7.4 ppm
1				2	SS	33	42	7.9 ppm (chemical analysis)
				3	SS	64	44	8.6 ppm
2		<b>SILTY SAND WITH GRAVEL</b> Brown silty sand (till like) with gravel. Moist.		4	SS	56	83	7.2 ppm
3				5	SS	>50-3in	67	7.6 ppm
4		Auger refusal at 4.9 m		6	SS	59	67	8.7 ppm
5		End of Borehole		7	SS	>50-3in	0	7.7 ppm
6								
7								
8								
9		This log was prepared for environmental purposes and should not be relied upon for engineering use						

# EFS Environmental Field Services

## Borehole / Monitor Well Log BH - 3

<b>Client :</b> City of Guelph	<b>Project No. :</b> 01-114
<b>Project :</b> Baker Street Parking Lot	<b>Location :</b> Guelph, ON
<b>Driller / Rig Type :</b> Strata Drilling Inc, CME 75	
<b>Installation Date :</b> June 25, 2001	
<b>Ground Elevation :</b> 99.435 (relative)	<b>Geologist :</b> EK
<b>Monitor Elevation :</b> na	<b>Reviewed by :</b> TK

Depth (m)	Stratigraphy	Description	Monitor Details	Sample Number	Type of Sample	N (blows per ft)	% Recovery	Remarks
0		Ground Surface						
		<b>ASPHALT</b>						
		<b>FILL</b> Brown stony sandy silt to silty sand fill, pieces of red brick, reddish soils, shaly or brick-like material. Moist		1	SS	29	42	MiniRae PID Reading 6.9 ppm
1				2	SS	43	33	5.8 ppm (chemical analysis)
2								
		<b>SILTY SAND WITH GRAVEL</b> Brown silty sand (till-like) with gravel. Moist.		3	SS	43	25	6.3 ppm
3				4	SS	30-2in	25	6.0 ppm (chemical analysis)
4				5	SS	74	33	6.3 ppm (grain size analysis)
5		Auger refusal at 5.9 m		6	SS	49	58	6.0 ppm
6		End of Borehole						Borehole sealed with bentonite
7								
8								
9		This log was prepared for environmental purposes and should not be relied upon for engineering use						

# EFS Environmental Field Services

## Borehole / Monitor Well Log BH - 4

Client : City of Guelph	Project No. : 01-114
Project : Baker Street Parking Lot	Location : Guelph, ON
Driller / Rig Type : Strata Drilling Inc, CME 75	
Installation Date : June 26, 2001	
Ground Elevation : 100.00 (Relative) Geologist : EK	
Monitor Elevation : 99.91 (Relative) Reviewed by : TK	

Depth (m)	Stratigraphy	Description	Monitor Details	Sample Number	Type of Sample	N (blows per ft)	% Recovery	Remarks
0		Ground Surface						
	ASPHALT							
	FILL			1	SS	25	75	MiniRae PID Reading 6.3 ppm
1		Brown stony sandy fill, pieces of brick, red stained soils, gravelly. Moist		2	SS	16	38	6.0 ppm (chemical analysis)
2				3	SS	9	13	7.9 ppm
	SILTY SAND WITH GRAVEL							
		Brown silty sand (till like) with gravel, trace cobbles. Moist		4	SS	41	42	6.3 ppm
3				5	SS	>50	0	no sample
4				6	SS	>50	0	no sample
		Auger refusal at 5.5 m.						
5				7	SS	>50	20	6.2 ppm
6		End of Borehole						
7								
8								
9		This log was prepared for environmental purposes and should not be relied upon for engineering use						

# EFS Environmental Field Services

## Borehole / Monitor Well Log BH - 5

<i>Client : City of Guelph</i>	<i>Project No. : 01-114</i>
<i>Project : Baker Street Parking Lot</i>	<i>Location : Guelph, ON</i>
<i>Driller / Rig Type : Strata Drilling Inc, CME 75</i>	
<i>Installation Date : June 26, 2001</i>	
<i>Ground Elevation : 99.77 (Relative)</i>	<i>Geologist : EK</i>
<i>Monitor Elevation : na</i>	<i>Reviewed by : TK</i>

Depth (m)	Stratigraphy	Description	Monitor Details	Sample Number	Type of Sample	N (blows per ft)	% Recovery	Remarks
0		Ground Surface						
	[Cross-hatch pattern]	<b>ASPHALT</b>	[Vertical lines]					
		<b>FILL</b> Brown sandy silt fill, with stones. Moist.		1	SS	20	67	MiniRae PID Reading 6.2 ppm
1				2	SS	33	42	7.2 ppm (chemical analysis)
2		<b>SILTY SAND WITH GRAVEL</b> Brown silty sand (till like) with gravel, some rust staining. Moist.		3	SS	37	50	7.9 ppm
				4	SS	67	72	9.1 ppm
3				5	SS	>50	44	9.1 ppm
4				6	SS	>50	19	8.1 ppm
5		<b>CLAYEY SILT</b> Grey clayey silt (till like), trace rust staining along fractures. Moist.		7	SS	>50	50	9.3 ppm
6		End of Borehole						Borehole sealed with bentonite
7								
8								
9		This log was prepared for environmental purposes and should not be relied upon for engineering use						



# EFS Environmental Field Services

## Borehole / Monitor Log BH - 6

<i>Client</i> : City of Guelph	<i>Project No.</i> : 01-114
<i>Project</i> : Baket Street Parking Lot	<i>Location</i> : Guelph, ON
<i>Driller / Rig Type</i> : Strata Drilling Inc, CME 75	
<i>Installation Date</i> : June 26, 2001	
<i>Ground Elev</i> : 99.40 (Relative)	<i>Geologist</i> : EK
<i>Monitor Elev</i> : 99.26 (Relative)	<i>Reviewed by</i> : TK

Depth (ft)	Soils or Rock	Description	Monitor Details	Sample Number	Type of Sample	N (blows per ft)	% Recovery	Remarks
0		Ground Surface						
0		<b>ASPHALT</b>						MiniRae PID Reading
1		<b>FILL</b>		1	SS	14	50	5.9 ppm
2		Brown sandy silt fill, some clayey silt, trace pieces of asphalt near top. Moist.						
3				2	SS	5	32	6.3 ppm (chemical analysis)
4								
5		<b>SAND</b>						
6		Brown silty fine sand. Moist.		3	SS	14	58	5.6 ppm
7								
8		<b>SANDY SILT</b>						
9		Brown sandy silt (till like) with occasional and random sand seam up to 4 cm thick (wet to saturated). Becoming grey below 4.9 m and wetter.		4	SS	24	89	6.5 ppm (chemical analysis)
10								
11				5	SS	29	75	5.9 ppm (grain size analysis)
12								
13								
14		Measured depth to water in monitoring well on Jul 6-2001 was 3.72m from top of casing		6	SS	45	89	6.2 ppm
15								
16				7	SS	43	67	5.8 ppm
17								
18								
19								
20		End of Borehole						
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

This log was prepared for environmental purposes and should not be relied upon for engineering use

# EFS Environmental Field Services

## Borehole / Monitor Well Log BH - 7

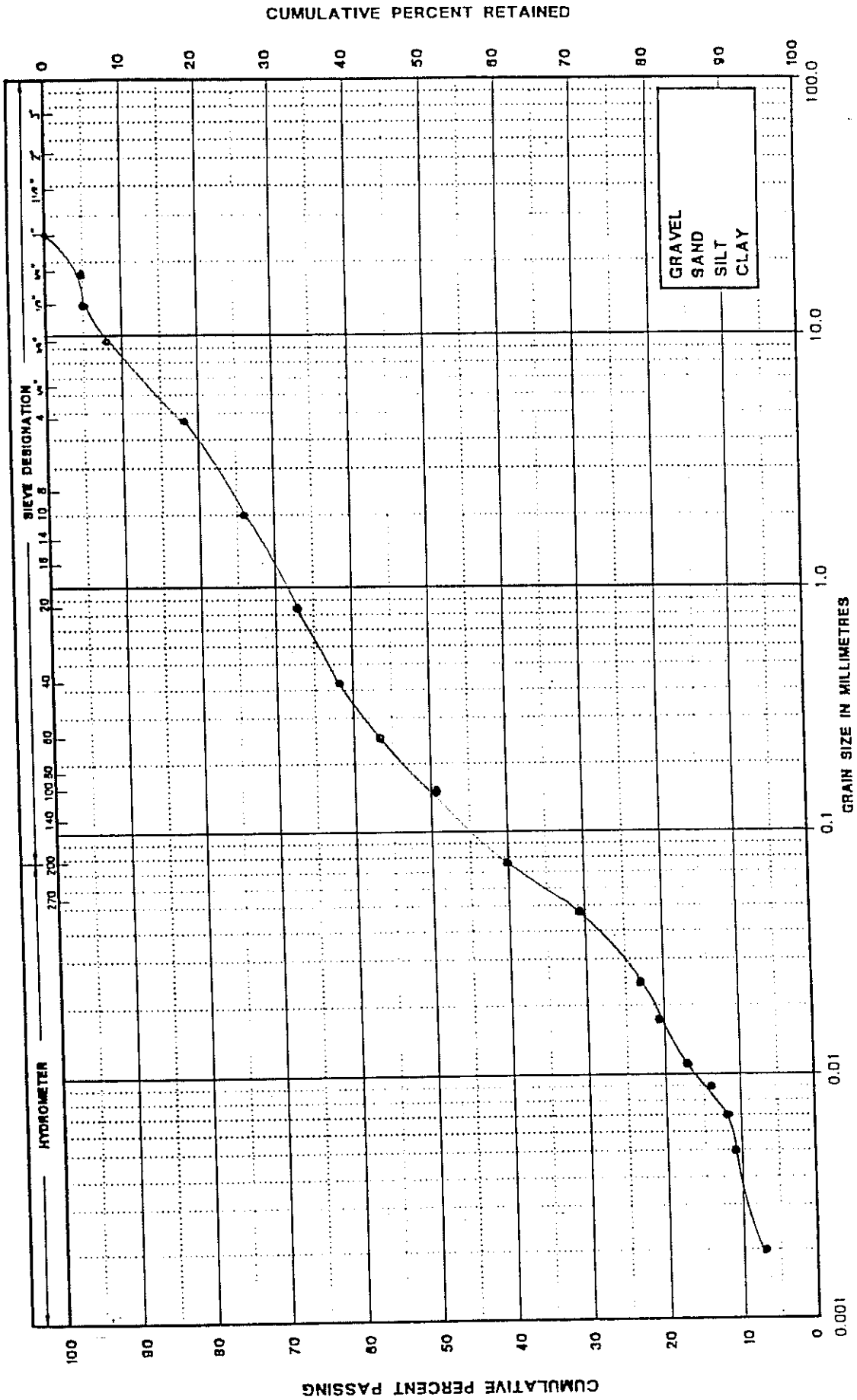
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<i>Project</i> : Baker Street Parking Lot	<i>Location</i> : Guelph, ON
<i>Driller / Rig Type</i> : Strata Drilling Inc, CME 75	
<i>Installation Date</i> : June 26, 2001	
<i>Ground Elevation</i> : 99.80 (Relative)	<i>Geologist</i> : EK
<i>Monitor Elevation</i> : na	<i>Reviewed by</i> : TK

Depth (m)	Stratigraphy	Description	Monitor Details	Sample Number	Type of Sample	N (blows per ft)	% Recovery	Remarks
0		Ground Surface						
	[Cross-hatch pattern]	<b>ASPHALT</b>						
	[Cross-hatch pattern]	<b>FILL</b> Brown stony gravelly fill, moist		1	SS	11	20	MiniRae PID Reading 8.0 ppm
1	[Dotted pattern]	<b>SANDY SILT</b> Brown sandy silt (till like), minor rust staining throughout. Moist.		2	SS	19	50	8.3 ppm (chemical analysis)
2	[Dotted pattern]			3	SS	42	42	8.4 ppm
3	[Dotted pattern]			4	SS	>50	60	6.6 ppm (chemical analysis)
4	[Dotted pattern]			5	SS	>50	63	6.7 ppm (grain size analysis)
5	[Dotted pattern]	Auger refusal at 5.2 m.		6	SS	85	42	7.2 ppm
6	[Dotted pattern]			7	SS	>50	48	3.9 ppm
7								
8								
9								
		End of Borehole						Borehole sealed with bentonite
		This log was prepared for environmental purposes and should not be relied upon for engineering use						

***Appendix C***

***Soil Grain Size Analyses***

# PARTICLE SIZE DISTRIBUTION

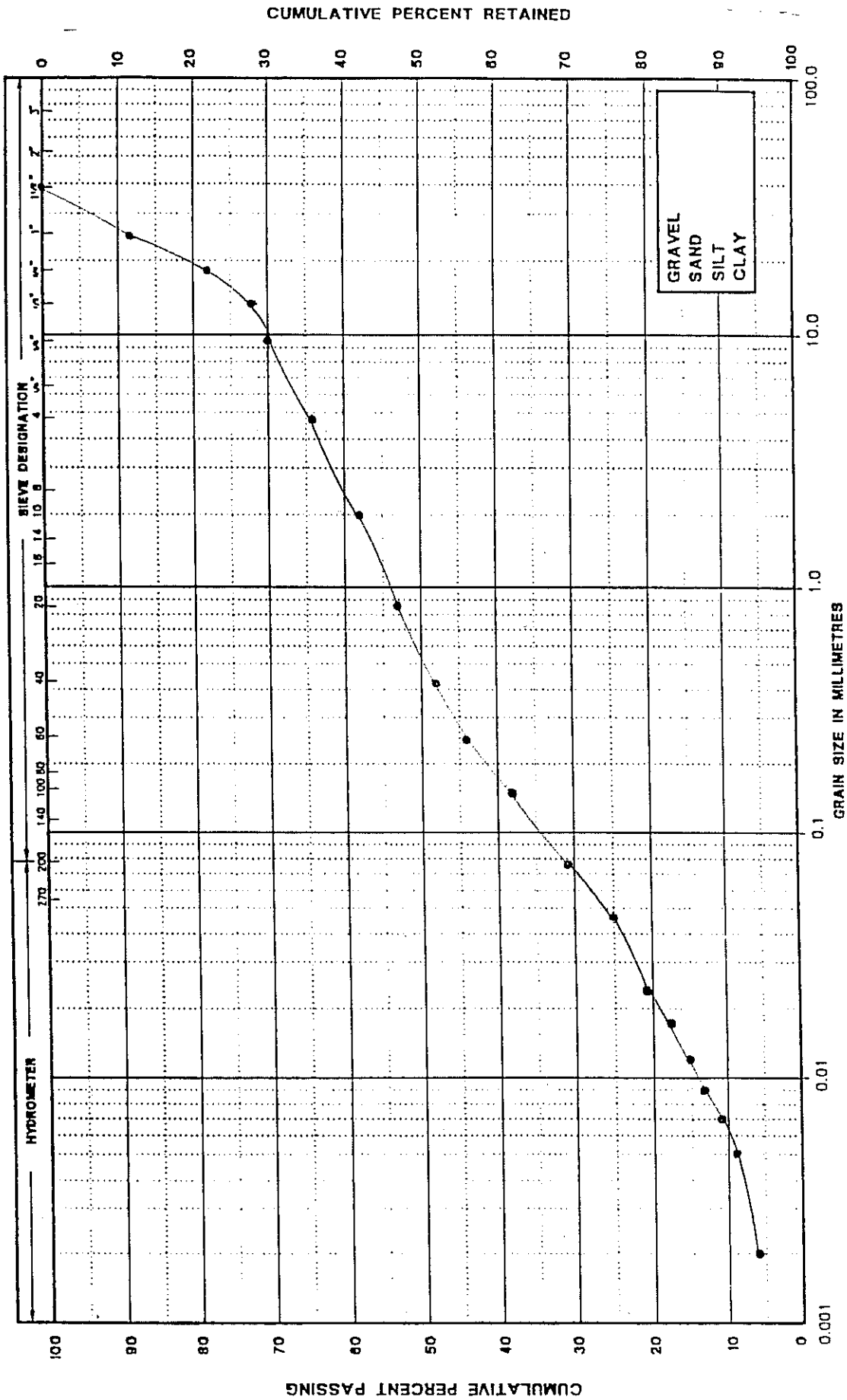


CLAY AND SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL
---------------	-----------	-------------	-------------	-------------	---------------

UNIFIED SOIL CLASSIFICATION SYSTEM

PROJECT: KEWEN ENVIRONMENTAL      PROJECT No: \_\_\_\_\_      HOLE No: -1-5      SAMPLE No: \_\_\_\_\_  
 DEPTH: \_\_\_\_\_      REMARKS: \_\_\_\_\_      FIGURE: \_\_\_\_\_

# PARTICLE SIZE DISTRIBUTION



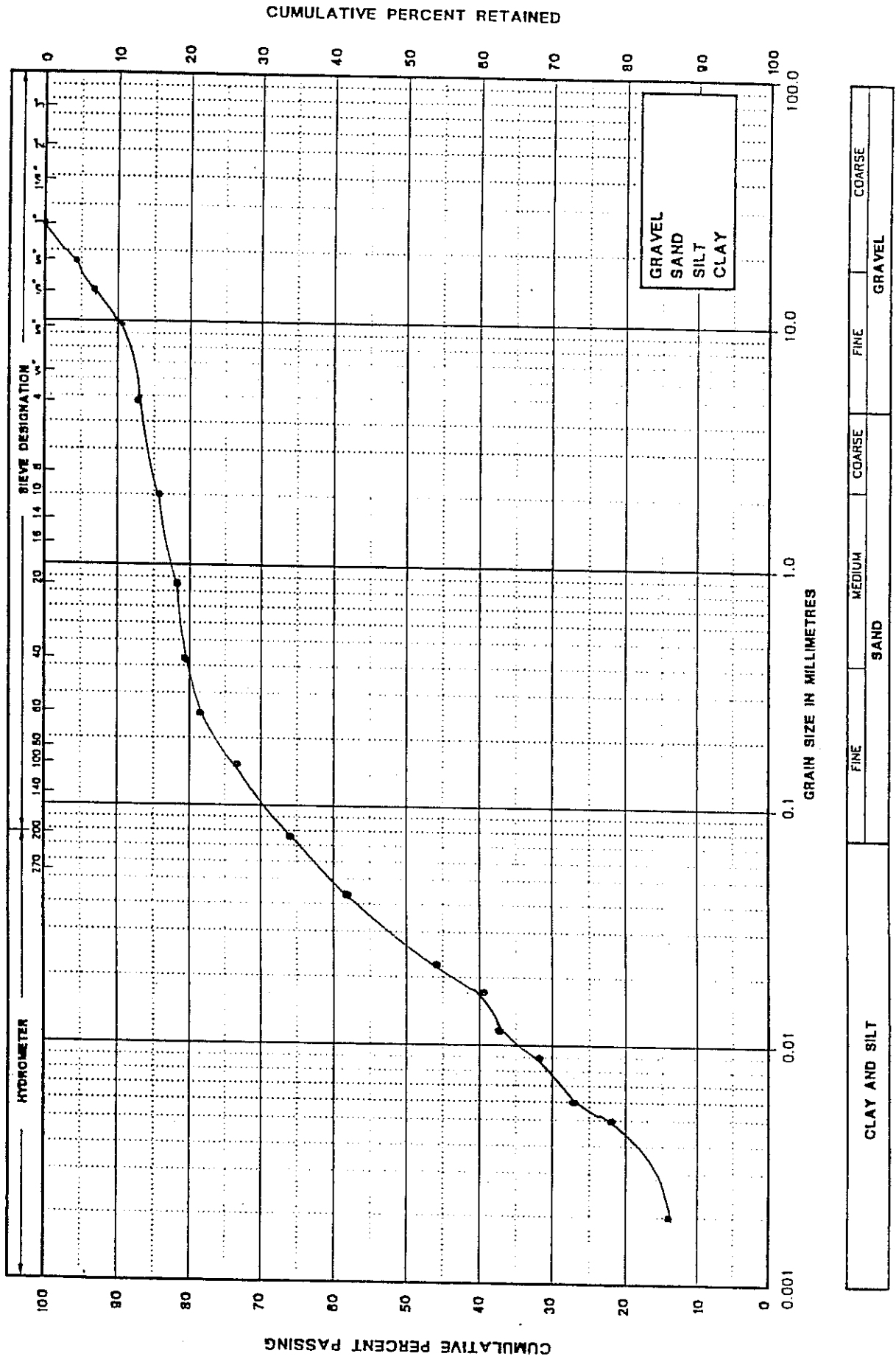
CLAY AND SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL
---------------	-----------	-------------	-------------	-------------	---------------

UNIFIED SOIL CLASSIFICATION SYSTEM

PROJECT: KEMEN ENVIRONMENTAL PROJECT No: \_\_\_\_\_ HOLE No: 3-5 SAMPLE No: \_\_\_\_\_

DEPTH: \_\_\_\_\_ REMARKS: \_\_\_\_\_ FIGURE: \_\_\_\_\_

# PARTICLE SIZE DISTRIBUTION



UNIFIED SOIL CLASSIFICATION SYSTEM

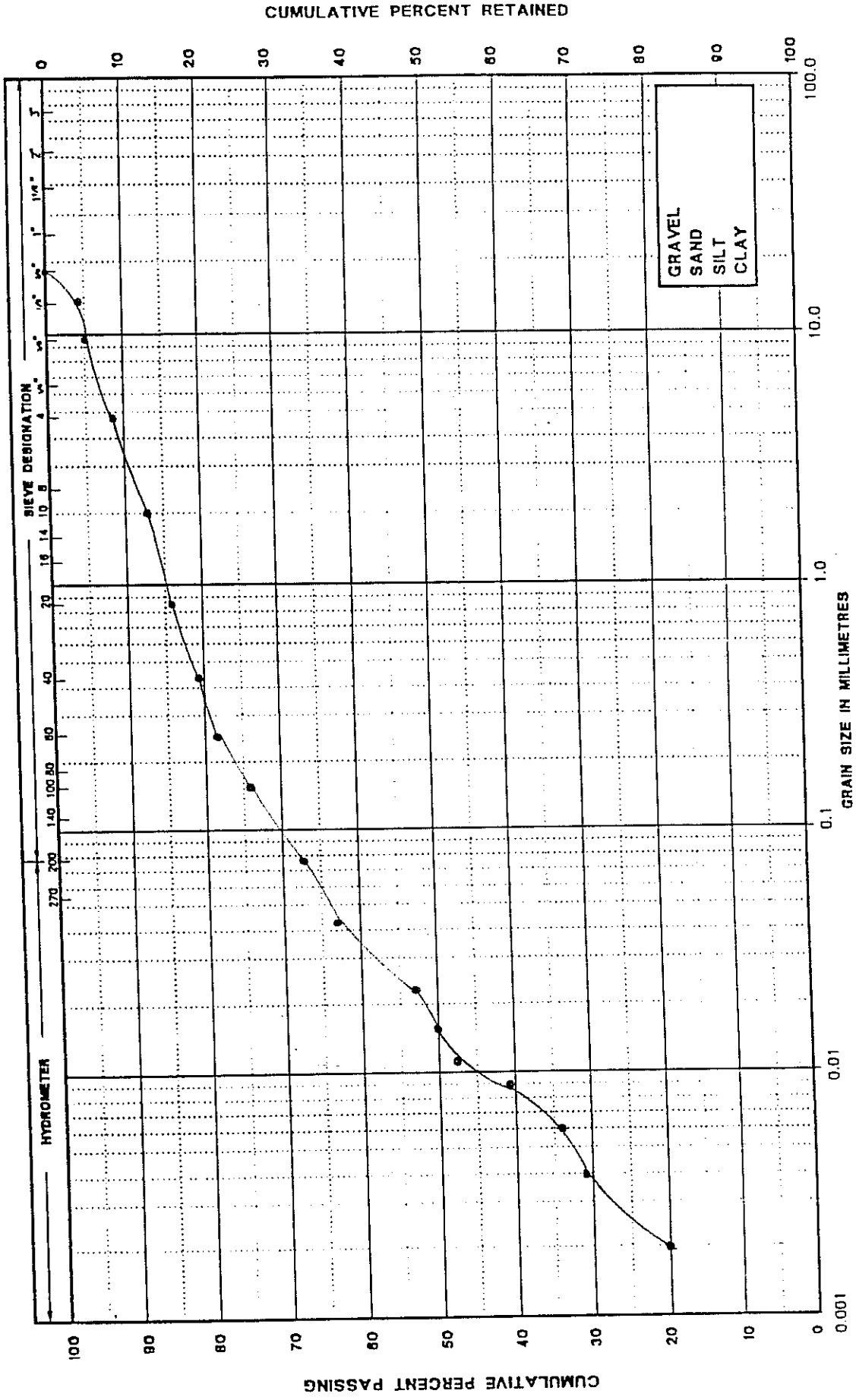
PROJECT: KEWEN ENVIRONMENTAL PROJECT No: \_\_\_\_\_ HOLE No: -6-5 SAMPLE No: \_\_\_\_\_

DEPTH: \_\_\_\_\_ REMARKS: \_\_\_\_\_

FIGURE: \_\_\_\_\_

CLAY AND SILT	FINE	MEDIUM	COARSE	FINE	GRAVEL	COARSE
---------------	------	--------	--------	------	--------	--------

# PARTICLE SIZE DISTRIBUTION



CLAY AND SILT	SAND	GRAVEL
FINE	MEDIUM	COARSE
FINE	COARSE	COARSE

UNIFIED SOIL CLASSIFICATION SYSTEM

PROJECT: KEWEN ENVIRONMENTAL PROJECT No:                      HOLE No: 7-5 SAMPLE No:                     

DEPTH:                      REMARKS:                      FIGURE:

***Appendix D***

***Ministry of Environment Table "A" Guideline***



**Table A**

**Surface soil and groundwater criteria for agricultural,  
residential/parkland, industrial/commercial land use for a  
potable groundwater condition**

Table A: Surface soil and groundwater remediation criteria for three land uses (agricultural, residential/parkland and industrial/commercial) in a potable groundwater situation.

Soil Criteria for Inorganics in this Table apply only where Surface Soil pH is 5.0 to 9.0 and for Full Depth Use, the Surface Soil pH is 5.0 to 11.0				
Table A:	Soil remediation criteria (ug/g)			Potable groundwater criteria (ug/l)
Chemical compound	Agricultural land use	Residential/parkland land use	Industrial/commercial land use	All land use categories
ACENAPHTHENE	15	15	15	20
ACENAPHTHYLENE	100	100	130	310
ACETONE	3.5	3.5	3.5	3000
ALDRIN	0.05	0.05	0.05	0.01
ANTHRACENE	28	28	28	12
ANTIMONY	13	13	(44) 40	6.0
ARSENIC	(25) 20	(25) 20	(50) 40	25
BARIUM	(1000) 750	(1000) 750	(2000) 1500	1000
BENZENE	0.24	0.24	0.24	5.0
BENZO(a)ANTHRACENE	6.6	6.6	6.6	0.2
BENZO(a)PYRENE	1.2	1.2	1.9	0.01
BENZO(b)FLUORANTHENE	12	12	18	0.2
BENZO(g,h,i)PERYLENE	40	40	40	0.2
BENZO(k)FLUORANTHENE	12	12	18	0.2
BERYLLIUM	1.2	1.2	1.2	4.0
BIPHENYL, 1,1-	0.89	0.89	0.89	350
BIS(2-CHLOROETHYL)ETHER	0.66	0.66	0.66	4.4
BIS(2-CHLOROISOPROPYL)ETHER	0.66	0.66	0.66	2.2
BIS(2-ETHYLHEXYL)PHTHALATE	100	100	100	6.0
BORON (AVAILABLE)	1.5*	1.5*	2.0*	5000
BROMODICHLOROMETHANE	0.12	0.12	0.12	5.0
BROMOFORM	0.11	0.11	0.11	5.0
BROMOMETHANE	(0.38) 0.061	(0.38) 0.061	(0.38) 0.061	(10) 3.7
CADMIUM	(4.0) 3.0	12	12	5.0
CARBON TETRACHLORIDE	(0.64) 0.10	(0.64) 0.10	(0.64) 0.10	5.0

Soil Criteria for Inorganics in this Table apply only where Surface Soil pH is 5.0 to 9.0 and for Full Depth Use, the Surface Soil pH is 5.0 to 11.0				
Table A:	Soil remediation criteria (ug/g)			Potable groundwater criteria (ug/l)
Chemical compound	Agricultural land use	Residential/parkland land use	Industrial/commercial land use	All land use categories
CHLORDANE	0.29	0.29	0.29	0.04
CHLOROANILINE, p-	1.3	1.3	1.3	28
CHLOROBENZENE	2.4	2.4	2.4	30
CHLOROFORM	0.13	0.13	0.13	5.0
CHLOROPHENOL, 2-	0.1	0.1	0.1	0.3
CHROMIUM (TOTAL)	(1000) 750	(1000) 750	(1000) 750	50
CHROMIUM (VI)	(10) 8.0	(10) 8.0	(10) 8.0	50
CHRYSENE	12	12	17	0.5
COBALT	(50) 40	(50) 40	(100) 80	100
COPPER	(200) 150	(300) 225	(300) 225	23
CYANIDE (FREE)	100	100	100	52
DIBENZO(a,h)ANTHRACENE	1.2	1.2	1.9	0.2
DIBROMOCHLOROMETHANE	0.09	0.09	0.09	5.0
DICHLOROBENZENE, 1,2- (o-DCB)	0.88	0.88	0.88	3.0
DICHLOROBENZENE, 1,3- (m-DCB)	30	30	30	630
DICHLOROBENZENE, 1,4- (p-DCB)	0.32	0.32	0.32	1.0
DICHLOROBENZIDINE, 3,3'-	1.3	1.3	1.3	83
DDD	2.2	2.2	3.5	6.0
DDE	1.6	1.6	2.4	20
DDT	1.6	1.6	2.0	0.05
DICHLOROETHANE, 1,1-	3.0	3.0	3.0	70
DICHLOROETHANE, 1,2-	(0.05) 0.022	(0.05) 0.022	(0.05) 0.022	5.0
DICHLOROETHYLENE, 1,1-	(0.015) 0.0024	(0.015) 0.0024	(0.015) 0.0024	(4.1) 0.66
DICHLOROETHYLENE, CIS-1,2-	2.3	2.3	2.3	70
DICHLOROETHYLENE, TRANS-1,2-	4.1	4.1	4.1	100
DICHLOROPHENOL, 2,4-	0.3	0.3	0.3	0.3
DICHLOROPROPANE, 1,2-	(0.12) 0.019	(0.12) 0.019	(0.12) 0.019	5.0

Soil Criteria for Inorganics in this Table apply only where Surface Soil pH is 5.0 to 9.0 and for Full Depth Use, the Surface Soil pH is 5.0 to 11.0				
Table A:	Soil remediation criteria (ug/g)			Potable groundwater criteria (ug/l)
Chemical compound	Agricultural land use	Residential/ parkland land use	Industrial/ commercial land use	All land use categories
DICHLOROPROPENE, 1,3-	(0.04) 0.0066	(0.04) 0.0066	(0.04) 0.0066	1.4
DIELDRIN	0.05	0.05	0.05	0.02
DIETHYL PHTHALATE	0.71	0.71	0.71	30
DIMETHYL PHTHALATE	0.7	0.7	0.7	30
DIMETHYLPHENOL, 2,4-	0.94	0.94	0.94	140
DINITROPHENOL, 2,4-	0.2	0.2	0.2	42
DINITROTOLUENE, 2,4-	0.66	0.66	0.66	0.5
DIOXIN/FURAN (ng TEQ/g soil)	0.01	1.0	1.0	0.000015
ENDOSULFAN	0.18	0.18	0.18	0.35
ENDRIN	0.05	0.05	0.05	0.05
ETHYLBENZENE	0.28	0.28	0.28	2.4
ETHYLENE DIBROMIDE	(0.01) 0.0056	(0.01) 0.0056	(0.012) 0.0056	1.0
FLUORANTHENE	40	40	40	130
FLUORENE	340	340	340	280
HEPTACHLOR	(0.12) 0.084	(0.12) 0.084	(0.15) 0.084	0.04
HEPTACHLOR EPOXIDE	0.06	0.06	0.09	3.0
HEXACHLOROBENZENE	0.46	0.46	0.76	(1.0) 0.62
HEXACHLOROBUTADIENE	(2.2) 0.38	(2.2) 0.38	(2.2) 0.38	0.45
HEXACHLOROCYCLOHEXANE, Gamma	0.41	0.41	0.49	0.8
HEXACHLOROETHANE	(6.3) 3.8	(6.3) 3.8	(8.5) 3.8	2.5
INDENO(1,2,3-cd)PYRENE	12	12	19	0.2
LEAD	200	200	1000	10
MERCURY	10	10	10	0.12
METHOXYCHLOR	4.0	4.0	4.0	0.3
METHYL ETHYL KETONE	0.27	0.27	0.27	350
METHYL ISOBUTYL KETONE	0.48	0.48	0.48	350

Soil Criteria for Inorganics in this Table apply only where Surface Soil pH is 5.0 to 9.0 and for Full Depth Use, the surface Soil pH is 5.0 to 11.0

Table A:	Soil remediation criteria (ug/g)			Potable groundwater criteria (ug/l)
	Chemical compound	Agricultural land use	Residential/ parkland land use	Industrial/ commercial land use
METHYL MERCURY	6.8	6.8	10	0.12
METHYL TERT BUTYL ETHER	5.7	5.7	5.7	700
METHYLENE CHLORIDE	1.1	1.1	1.1	50
METHYLNAPHTHALENE, 2-(1-)	1.2	1.2	1.2	10
MOLYBDENUM	5.0	40	40	7300
NAPHTHALENE	4.6	4.6	4.6	21
NICKEL	(200) 150	(200) 150	(200) 150	100
PENTACHLOROPHENOL	5.0	5.0	5.0	30
PETROLEUM HYDROCARBONS (gas/diesel)	100	100	100	1000
PETROLEUM HYDROCARBONS (heavy oils)	1000	1000	1000	1000
PHENANTHRENE	40	40	40	63
PHENOL	40	40	40	4200
POLYCHLORINATED BIPHENYLS	0.5	5.0	25	0.2
PYRENE	250	250	250	40
SELENIUM	2.0	10	10	10
SILVER	(25) 20	(25) 20	(50) 40	1.2
STYRENE	(1.7) 1.2	(1.7) 1.2	(1.7) 1.2	100
TETRACHLOROETHANE, 1,1,1,2-	(0.12) 0.019	(0.12) 0.019	(0.12) 0.019	5.0
TETRACHLOROETHANE, 1,1,2,2-	0.01	0.01	0.01	1.0
TETRACHLOROETHYLENE	0.45	0.45	0.45	5.0
THALLIUM	4.1	4.1	32	2.0
TOLUENE	2.1	2.1	2.1	24
TRICHLOROBENZENE, 1,2,4-	30	30	30	70
TRICHLOROETHANE, 1,1,1-	(34) 26	(34) 26	(34) 26	200
TRICHLOROETHANE, 1,1,2-	0.28	0.28	0.28	5.0
TRICHLOROETHYLENE	(3.9) 1.1	(3.9) 1.1	(3.9) 1.1	50

Soil Criteria for Inorganics in this Table apply only where Surface Soil pH is 5.0 to 9.0 and for Full Depth Use, the Surface Soil pH is 5.0 to 11.0				
Table A:	Soil remediation criteria (ug/g)			Potable groundwater criteria (ug/l)
Chemical compound	Agricultural land use	Residential/ parkland land use	Industrial/ commercial land use	All land use categories
TRICHLOROPHENOL, 2,4,5-	3.2	3.2	3.2	200
TRICHLOROPHENOL 2,4,6-	0.66	0.66	0.66	2.0
VANADIUM	(250) 200	(250) 200	(250) 200	200
VINYL CHLORIDE	(0.0075) 0.003	(0.0075) 0.003	(0.0075) 0.003	(1.3) 0.5
XYLENES	25	25	25	300
ZINC	(800) 600	(800) 600	(800) 600	1100
ELECTRICAL CONDUCTIVITY (mS/cm)	0.70	0.70	1.4	N/A
CHLORIDE	N/V	N/V	N/V	250000
NITRATE	N/V	N/V	N/V	10000
NITRITE	N/V	N/V	N/V	1000
SODIUM ADSORPTION RATIO (SAR)	5.0	5.0	12	N/A
SODIUM	N/V	N/V	N/V	200000

( ) Criterion value in brackets applies to medium and fine textured soils.

+ Boron soil criterion based on Hot Water Extract.

N/A = Not applicable. N/V = No Value.

++ Analysis for methyl mercury is only required when the total mercury criterion is exceeded.

(\*1-) 2-methyl naphthalene soil criterion is applicable to 1-methyl naphthalene with the provision that if both are detected in the soil, the sum of the two concentrations cannot exceed the soil criterion.

***Appendix E***

***Soil Chemical Analyses***



**PHILIP ANALYTICAL SERVICES**  
 5735 McAdam Road  
 Mississauga, Ontario L4Z 1N9

Tel: (905) 890-8566  
 Fax: (905) 890-8575  
 Wats: 1-800-263-9040

LAB ONLY

Work Order: # 2156050

Comments: JUN 27 01 PM 1:20

**CHAIN OF CUSTODY RECORD**

Client: KEWEN ENVIRONMENTAL

PAS Quote #: Baker St. Peaking (cont.)

Page 1 of 1

Contact: THOM KEWEN  
 Phone: 905-640-9454 Fax: 905-640-9455

Client P.O. #:

Client Project #:

Sampled by: R. KAWENY

Please specify Guideline (if applicable)

Analysis Required:

Invoice to (if other than above):

TAT (Turnaround Time)

**PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS**

\*some exceptions apply, please contact Lab  
 STD 5-7 Business Days

RUSH Specify Date

Time

Sample #	Client Sample I.D.	Date Sampled	Time Sampled	Sample Matrix	No. of Containers	Comments/Contamination/ Site History
1	BH 7-2	6/26/01	6:45	SOIL	2	
2	BH 5-2	6/26/01			2	
3	BH 1-2	6/25/01			1	
4	BH 2-2				1	
5	BH 3-2				1	
6	BH 4-2	6/26/01			1	
7	BH 6-2				1	
8	BH 1-4				1	
9	BH 3-4				1	
10	BH 6-4				1	
11	BH 7-4				1	
12						

VOC's  
 PH. COND.  
 METALS

Samples Relinquished to PAS by (Client Signature)

*[Signature]*

Date: 6/27/01

Time:

Samples Received in lab by:

*[Signature]*

Date: 6/27/01

Time: 13:20

Method of Shipment: Express

Condition of samples upon receipt at lab: ZIC





ANALYTICAL SERVICES

**KEWEN ENVIRONMENTAL**  
9 Bayberry Street  
Stouffville, ON  
L4A 7Z1

20-Jul-2001

Page: 4  
Copy: 2 of 2

Attn: Thom Kewen  
Project:

PO #: 01-114  
Received: 6-Jul-2001 15:04

Job: 2156376

Status: Final

Water Samples

Sample Id	HCO3 <sup>-</sup> Calc. mg/L		L.I. Calc.		A.I. Calc.		R.S.I. Calc.	
	None	None	None	None	None	None	None	None
BH-6	663	0.3	12.87	6.6	nan	nan	nan	nan
Blank	308	-0.5	11.65	8.1	11.62	8.1	8.1	8.1
QC Standard (found)	302	-0.6	11.62	8.1	12.89	6.6	6.6	6.6
QC Standard (expected)	675	0.3	12.89	6.6				
Repeat BH-6								



ANALYTICAL SERVICES

**KEWEN ENVIRONMENTAL**  
9 Bayberry Street  
Stouffville, ON  
L4A 7Z1

20-Jul-2001

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Attn: Thom Kewen  
Project:

PO #: 01-114  
Received: 6-Jul-2001 15:04

Job: 2156376

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*  
.....  
Ralph Siebert, B.Sc.  
Project Manager



ANALYTICAL SERVICES

KEWEN ENVIRONMENTAL  
9 Bayberry Street  
Stouffville, ON  
L4A 7Z1

9-Jul-2001

Page: 1  
Copy: 2 of 2

Attn: Thom Kewen  
Project:

Received: 27-Jun-2001 13:56

PO #:

Job: 2156050

Status: Final

Soil Samples

Sample Id	pH	SM 4500B pH Units	Sp. Cond. SM 2510B umhos/cm	Ag ICAP ppm	Al ICAP ppm	Ba ICAP ppm	Be ICAP ppm	Ca ICAP ppm	Cd ICAP ppm
BH7-2	9.19		111	<1	9230	49	0.3	101000	<0.5
BH5-2	9.36		877	<1	4570	15	<0.2	110000	<0.5
BH1-2	8.87		703	<1	2590	17	<0.2	129000	<0.5
BH2-2	9.14		1149	<1	3940	15	<0.2	137000	<0.5
BH3-2	9.26		761	<1	8150	64	0.3	122000	<0.5
BH4-2	9.33		1770	<1	6580	35	0.2	142000	<0.5
BH6-2	8.61		1540	<1	9210	41	0.4	9550	<0.5
BH-1-4	8.91		454	<1	3100	13	<0.2	109000	<0.5
BH-3-4	10.5		789	<1	4480	20	<0.2	146000	<0.5
BH-6-4	9.47		1940	<1	4050	19	<0.2	96500	<0.5
BH-7-4	9.17		1520	<1	9010	53	0.3	88600	<0.5
Blank	---		3	<1	<20	<5	<0.2	<50	<0.5
QC Standard (found)	9.23		2110	2	16800	157	0.5	6150	<0.5
QC Standard (expected)	9.38		2181	2	16300	157	0.6	6210	<0.5
Repeat BH7-2	9.16		1108	<1	8870	49	0.3	104000	<0.5





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Project:

Received: 27-Jun-2001 13:56

PO #:

Job: 2156050

Status: Final

Soil Samples

Sample Id	Co		Cr		Cu		Fe		K		Mg		Mn		Mo	
	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm
BH7-2	5		14		16		16800		1720		23200		431		<3	
BH5-2	2		6		7		7750		809		52200		290		<3	
BH1-2	<2		6		8		7800		586		60200		252		<3	
BH2-2	2		3		14		11900		1150		66500		345		<3	
BH3-2	2		10		27		10200		1390		56400		301		<3	
BH4-2	<2		12		39		17200		1090		67000		339		<3	
BH6-2	4		15		12		19300		866		5310		517		<3	
BH-1-4	<2		5		7		6380		512		48500		271		<3	
BH-3-4	2		7		9		6650		1070		62300		256		<3	
BH-6-4	3		7		10		8280		733		33200		264		<3	
BH-7-4	5		14		14		15900		1970		20400		407		<3	
Blank	<2		<1		<1		<50		<100		<20		<1		<3	
QC Standard (found)	26		46		31		32100		2730		8230		1160		<3	
QC Standard (expected)	25		45		32		31100		2630		8060		1140		<3	
Repeat BH7-2	6		14		16		16400		1490		23500		442		<3	



ANALYTICAL SERVICES

**KEWEN ENVIRONMENTAL**  
9 Bayberry Street  
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9-Jul-2001

Page: 3  
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Attn: Thom Kewen  
Project:

Received: 27-Jun-2001 13:56

PO #:

Job: 2156050

Status: Final

Soil Samples

Sample Id	Na		Ni		P		Pb		Sr		Ti		V		Zn	
	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm	ICAP	ppm
BH7-2	1340		12		556		<5		127.		371		20		79	
BH5-2	784		5		382		<5		60.1		247		14		73	
BH1-2	490		4		300		20		67.4		214		15		141	
BH2-2	940		4		636		7		76.8		418		17		833	
BH3-2	763		7		327		169		73.3		242		13		168	
BH4-2	1140		7		252		45		76.1		200		15		97	
BH6-2	1410		10		663		13		12.9		130		28		83	
BH-1-4	379		3		381		<5		81.6		163		10		90	
BH-3-4	537		4		312		8		83.7		232		11		54	
BH-6-4	1220		4		447		<5		90.4		264		14		57	
BH-7-4	1460		12		585		<5		119.		453		22		53	
Blank	<50		<2		<20		<5		<0.3		<5		<1		<5	
QC Standard (found)	363		43		798		18		26.4		661		45		129	
QC Standard (expected)	337		43		810		21		26.0		882		48		126	
Repeat BH7-2	1360		12		588		<5		130.		362		21		80	



ANALYTICAL SERVICES

**KEWEN ENVIRONMENTAL**  
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L4A 7Z1

9-Jul-2001

Page: 4  
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Attn: Thom Kewen  
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Received: 27-Jun-2001 13:56

PO #:

Job: 2156050

Status: Final

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Job approved by:

Signed: *Ralph Siebert*  
Ralph Siebert, B.Sc.  
Project Manager





ANALYTICAL SERVICES

Client: Kewen Environmental  
 Work Order: 2156050  
 Matrix: Soil

**VOLATILE ORGANIC COMPOUNDS**  
 Units: micrograms/gram (ug/g) dry weight

Date: 09-Jul-01

Compound	EQL ug/g	BH5-2	BH7-2	BH7-2 Dup.
Chloromethane	0.005	nd	nd	nd
Vinyl Chloride	0.002	nd	nd	nd
Bromomethane	0.005	nd	nd	nd
Chloroethane	0.005	nd	nd	nd
Trichlorofluoromethane	0.005	nd	nd	nd
Acetone	0.100	nd	nd	nd
1,1-Dichloroethene	0.002	nd	nd	nd
Dichloromethane (Methylene Chloride)	0.010	nd	nd	nd
trans-1,2-Dichloroethene	0.002	nd	nd	nd
Methyl-t-Butyl Ether	0.002	nd	nd	nd
1,1-Dichloroethane	0.002	nd	nd	nd
Methyl Ethyl Ketone (MEK)	0.025	nd	nd	nd
cis-1,2-Dichloroethene	0.002	nd	nd	nd
Chloroform	0.002	nd	nd	nd
1,2-Dichloroethane	0.002	nd	nd	nd
1,1,1-Trichloroethane	0.002	nd	nd	nd
Carbon Tetrachloride	0.002	nd	nd	nd
Benzene	0.002	0.003	0.002	*0.001
1,2-Dichloropropane	0.002	nd	nd	nd
Trichloroethene (Trichloroethylene)	0.002	nd	nd	nd
Bromodichloromethane	0.002	nd	nd	nd
cis-1,3-Dichloropropene	0.002	nd	nd	nd
Methyl Isobutyl Ketone (MIBK)	0.025	nd	nd	nd
trans-1,3-Dichloropropene	0.002	nd	nd	nd
1,1,2-Trichloroethane	0.002	nd	nd	nd
Toluene	0.002	0.008	0.007	0.004
2-Hexanone	0.025	nd	nd	nd
Dibromochloromethane	0.002	nd	nd	nd
1,2-Dibromoethane (Ethylene dibromide)	0.002	nd	nd	nd
Tetrachloroethene (Perchloroethylene)	0.002	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.002	nd	nd	nd
Chlorobenzene	0.002	nd	nd	nd
Ethylbenzene	0.002	0.002	*0.001	*0.001
m-Xylene & p-Xylene	0.002	0.007	0.006	0.004
Bromoform	0.002	nd	nd	nd
Styrene	0.002	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.002	nd	nd	nd
o-Xylene	0.002	0.002	0.002	*0.001
1,3-Dichlorobenzene	0.002	nd	nd	nd
1,4-Dichlorobenzene	0.002	nd	nd	nd
1,2-Dichlorobenzene	0.002	nd	nd	nd
Surrogate Standard Recoveries	(Control Limits)			
Dibromofluoromethane (70-130%)		101%	100%	101%
Toluene-d8 (70-130%)		105%	104%	103%
4-Bromofluorobenzene (70-130%)		97%	98%	97%





ANALYTICAL SERVICES

Client: Kewen Environmental  
 Work Order: 2156050  
 Matrix: Soil

**VOLATILE ORGANIC COMPOUNDS**  
 Units: micrograms/gram (ug/g) dry weight

Date: 09-Jul-01

Compound	EQL ug/g	Method Blank			Spiked Method Blank			
		Result	Upper Limit	Accept	% Recovery	Lower Limit	Upper Limit	Accept
Chloromethane	0.005	nd	0.005	yes	84	60	140	yes
Vinyl Chloride	0.002	nd	0.002	yes	89	60	140	yes
Bromomethane	0.005	nd	0.005	yes	100	60	140	yes
Chloroethane	0.005	nd	0.005	yes	93	60	140	yes
Trichlorofluoromethane	0.005	nd	0.005	yes	94	60	140	yes
Acetone	0.100	nd	0.100	yes	94	60	140	yes
1,1-Dichloroethene	0.002	nd	0.002	yes	95	70	130	yes
Dichloromethane (Methylene Chloride)	0.010	nd	0.010	yes	100	70	130	yes
trans-1,2-Dichloroethene	0.002	nd	0.002	yes	97	70	130	yes
Methyl-t-Butyl Ether	0.002	nd	0.002	yes	100	70	130	yes
1,1-Dichloroethane	0.002	nd	0.002	yes	97	70	130	yes
Methyl Ethyl Ketone (MEK)	0.025	nd	0.025	yes	99	60	140	yes
cis-1,2-Dichloroethene	0.002	nd	0.002	yes	99	70	130	yes
Chloroform	0.002	nd	0.002	yes	99	70	130	yes
1,2-Dichloroethane	0.002	nd	0.002	yes	99	70	130	yes
1,1,1-Trichloroethane	0.002	nd	0.002	yes	98	70	130	yes
Carbon Tetrachloride	0.002	nd	0.002	yes	97	70	130	yes
Benzene	0.002	nd	0.002	yes	98	70	130	yes
1,2-Dichloropropane	0.002	nd	0.002	yes	98	70	130	yes
Trichloroethene (Trichloroethylene)	0.002	nd	0.002	yes	97	70	130	yes
Bromodichloromethane	0.002	nd	0.002	yes	99	70	130	yes
cis-1,3-Dichloropropene	0.002	nd	0.002	yes	98	70	130	yes
Methyl Isobutyl Ketone (MIBK)	0.025	nd	0.025	yes	100	60	140	yes
trans-1,3-Dichloropropene	0.002	nd	0.002	yes	100	70	130	yes
1,1,2-Trichloroethane	0.002	nd	0.002	yes	101	70	130	yes
Toluene	0.002	nd	0.002	yes	98	70	130	yes
2-Hexanone	0.025	nd	0.025	yes	101	60	140	yes
Dibromochloromethane	0.002	nd	0.002	yes	101	70	130	yes
1,2-Dibromoethane (Ethylene dibromide)	0.002	nd	0.002	yes	101	70	130	yes
Tetrachloroethene (Perchloroethylene)	0.002	nd	0.002	yes	97	70	130	yes
1,1,1,2-Tetrachloroethane	0.002	nd	0.002	yes	100	70	130	yes
Chlorobenzene	0.002	nd	0.002	yes	98	70	130	yes
Ethylbenzene	0.002	nd	0.002	yes	93	70	130	yes
m-Xylene & p-Xylene	0.002	nd	0.002	yes	98	70	130	yes
Bromoform	0.002	nd	0.002	yes	101	70	130	yes
Styrene	0.002	nd	0.002	yes	101	70	130	yes
1,1,2,2-Tetrachloroethane	0.002	nd	0.002	yes	100	70	130	yes
o-Xylene	0.002	nd	0.002	yes	98	70	130	yes
1,3-Dichlorobenzene	0.002	nd	0.002	yes	101	70	130	yes
1,4-Dichlorobenzene	0.002	nd	0.002	yes	102	70	130	yes
1,2-Dichlorobenzene	0.002	nd	0.002	yes	101	70	130	yes
Surrogate Standard Recoveries		(Control Limits)						
Dibromofluoromethane		107%	70-130%	yes	100	70	130	yes
Toluene-d8		101%	70-130%	yes	99	70	130	yes
4-Bromofluorobenzene		100%	70-130%	yes	100	70	130	yes







ANALYTICAL SERVICES

Client: Kewen Environmental  
Work Order: 2156050  
Matrix: Soil

**VOLATILE ORGANIC COMPOUNDS**

Date: 09-Jul-01

Legend: EQL = Estimated Quantitation Limit for undiluted samples  
nd = Not Detected Above EQL  
Dup. = Duplicate  
\* = Detected below EQL but passed compound identification criteria

Date of sample receipt: June 27, 2001  
Date of sample analysis: July 3, 2001

**Analytical Method:**

The soil samples were analysed by low level purge & trap (US EPA Method 5035) gas chromatography/ mass spectrometry using US EPA Method 8260B (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 PAS for a period of 30 days following reporting or as per specific contractual arrangement.*

Job Approved By:

.....  
Anne Trebaul, M.Sc.  
Chemist



*Appendix F*

*Groundwater Chemical Analyses*



PHILIP ANALYTICAL SERVICES

7335 McAdam Road  
Mississauga, Ontario L4Z 1N9  
Tel: (905) 890-8566  
Fax: (905) 890-8575  
Wats: 1-800-263-9040

LAB DRY ONLY

Work Order:

2156376

Comments:

CHAIN OF CUSTODY RECORD

Client: KEWEN ENVIRON MENTAL PAS Quote #: 01-114 Page 1 of 1  
9 BAMBURY STREET Client P.O. #:                       
STOUFFVILLE ON L4A 7Z1 Client Project #:                       
THOM KEWEN Sampled by: MOE TABLE 'A'  
905-640-9454 Phone: 905-640-9455 Please specify Guideline (if applicable)                       
Fax:                     

TAT (Turnaround Time)                       
**PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS**  
 \*some exceptions apply, please contact Lab  
STD 5-7 Business Days  
 RUSH Specify Date 6  
 Time                     

Analysis Required:                       
WATPAC "MS"  
 Invoice to (if other than above):                       
                      
                    

Sample #	Client Sample I.D.	Date Sampled	Time Sampled	Sample Matrix	No. of Containers	Comments/Contamination/ Site History
1	BSA-6	JUL 6	PM	WATER	3	
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

Samples Relinquished to PAS by                      Date: Jul 6 - 2001 Time: 2:20 PM Method of Shipment                       
 (Client Signature)  
 Samples Received in lab by: V. Eccles Date: 01/07/06 Time: 14:17 Condition of samples upon receipt at lab:



ANALYTICAL SERVICES

**KEWEN ENVIRONMENTAL**  
9 Bayberry Street  
Stouffville, ON  
L4A 7Z1

20-Jul-2001

Page: 1  
Copy: 2 of 2

Attn: Thom Kewen  
Project:

PO #: 01-114  
Received: 6-Jul-2001 15:04

Job: 2156376

Status: Final

Water Samples

Sample Id	Ag		Al		As		B		Ba		Be		Bi		Ca	
	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L
BH-6	<0.001	0.05	<0.02	0.11	0.33	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	269
Blank	<0.001	<0.05	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<5
QC Standard (found)	0.037	10.2	0.51	0.51	0.49	0.51	0.51	0.51	0.49	0.51	0.51	0.51	0.51	0.51	0.51	50
QC Standard (expected)	0.030	10.0	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	50
Repeat BH-6	<0.001	0.05	<0.02	0.11	0.32	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	264

Sample Id	Cd		Co		Cr		Cu		Fe		K		Mg		Mn	
	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L	ICP/MS mg/L
BH-6	<0.001	0.002	<0.05	<0.005	0.4	13	59.2	0.23	<0.001	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Blank	<0.001	<0.001	<0.05	<0.005	<0.3	<1	<0.5	<0.05	<0.001	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
QC Standard (found)	0.496	0.502	0.50	0.490	0.6	9	9.7	0.52	0.496	0.502	0.50	0.490	0.6	9.7	0.52	0.52
QC Standard (expected)	0.500	0.500	0.50	0.500	0.5	10	10.0	0.50	0.500	0.500	0.50	0.500	0.5	10.0	0.50	0.50
Repeat BH-6	<0.001	0.002	<0.05	<0.005	<0.3	11	57.7	0.22	<0.001	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05



ANALYTICAL SERVICES

**KEWEN ENVIRONMENTAL**  
 9 Bayberry Street  
 Stouffville, ON  
 L4A 7Z1

20-Jul-2001

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Attn: Thom Kewen  
 Project:

Received: 6-Jul-2001 15:04  
 PO #: 01-114

Job: 2156376

Status: Final

Water Samples

Sample Id	Mo ICP/MS mg/L	Na ICP/MS mg/L	Ni ICP/MS mg/L	P ICP/MS mg/L	Pb ICP/MS mg/L	Sb ICP/MS mg/L	Se ICP/MS mg/L	Si ICP/MS mg/L
BH-6	0.01	3110	<0.01	<0.5	<0.005	0.007	<0.02	6.0
Blank	<0.01	<1	<0.01	<0.5	<0.005	<0.005	<0.02	<0.5
QC Standard (found)	0.56	50	0.50	1.1	0.498	0.529	0.49	1.2
QC Standard (expected)	0.50	50	0.50	1.0	0.500	0.500	0.50	1.0
Repeat BH-6	0.01	2950	<0.01	<0.5	<0.005	0.006	<0.02	5.7

Sample Id	Sn ICP/MS mg/L	Sr ICP/MS mg/L	Ti ICP/MS mg/L	V ICP/MS mg/L	Zn ICP/MS mg/L	F- SM 4500F mg/L	Cl- SM 4110B mg/L	NO2-N SM 4110B mg/L
BH-6	<0.01	0.77	<0.05	<0.05	<0.05	<0.1	5410	<2
Blank	<0.01	<0.01	<0.05	<0.05	<0.05	<0.1	<50	<2
QC Standard (found)	0.53	0.49	0.51	0.51	0.49	0.2	2550	104
QC Standard (expected)	0.50	0.50	0.50	0.50	0.50	0.2	2500	100
Repeat BH-6	<0.01	0.75	<0.05	<0.05	<0.05	<0.1	5120	<2



ANALYTICAL SERVICES

**KEWEN ENVIRONMENTAL**  
9 Bayberry Street  
Stouffville, ON  
L4A 7Z1

20-Jul-2001

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Attn: Thom Kewen  
Project:

Received: 6-Jul-2001 15:04  
PO #: 01-114

Job: 2156376

Status: Final

Water Samples

Sample Id	PO4-3 SM 4110B	Br- SM 4110B	NO3-N SM 4110B	SO4= SM 4110B	pH Units	Alk 8.3 SM 2320B	Alk 4.2 SM 2320B	mg CaCO3/L
BH-6	<10	<5	5	112	7.17	<1	546	
Blank	<10	<5	<2	<5	---	<1	<5	
QC Standard (found)	470	200	100	490	7.03	<1	254	
QC Standard (expected)	500	200	100	500	7.00	<1	250	
Repeat BH-6	<10	<5	5	120	7.19	<1	556	

Sample Id	NH3-N SM 4500H	DOC SM 5310C	Th. Cond. Calc.	Th. TDS Calc.	pH Units	CAB Calc.	Hard(Calc) SM 2340B	CO3= Calc.
BH-6	0.18	8.0	19840.	9310	6.91	3.66	915.2	1
Blank	<0.03	<0.2	nan	66	9.96	63.3	14.5	nan
QC Standard (found)	1.47	10.0	7221.	3312	7.56	87.4	165.3	1
QC Standard (expected)	1.50	10.0	7127.	3270	7.57	87.2	166.0	1
Repeat BH-6	0.17	9.0	18870.	8865	6.88	3.78	896.0	1