NOVATECH

Engineers, Planners & Landscape Architects

Engineering

- Land / Site Development
- Municipal Infrastructure
- Environmental / Water Resources
- Traffic / Transportation
- Structural
- Recreational

Planning

- Land / Site Development
- Planning Application Management
- Municipal Planning Documents & Studies
- Expert Witness (OMB)
- Wireless Industry

Landscape Architecture

- Urban Design & Streetscapes
- Open Space, Parks & Recreation Planning
- Community & Residential Developments
- Commercial & Institutional Sites
- Environmental Restoration

36 Years

Roger Stevens Warehouse
1966 Roger Stevens Drive, Ottawa

Servicing Options Statement & Conceptual Servicing Report

Engineering excellence. Planning precision. Inspired landscapes.

SERVICING OPTIONS STATEMENT & CONCEPTUAL SERVICING REPORT

ROGER STEVENS WAREHOUSE
1966 ROGER STEVENS DRIVE
OTTAWA, ONTARIO

Prepared by:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Kanata, Ontario
K2M 1P6

July 12, 2019

Novatech File No. 119018
Ref No. 2019-128

July 12, 2019

City of Ottawa
Planning and Growth Management Department
Infrastructure Approvals Division
110 Laurier Avenue West, 4th Floor
Ottawa, Ontario
K1P 1J1

Attention: Mr. Harry Alvey, P. Eng.

Dear Sir:

Re: 1966 Roger Stevens Drive, Ottawa
Servicing Options Statement and Conceptual Servicing Report
Our File No.: 119018

Enclosed is a 'Servicing Options Statement and Conceptual Servicing Report' for the proposed distribution centre located at 1966 Roger Stevens Drive, in the City of Ottawa. This report is submitted in support of Re-zoning and Official Plan Amendment applications. This report should be read in conjunction with the Conceptual Stormwater Management Report also prepared by Novatech.

Should you have any questions or require additional information, please contact the undersigned.

Yours truly,

NOVATECH

Cara Ruddle, P. Eng.
Senior Project Manager | Land Development Engineering

cc: James Beach – Boundary Road Development Inc.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Novatech has been retained to prepare a Servicing Options Statement and Conceptual Servicing Report for the subject development. This report outlines the servicing options for the proposed development with respect to water, sanitary and storm drainage in accordance with the City Official Plan. Conceptual Servicing will also be discussed for the proposed development. This report is being submitted to satisfy the requirements for the application of Re-zoning and Official Plan Amendment. The subject site is located at 1966 Roger Stevens Drive at the intersection Roger Stevens Drive and Highway # 416. The legal description of the site is Part of Lot 21 and 22, Concession 2 (geographic Township of North Gower) now in the City of Ottawa. **Figure 1** is a Key Plan showing the site location.

2.0 EXISTING CONDITIONS

The subject property is located on the south side of Roger Stevens Drive and is bounded by Highway 416 to the east, rural residential and undeveloped forested lands to the south, residential rural estate lots to the west and Roger Stevens Drive and undeveloped/farm lands to the north. The site is approximately 2.5km to east of the Town of North Gower. Currently there is an existing residence and associated farm buildings on the property.

The parcel is approximately 49.4 hectares in size. The topography of the site is perched in the center where the existing farmhouse and barns were located and generally slopes away to the property lines. **Figure 2** is an existing conditions plan showing the current state of the site**.**

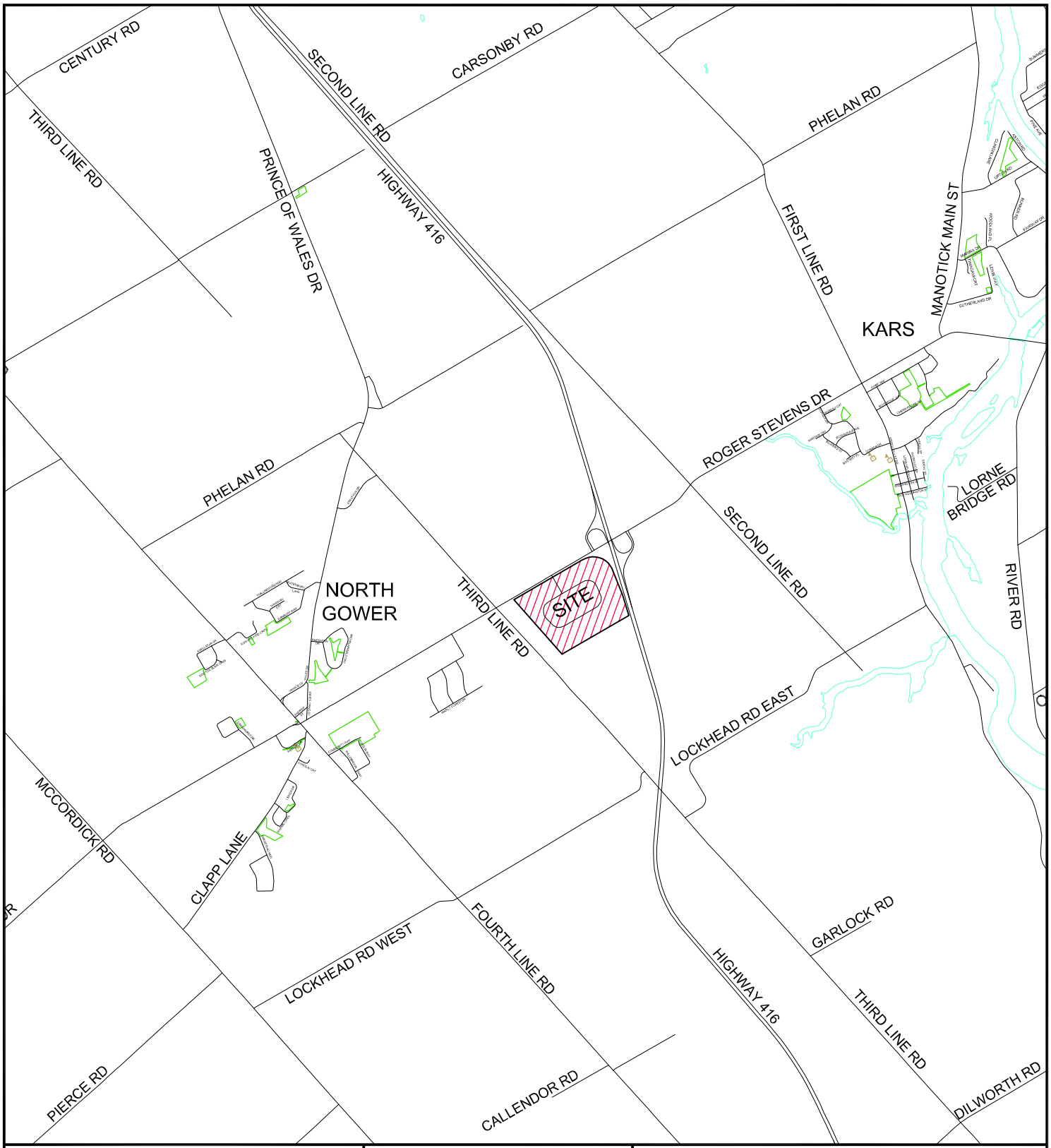
The original development concept for this property is known as the Jordel Acres Subdivision which included a row of single-family homes along Third Line Road South (some of which have been constructed). The remainder of the site was to be a commercial/industrial park. This Plan of Subdivision is registered but the Industrial Park portion of the site was not constructed. The Servicing Options Statement portion of this report will review the servicing options with supporting documentation provided as part of the previous development concept. The Conceptual Servicing portion of the report will review the servicing options and in relation to the previous development concept and what is allowable for the subject property.

3.0 PROPOSED DEVELOPMENT

The proposed development consists of a single large distribution warehouse, distribution trucking parking lot, staff parking lot, and a stormwater management facility. The site will have two accesses from Rogers Stevens to the staff parking area. A third access from Roger Stevens is provided which will serve as the truck access. **Figure 3** is a proposed Conceptual Site Plan illustrating the proposed development. The original Registered Plan of Subdivision is provided for reference at the rear of the report in **Appendix A**.

The business type proposed for development will be relatively “dry” (domestic use only) with respect to water and sewage generation. The uses will likely be transportation based fully utilizing the proximity of the site to the Highway # 416 transportation corridor.

It is proposed to service the development with private wells and a private sewage system. This report is written to provide support for this form of servicing for the development.



NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

1966 ROGER STEVENS DRIVE

KEYPLAN

SCALE		
N.T.S		
DATE	JOB	FIGURE
JULY 2019	119018	1

M:\2019\119018\CAD\Design\Figures\REPROT FIGURES.dwg, FIG 1 KP, Jun 27, 2019 - 3:25pm, mhrehoriak

SHT8X11.DWG - 216mmx279mm

M:\2019\119018\CAD\Design\Figures\Ex Conditions REPROT FIGURES.dwg, FIG 2 EXC, Jul 10, 2019 - 4:03pm, mhrehoriak

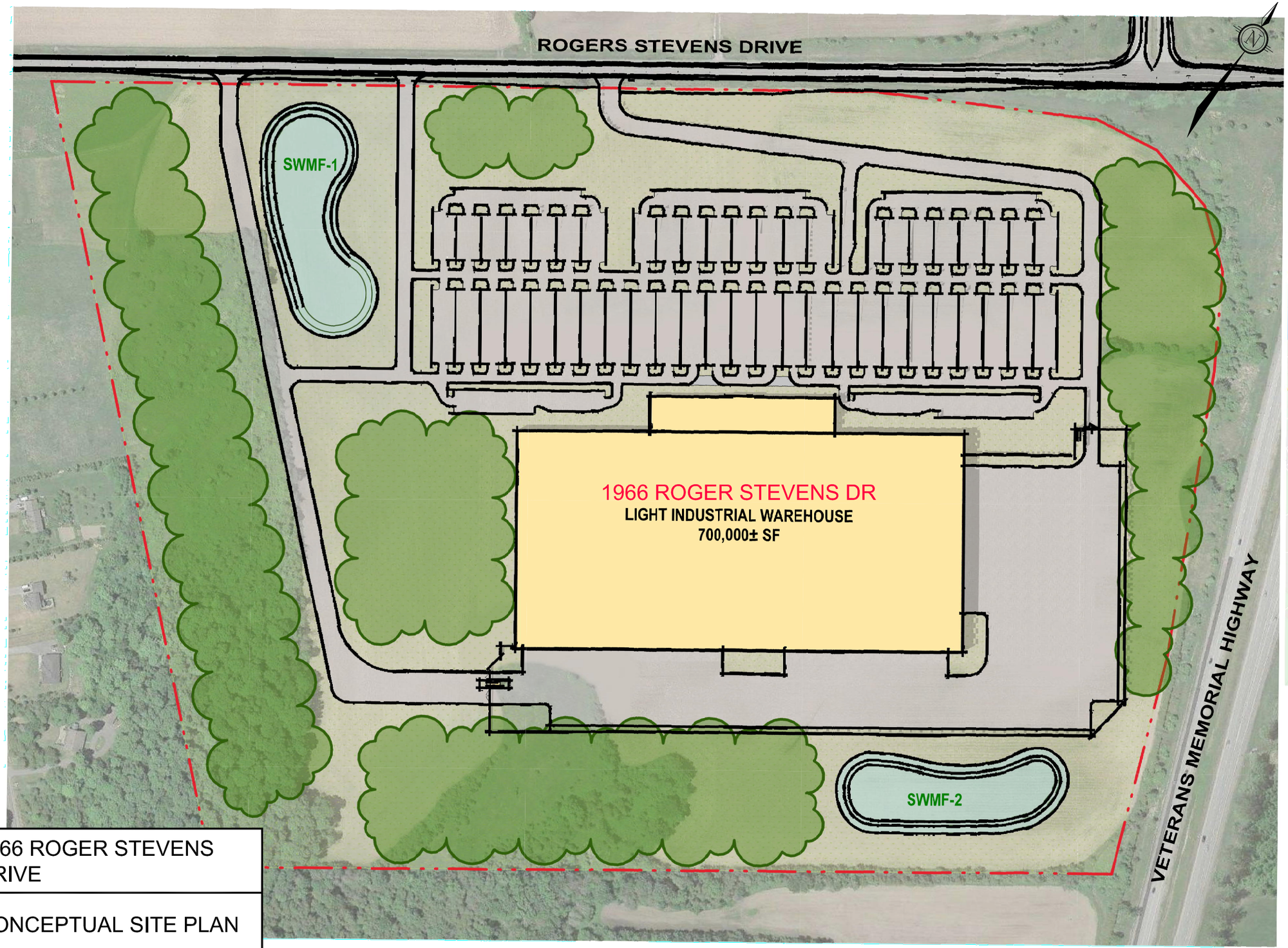
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

1966 ROGER STEVENS DRIVE

EXISTING CONDITIONS PLAN

SCALE		
N.T.S		
DATE	JOB	FIGURE
JULY 2019	119018	2



NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

1966 ROGER STEVENS DRIVE

CONCEPTUAL SITE PLAN

SCALE 1 : 3000 (0, 30, 60, 90, 120)

DATE	JOB	FIGURE
JULY 2019	119018	3

4.0 EXISTING POLICY FRAMEWORK FOR SERVICING OPTIONS OR TERMS OF REFERENCE

4.1 PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement (PPS, 2005) states that municipal sewage and water services are to be utilized where possible. Private communal sewage and water services can be utilized if a Municipality so chooses where municipal services are not available or where established policies exist to ensure the servicing satisfies criteria outlined in Section 1.6.4.1 of the PPS.

Communal water systems are shared facilities for the distribution of water to multiple residences. Communal sewage systems are shared facilities for the collection, treatment and disposal of sewage. These systems are not connected to a Municipal System. For communal development, the Municipality is responsible for ownership as per Section 52 and 53, Ontario Water Recourses Act, R.S.O. 1990, Part VIII, Environmental Protection Act, R.S.O. 1990.

Individual sewage and water services can be used in development of five units or less where municipal or private communal services are not available and where site conditions are suitable. Rural developments of greater than five units can also use individual sewage and water services where land use is in accordance with Section 1.1.4.1(a) and where site conditions are suitable for long term use of such services. (Refer to Sections 1.6.4.2 to 1.6.4.4 of the Provincial Policy Statement for more details.)

4.2 PROCEDURE D-5-3: SERVICING OPTIONS STATEMENT

A Servicing Options Statement is required for a development where the proposal is to use servicing other than existing municipal services. The Servicing Options Statement must review all possible servicing scenarios including municipal, communal and private servicing. MOE Procedure D-5-3 (March 1995) requires that the Servicing Options Statement should address the proximity of existing servicing and possible future connections to the existing municipal infrastructure, evaluation of each servicing option, and provide any documentation supporting the proposed servicing option for the development.

4.3 CITY OFFICIAL PLAN

Section 2.3.2 – Water and Wastewater Services, item 12 states that '*all development outside of Public Service Areas will be based on private services*.' Since the subject property is well outside of the Urban Boundary it is not located within a Public Service Area and private servicing is required.

Section 4.4 of the Official Plan states that proponents of development must demonstrate that the servicing proposed for a development is adequate. Since the proposed development is to be serviced by private well and wastewater systems, the policy 4.4.2- Private Water and Wastewater Servicing applies. This policy states that '*Private individual services will mean a privately-owned and maintained well-water supply and a privately-owned and privately-maintained wastewater disposal systems that services the development on the lot upon which they are located and which will remain under one ownership.*'

Policy 1 (items a) to e)) of Section 4.4.2 of the Official Plan states that sufficient information is to be provided to ensure that adequate groundwater exists to service the development, that the groundwater meets the Ontario Drinking Water Standards, Objectives and Guidelines, and any

neighbouring wells will not be negatively impacted. It is also required to show that the wastewater system will not negatively impact the new well or the well on neighbouring properties.

5.0 ENVIRONMENTAL SUITABILITY AND EVALUATION

A Hydrogeological Study Report, Jordel Acres Proposed Subdivision, prepared by Sauriol Environmental Inc. (June 1999) has been completed for the subject site. The following information summarizes their findings.

5.1 SUITABILITY OF THE TERRAIN

5.1.1 TERRAIN

There is a high point that runs diagonally across the site that splits the site drainage. The eastern half of the site drains south easterly to a culvert under the Highway # 416 eventually outletting to Stevens Creek. The western half of the site drains north westerly to the Roger Stevens Drive road side ditch with outlets to a culvert under Roger Stevens Drive. This existing ditch system drains to Stevens Creek.

5.1.2 SOILS

Three (3) test wells were excavated as part of the terrain evaluation. The test wells concluded that there are three types of soils present on site. The ridge area consists of glacial till and the lower areas consist of a clay material with some parts overlain by a thin sand material. The bedrock is approximately 8 to 13 metres below grade.

5.1.3 GROUNDWATER SUPPLY

The Hydrogeology Report indicates there were two existing wells on the property which serviced the existing farm house and barn. Three additional test wells were drilled to assess the quality and quantity of groundwater of the bedrock aquifer. The water bearing zone was found between 15 and 32 metres below grade. Pump and recovery tests were completed on the three wells constructed. These tests concluded that the aquifer can supply adequate water for the domestic demands of the previously proposed industrial/commercial subdivision and that there were no adverse effects on neighbouring wells. It was concluded that the groundwater is good quality and it is recommended that the shallow bedrock zone be used as a source of groundwater since there is less mineralization (lower levels of chloride, sodium and conductivity). There are elevated levels of hardness and at time iron and these aesthetic parameters can be treated with water softeners.

5.1.4 SUITABILITY FOR SEPTIC SYSTEMS

Sixteen test pits were excavated to complete grain size analyses and percolation tests of the various soil materials to determine the suitability for septic systems to service the proposed industrial/commercial development. The existing clay material has low permeability and imported material will be required for the septic system. The existing neighbouring wells were reviewed for nitrate levels and confirmed that the existing bedrock aquifer is isolated from the existing wells. Therefore, the proposed development can be serviced by septic systems.

5.2 SUITABILITY OF DEVELOPMENT

5.2.1 MUNICIPAL SERVICES

Municipal Infrastructure exists within the Urban Boundary of the City of Ottawa with the exception of some villages such as Richmond, Munster and Manotick. The Official Plan (Section 5.6.1) states that servicing in rural areas or outside the urban boundary is provided with private servicing (wells and sewage systems). The closest municipal watermains are located 12 km away therefore, the option of servicing the subject property with Municipal Services is not a viable option.

5.2.2 COMMUNAL SERVICES

Communal services are the preferred means of servicing development in areas where full municipal sewage and water services are not or cannot be provided and where site conditions are suitable over the long term. Communal servicing is an option where there are five or more units to be serviced. Communal services are also typically used where there is a compact lot layout or higher density units. The cost of providing a water treatment plant, sewage treatment facility and the financial aspects of a responsibility agreement with the City of Ottawa make this option economically challenging. Communal servicing is not a viable option since multiple units are not being proposed in the development concept.

5.2.3 PRIVATE SERVICING

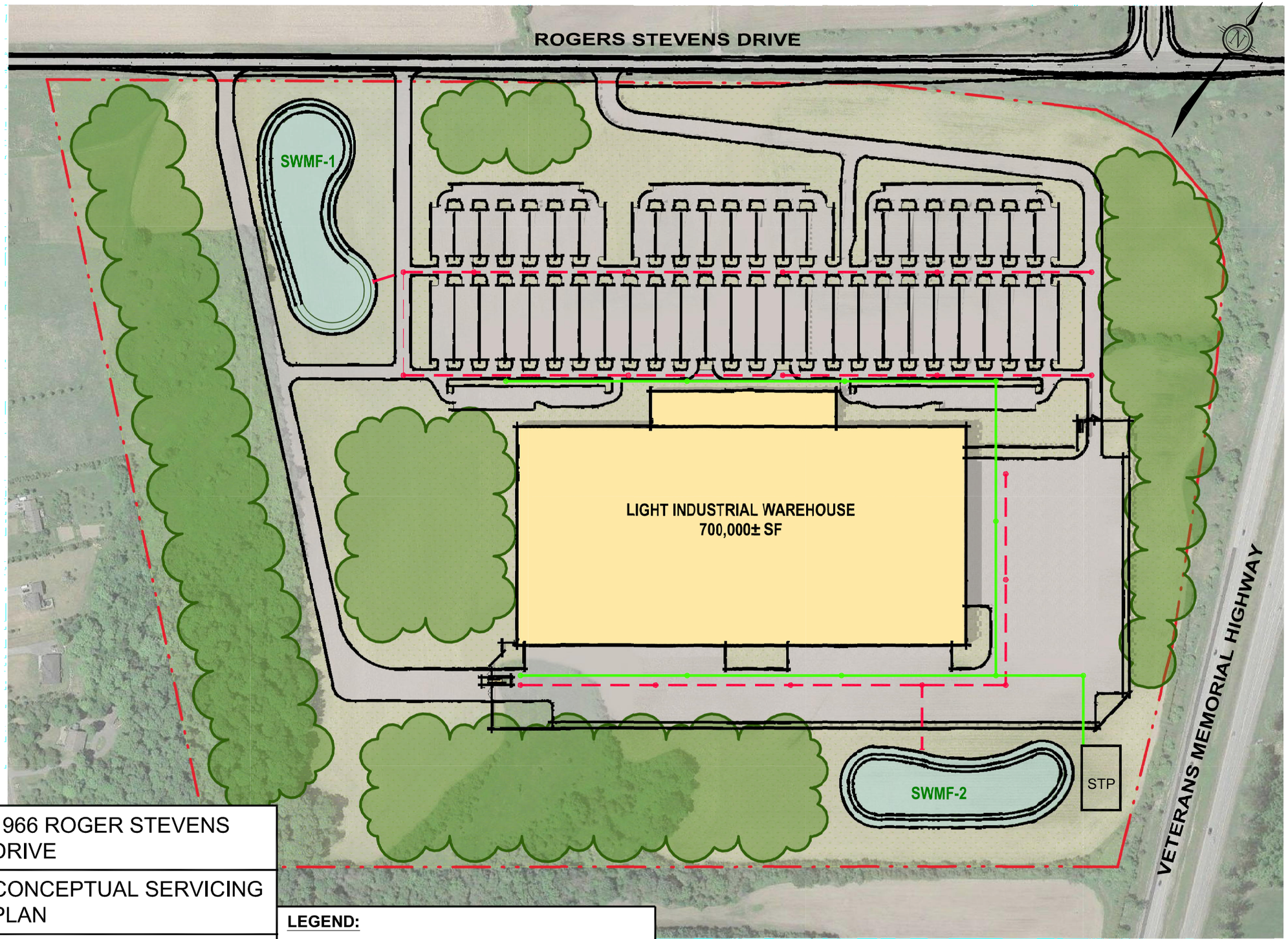
As indicated above the Official Plan states that private servicing is the preferred option for properties outside the Urban Boundary. The subject site is located outside the Urban Boundary and therefore, private servicing is the preferred option.

The Hydrogeological Study Report states that the on-site soils are suitable for septic systems and have made recommendations on the type and size of systems based on the previously proposed industrial/commercial concept. The design will be modified based on the current development proposal. The design flow of the sewage system be greater than 10,000L/day a Ministry of the Environment, Climate and Parks approval would be required.

The Hydrogeological Study Report also indicates that the existing bedrock aquifer can supply good quality groundwater and there is adequate quantity to service the existing Registered Plan of Subdivision. Additional Hydrogeological work will be required at the time of Site Plan to determine the impacts of the proposed development's water taking on the aquifer.

6.0 SITE SERVICING

A preliminary servicing design has been completed to provide a conceptual design and confirm that the proposed development is serviceable. This report will provide information on the preliminary water, sanitary and storm servicing of the proposed development. It is understood that the demands/flows from the proposed development may vary throughout a year period depending on the number of employees on site. Therefore, preliminary calculations are provided for the peak and off-peak seasons. Refer to **Figure 4** Conceptual Servicing Plan for servicing details.



NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

1966 ROGER STEVENS DRIVE

CONCEPTUAL SERVICING PLAN

SCALE 1 : 3000 (0, 30, 60, 90, 120)

DATE JULY 2019 | JOB 119018 | FIGURE 4

LEGEND:

CONCEPTUAL STORM SEWER

CONCEPTUAL SANITARY SEWER

6.1 WATER SERVICING

The proposed development will be serviced with private wells. The following calculations show the various water demands for the proposed development. Water demand is calculated based on employees, truck drivers delivering to and from the facility and internal hose bibs used for cleaning purposes.

Average Day Water Demand

The average day demand of the system is calculated as follows:

Approximate Number of Employees
2,200 employees (Off-Peak Season, January-November)
Average demand per employee = 75 Litres/day

2200 x 75 = 165,000 Litres/day

Approximate Truck Traffic
There will also be a water demand related to the truck drivers accessing the facility. During the off-peak season (January- November) there will be approximately 150 trucks/day accessing the facility. Assuming that each driver utilizes the washroom facilities, the average day flows are calculated as follows:

150 x 8L/day = 1,200 Litres/day

Internal Hose Bibs
There will also be miscellaneous internal hose bib use throughout the day. Assuming that the hoses could run for 5 hrs. at a rate of 40 Litres/min., the average day flows are calculated as follows:

5 hrs. x 40Litres/minute = 12,000 Litres/day
Average Day Summary
Employee use + Truck driver use + internal hose bibs
165,000 Litres/day + 1,200 Litres/day + 12,000 Litres/day
= 178,200 Litres / day

Peak Season Demand
The average day demand of the system is calculated as follows:

Approximate Number of Employees
3500 employees (Peak Season, November-January)
Average demand per employee = 75 Litres/day

3500 x 75 = 262,500 Litres/day

Approximate Truck Traffic
There will also be a water demand related to the truck drivers accessing the facility. During the peak season (November-January) there will be approximately 215 trucks accessing the facility. Assuming that each driver utilizes the washroom facilities, the peak season day flows are calculated as follows:

215 x 8L/day = 1,720 Litres/day

Internal Hose Bib
There will also be miscellaneous internal hose bib use throughout the day. Assuming that the hoses could run for 5 hrs. at a rate of 40 Litres/min., the peak season flows are calculated as follows:

5 hrs. x 40Litres/minute = 12,000 Litres/day

Peak Season (Maximum Day) Summary
Employee use + Truck driver use + internal hose bibs
262,500 Litres/day + 1,720 Litres/day + 12,000 Litres/day
= 276,220 Litres / day

The peak instantaneous water demand of the facility will be met by the internal water system. The internal water system will consist of storage tanks and a jet pump system to maintain the internal operating pressures.

The wells will be required to meet the peak season average day demand of 276,220 L/day (50USGPM).

Fire Suppression

Fire suppression water will be provided by way of above grade storage tanks. The tanks will supply the proposed pumphouse with fire suppression water. The pumphouse will supply the required demand to the sprinkler system and on-site hydrants. The fire suppression system will be a private system, owned and maintained by the property owner. A fire suppression consultant will be part of the design team for the Site Plan stage of the project.

6.2 SANITARY SERVICING

The proposed development site is not within the City of Ottawa sanitary service area. An on-site, private sewage collection and treatment facility is proposed with surface discharge of the treated effluent to the existing municipal drain and culvert that runs under Highway 417 and drains to Stevens Creek.

Sewage Collection

Similar to the water section of the report, the average sanitary flows are calculated for the off-peak season and the maximum sanitary flows are calculated for the peak season as follows:

3500 employees (Peak Season, November-January)
Average flow per employee = 75 Litres/day

3500 x 75 = 262,500 Litres/day

There will also be a sanitary flow related to the truck drivers accessing the facility. During the peak season (November-January) there will be approximately 215 trucks accessing the facility. Assuming that each driver utilizes the washroom facilities, the peak season day flows are calculated as follows:

215 x 8L/day = 1,720 Litres/day

There will also be miscellaneous internal hose bib use throughout the day. Assuming that the hoses could run for 5 hrs. at a rate of 40 Litres/min., the peak season flows are calculated as follows:

5 hrs. x 40Litres/minute = 12,000 Litres/day

Peak Season (Maximum Day) Summary

Employee use + Truck driver use + internal hose bibs
262,500 Litres/day + 1,720 Litres/day + 12,000 Litres/day
= 276,220 Litres / day
= 3.2 Litres/second

The anticipated extraneous flows are calculated from the equation found in Appendix A-2 of the MOE Guidelines for design of Sanitary Sewer and as is follows:

2.03L/mm Ø / 100m/hr
(2.03 x 250) x (1100 / 100)
= 5,582.5 Litres/hour
= 1.55 Litres/second

The resultant peak sanitary sewage flow to the collection system is as follows:

(Avg. Flow x Peak factor (1.5)) +Extraneous Flows

= (3.20 L/s x 1.5) + 1.55 L/s

= 6.35 L/s

The collection system consists of a series of pipes designed to convey the peak flow. The collection system pipe size is 250 mm and will be installed at a slope of 0.24%. The proposed sanitary sewage collection system will be capable of conveying 30.4 L/sec.

Sewage Treatment Plant

A private sewage treatment plant will be proposed for the treatment of domestic waste from the proposed distribution centre. Based on the Ministry's dry ditch discharge requirements, the system will be designed based on the following discharge parameters (characteristics):

Wastewater Characteristics

Parameter	**Unit**	**Design Value**
Biochemical Oxygen Demand (BOD5) 1	mg/L	350
Total Suspended Solids (TSS) 1	mg/L	350
Total Kjeldahl Nitrogen (TKN) 1	mg/L	70
Total Phosphorus (TP) 1	mg/L	10
Fat, Oil and Grease (FOG) 1	mg/L	<30
pH 1	-	6 to 9
Water Temperature 1	°C	10 to 25
Alkalinity 1	mg/L as CaCO3	520

The treatment plant will be capable of treating raw sewage to "Dry Ditch" discharge requirements as per MOECC guidelines. The discharge effluent criteria is as follows:

Effluent Quality

Parameter	Units	Regulatory Limit	Design Value
Biochemical Oxygen Demand (BOD5)	mg/L	< 10	< 5
Total Suspended Solids (TSS)	mg/L	< 10	< 1
Ammonia nitrogen (NH3-N)	mg/L	< 3	< 0.5
Total Phosphorus (TP)	mg/L	< 0.15	< 0.05
E. coli	MPN/100mL	< 200	< 2.2

The discharge location of the final effluent will be to the Johnston Municipal Drain located at the southeast corner of the property.

A pre-consultation meeting will be held with the MECP and the Conservation Authority prior to Site Application to confirm the design parameters above.

6.3 STORM SERVICING

There is a high point that runs diagonally across the site that splits the site drainage. The eastern half of the site drains south easterly to a culvert under the Highway # 416 eventually outletting to Stevens Creek. The western half of the site drains north westerly to the Roger Stevens Drive road side ditch with outlets to a culvert under Roger Stevens Drive. This existing ditch system drains to Stevens Creek.

The proposed development will be serviced by a combination of storm sewers, ditches and two wet ponds designed for quantity and quality control. The front paved parking areas will be serviced with catchbasins and storm sewers that outlet to a stormwater management pond in the northwest corner of the site. This pond will outlet to the Dillon-Wallace Municipal Drain. The location of this proposed pond is within an existing flood plain area and will require cut/fill permit from the Conservation Authority. The remaining proposed landscape areas will sheet drain to ditches.
The rear portion of the site will drain to a second stormwater management pond in the southeast corner of the site. This pond will outlet to the Johnston Municipal Drain. A Conceptual Servicing Plan is provided at the rear of this report for reference.

Refer to the Conceptual Stormwater Management Report prepared by Novatech for further information on the conceptual stormwater management design.

8.0 SUMMARY AND CONCLUSIONS

This report has been prepared in support of zoning by-law amendment and official plan amendment for the proposed distribution warehouse at 1966 Roger Stevens Drive, in the City of Ottawa.

The conclusions are as follows:

- The proposed development site will be serviced with private wells.

- The proposed building will be sprinklered. Water supply for fire suppression will be provided by way of storage tanks. The storage tanks will supply fire suppression water to the proposed pump house which will supply water to the sprinkler system and on-site hydrants.
- The proposed development will be serviced by private sewage collection system and treatment facility that will surface discharge the treated effluent to the Johnston Municipal Drain.
- The stormwater quality and quantity control will be provided in two proposed Stormwater management ponds.

NOVATECH

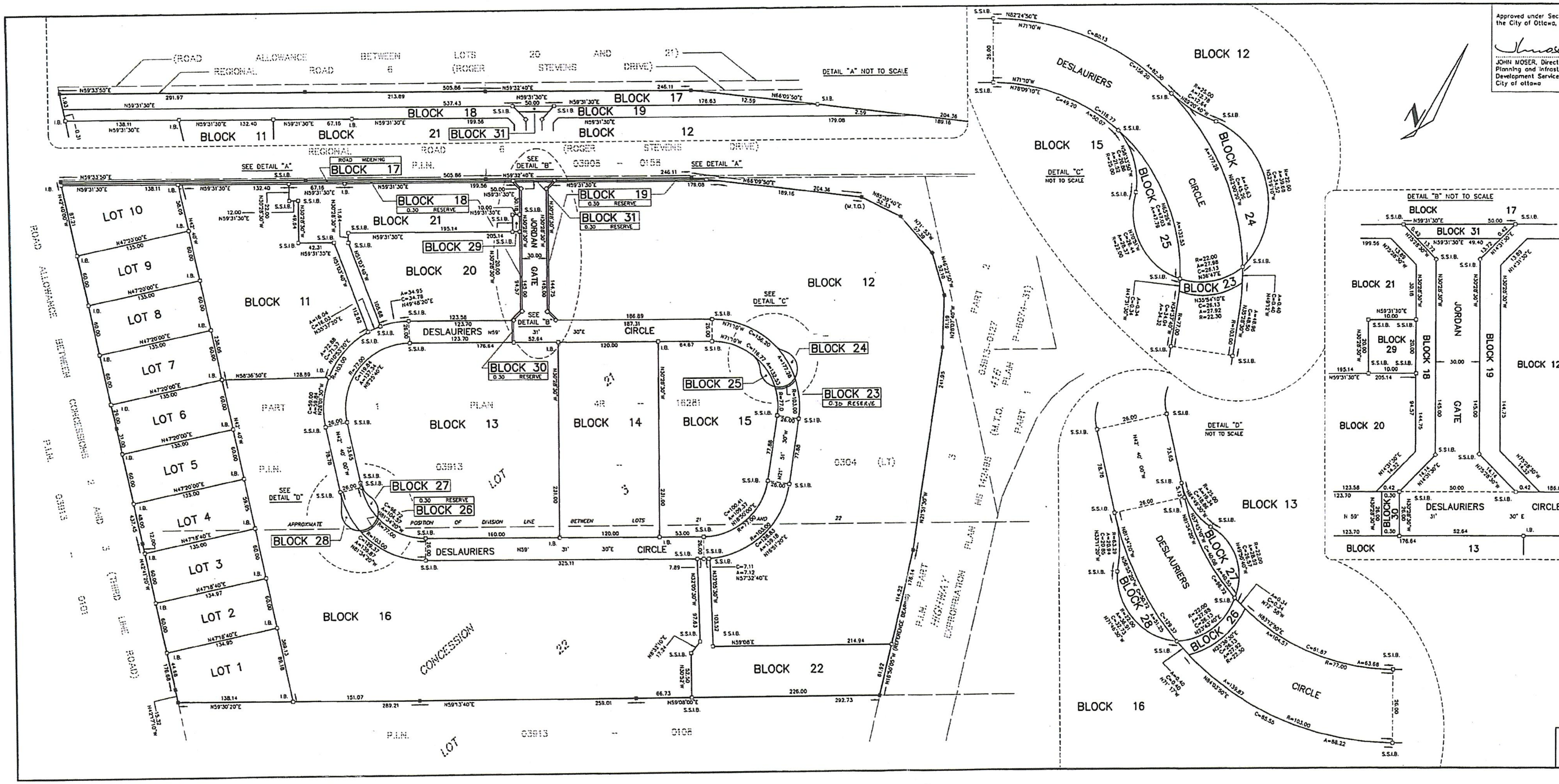
Prepared by:

Cara Ruddle, P. Eng.
Senior Project Manager
Land Development Engineering

Reviewed by:

J. Lee Sheets, C.E.T.
Director
Land Development & Public Sector Engineering

APPENDIX A
Plan 4M-1191



Approved under Section 51 of the Planning act, by the City of Ottawa, this 20 day of Jan....., 2003

JOHN MOSER, Director
Planning and Infrastructure Approvals
Development Services
City of ottawa

PLAN 4M- 1191

I CERTIFY THAT THIS PLAN 4M- 1191 IS REGISTERED IN THE LAND REGISTRY OFFICE FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON (No.4) AT 15:35 O'CLOCK ON THE 28 DAY OF January 2003 AND ENTERED IN THE REGISTER FOR P.I.N. 03913 - 0304 (LT) AND THAT THE REQUIRED CONSENTS AND AFFIDAVITS ARE REGISTERED AS PLAN DOCUMENT No. OC164045

"M.Wasag" Cert.Off.
LAND REGISTRAR

THE SUBDIVISION REPRESENTED BY THIS PLAN AFFECTS ALL OF P.I.N. 03913 - 0304 (LT)

2-5771

PLAN OF SUBDIVISION OF
PART OF LOTS 21 AND 22
CONCESSION 2
GEOGRAPHIC TOWNSHIP OF NORTH GOWER
CITY OF OTTAWA
BY J.P. SHIPMAN, O.L.S.
SCALE 1:2000

0 25 50 75 100 150 200
METRES

METRIC

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

NOTES

BEARINGS HEREON ARE ASTRONOMIC, DERIVED FROM THE BEARING OF N16°50'05"W AS SHOWN FOR THE WESTERLY LIMIT OF PART 3 ON EXPROPRIATION PLAN NS 142495 (MTO PLAN P-6074-31)

ALL MONUMENTS FOUND ARE BY J.P. SHIPMAN, O.L.S. UNLESS OTHERWISE NOTED
ALL MONUMENTS ARE STANDARD IRON BARS UNLESS OTHERWISE NOTED

S.I.B	DENOTES 0.025 SQ., 1.2 LONG, STANDARD IRON BAR
S.S.I.B.	DENOTES 0.025 SQ., 0.6 LONG, SHORT STANDARD IRON BAR
I.B.	DENOTES 0.016 SQ., 0.6 LONG, IRON BAR
■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT PLANTED
WIT.	DENOTES WITNESS
MTO	DENOTES MINISTRY OF TRANSPORTATION OF ONTARIO

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT:

(1) THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.

(2) THE SURVEY WAS COMPLETED ON THE 9th DAY OF SEPTEMBER, 2002.

SEPTEMBER 9, 2002
DATE

J.P. SHIPMAN
ONTARIO LAND SURVEYOR

OWNER'S CERTIFICATE

THIS IS TO CERTIFY THAT:

(1) LOTS 1 TO 10 (BOTH INCLUSIVE), BLOCKS 11 TO 16 (BOTH INCLUSIVE), THE ROAD WIDENING, NAMELY BLOCK 17, THE RESERVES, NAMELY BLOCKS 18,19,23,26,30 AND 31, BLOCKS 20,21,22,24,25,27,28 AND 29 AND THE STREETS, NAMELY JORDAN GATE AND DESLAURIERS CIRCLE, HAVE BEEN LAID OUT IN ACCORDANCE WITH OUR INSTRUCTIONS.

(2) THE STREETS AND THE ROAD WIDENING ARE HEREBY DEDICATED TO THE CITY OF OTTAWA AS PUBLIC HIGHWAYS.

DATED THE 9th DAY OF SEPTEMBER, 2002

GARRY H. JORDAN, PRESIDENT
JORDEL ACRES INC.
I HAVE AUTHORITY TO BIND THE CORPORATION

H.A.KEN SHIPMAN SURVEYING LTD. P.O. BOX 53, NORTH GOWER, ONT. K0A 2T0	REF No. : N.G.-793 FILE No. : 00-10-24[illegible]

APPENDIX B
Existing Jordel Acres Hydrogeological Study Report

HYDROGEOLOGICAL STUDY REPORT

JORDEL ACRES PROPOSED SUBDIVISION

Report prepared for Pri-Tec Construction
Prepared by Sauriol Environmental Inc
Our file 9908
Dated: June 1999

SAURIOL
ENVIRONMENTAL Inc.
SAURIOL
ENVIRONNEMENT

CONTAMINANT HYDROGEOLOGY
ENVIRONMENTAL STUDIES
WATER SUPPLY HYDROGEOLOGY

HYDROGÉOLOGIE DES POLLUANTS
ÉTUDES D'IMPACT
HYDROGÉOLOGIE DE L'APPROVISIONNEMENT EN EAU

June 28, 1999

Pri-Tec Construction Ltd
P.O. Box 13501
Pri-Tec Industrial Park
RR#5 Carp Road
Kanata, ON
K2K 1X6

Attention: Mr. Richard Lalande
President

Re: Hydrogeological Study Report
Jordel Acres Proposed Subdivision
Lot 21 Concession II Rideau Township
Highway 416 and Roger Stevens Drive
Our file 9908

Dear Richard:

Please find enclosed five copies of the Hydrogeological Report completed for the Jordel Acres Proposed Subdivision. It includes a review of the groundwater supply availability and quality, a terrain suitability for septic system, and an Environmental Site Assessment Phase One.

Trusting the its contents is to your satisfaction. We were pleased to be of service to Pri-Tec Construction.

Yours Truly

Sauriol Environmental Inc

Jacques Sauriol M. Sc.
President

encl.

P.O. Box 7181, VANIER, ONTARIO K1L 8E3; (613) 749-6066 FAX/TÉLÉC.: (613) 749-6349
Casier postal 7181, VANIER (ONTARIO) K1L 8E3; INTERNET: sauriol @ compuserve.com

Hydrogeological Study Report
Jordel Acres Proposed Subdivision

1.0 INTRODUCTION

Sauriol Environmental Inc was retained by Pri-Tec Construction, to undertake a Hydrogeological Investigation and a Phase One Environmental Site Assessment for the Jordel Acres proposed subdivision, located on part of Lot 21 Concession II Township of Rideau. The site is located at the South West corner of the intersection of Roger Stevens Drive and Highway 416, as shown on Figure 1. The property has approximately 55 Ha in surface area, and the conceptual plan proposes 41 lots, varying between 0.81 Ha for Residential portion, to 1.0 Ha for the Industrial portion and 1.5 Ha for the Commercial portion.

1.1 Objectives:

The scope of the study is to demonstrate the suitability of the Jordel Acres Property for a proposed Industrial, Commercial and Residential Development based on private services of wells and septic systems. The five main study objectives are as follows:

Assessment of the groundwater supply availability

Assessment of the Groundwater Quality

Assessment of the Terrain Suitability for Septic System

Assessment of any Environmental Liability attached to the Site

Provision of an overall opinion as to the suitability of the proposed Jordel Acres Subdivision.

1.2 Methodology:

Three Guidelines were used to prepared the present report. These include:

MOE March 1995 Technical Guidelines for Private Wells: Water Supply Assessment
MOE March 1995 Technical Guidelines for Individual On-Site Sewage Systems: Water Quality Impact Assessment
CSA Standard Z768-94 dated April 1994

A detailed review of the existing geologic and hydrogeological information of the property was undertaken using published geological maps, water well records and previous regional hydrogeological assessments. Nearby residents were interviewed on the availability and quality of their well water supply. Two nearby private wells were sampled to characterize local groundwater quality. A total of three test wells were constructed on the property. Pumping tests were completed on each test wells, in order to assess the aquifer yields. Hydraulic interferences were monitored during these tests. Well water samples were collected, and analytical work was completed to determine the potability of the supply. A backhoe test pit program was completed to assess the terrain suitability for septic system. A total of 16 test pits were excavated, and examined for lithology, stratigraphy, and depth to water table. Grain size analyses were completed on soil samples collected from the test pits.

2.0 GEOLOGIC SETTING

The study property is located in the "North Gower Drumlin Field" Physiographic Region (Chapman & Putman 1984). Drumlins are elongated hills formed at the bottom of the continental Icesheets. Two such Drumlins are located on the property. The long axis of these depositional features are aligned mainly North-South across the property. Regionally, these low hills are formed of glacial tills, are well drained and create undulating topography. The low-lying areas between topographic highs, are composed of marine clays, overlain in places by thin sands. Regionally, these low areas are levelled and dry, with a high water table (Ringrose Roed & Sauriol 1990). The property is drained by the Stevens Creek located to the North of the property, and which flows to the Rideau River.

2.1 Surficial Geology

The Surficial Geology information was taken from Richard's work at the GSC, backhoe test pit stratigraphy, as well as the stratigraphy of the test well on the property. A total of three Surficial Geology Units occurs on the property, namely a Glacial Till Unit, overlain by Offshore Marine Clay Unit (Champlain Sea deposit), overlain in place by a relatively thin Sand Unit. The sand is believed to be "marine re-workings" of the Drumlins, acting as high bars on the former sea floor. The Sand Unit is present as an offshore deposit overlying the clay on the eastern portion of the property. A relatively minor sub unit consists of a "near shore" well-sorted sand and gravel linear beach deposit on the top of the Drumlins.

A review of the aggregate potential by Gorrell Resources Investigation (1992) indicates a low priority for aggregate, with local fill use only, for the linear beach deposit on drumlin tops. No other aggregate potential resource has been identified on the property.

The Site Plan of Figure 2 and the Profile of Figure 3 illustrate the spatial distribution and the stratigraphy of the unconsolidated deposits on the study property.

2.2 Bedrock Geology

Bedrock Geology is based on OGS mapping (Williams and others), on the stratigraphy of the three test wells on the property, as well as on the nearby water well records. The 8 to 13 metres thick unconsolidated materials of the site are underlain by the limestone and dolomite of the Oxford Formation. This bedrock formation does not outcrop on the ground surface on the property. The bedrock surface is flat-lying at about 83 metres above sea level, and no noticeable bedrock surface sloping trend was noted.

2.3 Regional Hydrogeology

Based on the potentiometric elevations of the site test wells, a low hydraulic gradient was computed at 0.00089 towards the East. Regional bedrock aquifer groundwater flow appears eastward, as is the drainage of Stevens Creek to the Rideau River. Potentiometric elevation on the clay flats were recorded at about 1.8 m below the ground surface. There was concurrence between most water table encounters in the test pits and test well hydrostatic pressures (May 1999). Shallow water table groundwater flow is perceived to follow the local surface topography, hence draining from high till terrain to low clay grounds.

A review of the nearby MOE water well records indicates that the bedrock aquifer is more commonly used as a source of water supply. Regionally, the carbonate rich rock of the Oxford Formation are known to be a good and reliable groundwater aquifer. A survey completed for a nearby subdivision to the West (Kennedy Subdivision) indicates that wells normally encounter water bearing zones between 18 and 42 m., and yield between 45 and 90 Lpm (Geo-analysis 1988).

The Private Individual Servicing Study of the Region (Sauriol & Hanna 1992) classified the study area as having the best regional potential for groundwater quality, as having the area with greatest overburden thickness (mainly composed of fine grained soils), as having a high terrain suitability for septic systems, and as having a high regional development potential based on private services, compared to other area of the RMOC.

A review of the property's groundwater supply indicates the presence of three older wells. Two of the wells were dug wells and one other well was a drilled well. These older wells are located on the Site Plan of Figure 2.

Dug Well No 1 is located to the south of the farm house, and is constructed with 1.2 m diameter cement tiles. Well sounding indicates that this well is 3.66 m in depth, and there is no cover to the well. Surrounding area is wet and cattle uses the area around the well for grazing.

Dug Well No 2 is a very old well constructed of stones picked from fields. The wooded cover has caved in. There was a very rusty steel hand pump that was non operational. Well sounding indicates that this well is 4.57 m in depth. The well is overgrown with weeds.

The old drilled well is located inside the barn, and likely corresponds to the previous owners (Dillon's) water well record provided in Appendix B. The well produced sufficient water to supply the farm house and 30 heads of cattle. The well is located very closed to a manure pile inside the barn. Recent bacteria testing by the owner indicated acceptable drinking water (personal communication Mr. Jordan).

3.0 GROUNDWATER SUPPLY

The groundwater supply of the proposed Jordel Acres Subdivision was assessed by investigating the groundwater quantity and groundwater quality of the underlying bedrock aquifer.

3.1 Groundwater Quantity

A drilling program was undertaken on the week of May 17 1999. Three test wells were drilled and pressured grouted by Bourgeois Well Drilling. These wells are located on the Site Plan of Figure 2, as TW1, TW2, and TW3. The following sections deals with well specifications, compliance, and hydraulic testing of the three test wells.

3.1.1 Specifications

Well construction specifications are provided in Appendix A. It also includes a Well Certification Statement of the three test wells, for the Regional Municipality of Ottawa Carleton (RMOC). A proposed Well Certification Clause should be inserted in the Subdivision Agreement, to ensure future well construction compliance for each lot created in the Plan of Subdivision, including casing grouting. The final wordings should be in agreement with the Region. Proposed wording is included in Appendix A. The water demand per lot was determined as per MOE Guideline as follows: 4 persons per house * 3.75 Lpm/person = 15 Lpm peak demand, which is in excess of 13.7 Lpm minimum requirements.

3.1.2 Construction

The three test wells were completed in the dolomite of the Oxford Formation. Details on the well characteristics are outlined in Table 1. The thickness of the unconsolidated materials ranges between 7 and 11 metres, water bearing zones were encountered between 15 and 32 metres, and total well depth ranged between 24 and 37 metres. Copies of the water well records of the three test wells are located in Appendix B.

Of the three old wells found on the property, the old drilled well record was found in the MOE water well records. It indicates a well formally owned by Mr. Dillon, drilled in 1961 with 12.5 m of overburden and a well depth of 24.7 m. This well has a fairly high water yield with 68 Lpm for 1 hour with 0.6 m of drawdown. A copy of this record is also provided in Appendix B.

3.1.3 Pumping Test Analysis

A series of three pumping tests and three recovery tests were completed on the three test wells constructed on the property. The pumping tests were completed at a rate of 16 Lpm, near the expected water demand from the proposed subdivision. Very little drawdown was observed in the wells when stressed at that pumping rate. Recorded drawdown ranged from 0.02 to 0.16 m at the end of 6 hours of constant discharge. The driller's estimate of the capacity of the wells ranged from 160 to 180 Lpm. Hydraulic test information is provided in Appendix C. Transmissivity values from the TW1 was estimated at 280 m2/day (Table 2). In addition, distance-drawdown relationship was established between the two contiguous lot wells TW1 and TW2 (Figure 4). It shows that an observation well located 60 metres away from a well pumping at 16 Lpm would experience an interference of only 4 cm after 6 hours of pumping. One hundred percent recovery was recorded after a very short period, ranging from 1 to 30 minutes.

The pumping test results indicate that the Oxford Formation Aquifer can supply the domestic, dry-commercial and dry-industrial needs of this proposed subdivision. Yields of in excess of 16 Lpm are available from this aquifer. The induced drawdown generated from neighbouring wells will not have a detrimental effect on well water availability.

The effect of open-loop groundwater source heat pumps have not been evaluated as part of this study. These systems should not be approved as part of the development unless further specific testing be implemented.

3.1.4 Recommended Well Construction

Future wells on the property should be completed in a manner similar to the construction of the three test wells. Specifications are enclosed in Appendix A. These include the drilling with mud and the pressure grouting from the bottom upward through the casing into the well annulus. The total anticipated well depth should range between 24 and 37 metres below ground surface. It is further recommended that the three old wells located on the property (See Site Plan of Figure 2) should be abandoned as per MOE Guidelines, and that these works be a condition of Approval for the Subdivision. This recommendation is required to shut off any possible surface contaminant migration pathways along non-sealed well casings.

3.2 Groundwater Quality

Two nearby residences were sampled to document the quality of the surrounding aquifer. The three pumping wells were sampled at the beginning and the end of their hydraulic tests, for quality characterization. Field measurements of turbidity were also taken by SEI's staff. Analytical results from Accutest Laboratory are provided in Appendix D. This Appendix also includes the water quality results of the old drilled well taken by the owner in 1997. All sampled wells are located on the Site Plan.

3.2.1 Nearby Residences

The two sampled nearby residences are located to the immediate West of the study property (Gillis and Smith). A Point Of Entry water treatment system could not be by-passed for the sampling of the Gillis House. The surveyed residents (daughters) indicated that they were satisfied with their well water quality. The Smith's water quality result is indicative of the raw groundwater. The raw well water is typical of the Eastern Ontario carbonate rich bedrock aquifers, with elevated water Hardness (361 mg/L). The measured groundwater parameters meet the Ontario Drinking Water Objective (ODWO) for all parameters, except for Iron at 1.77 mg/L. The Gillis water sample is indicative of treated water (softener), and demonstrate the treatability of such a conventional unit. Indeed, the calcium and magnesium (Hardness) and the Iron, were reduced to below detection limits in the well water treated with the ionic exchanger.

3.2.2 Test Well Groundwater Quality

All three Test Wells on the property have very good groundwater quality. Similar to the neighbouring wells, the well water has elevated mineralization, with Total Dissolved Solids (TDS) at about 450 mg/L, and Hardness at about 250 to 300 mg/L. Iron results vary from as low as 0.04 to as high as 0.54 mg/L, exceeding at times the 0.3 mg/L ODWO criteria. Computed Organic Nitrogen is low, and no Hydrogen Sulphide was detected. Sodium concentrations are low, but still warrant a notice the Officer of Health for low sodium diet persons. Based on Chloride, Sodium and Conductivity as overall mineralization, the water of TW3 has less concentrations, suggesting that shallower water bearing zones is producing less mineralized groundwater (20m versus 26m and 32m. for TW3, TW2 and TW1 respectively). It is recommended that where possible, the shallow bedrock water bearing zone be utilized as a source of groundwater, because of less mineralization. Methane gas was field-measured with a Gastech Unit at the head of the three test wells, and no methane was detected above the detection limit of 1 ppm.

The old drilled well sampled by the owner in 1997 produced equivalent quality groundwater, with less Hardness, higher Chloride, Sodium and TDS (Appendix D). It is noted that the old well produced elevated Turbidity that could have been caused by Iron precipitation in the sample jar in 1997.

Between 8 and 13 hours of well development was required before producing acceptable turbidity water. Table 3 lists the field turbidity readings completed with a portable turbidity unit. The chart of Figure 5 plots the turbidity values against time. All last field turbidity readings were below the 1.0 NTU.

Nearby landuses consists mainly of agricultural activities and rural development. The new Highway 416 is contiguous to the East of the property. No land use conflicts have been noted.

4.0 TERRAIN SUITABILITY FOR SEPTIC SYSTEM

The terrain suitability for the attenuation of septic system effluent was determined by a backhoe test pit program, grain size analyses, percolation tests, and the delineation of terrain unit. A total of 16 backhoe test pits were constructed to 1.8 metres in depth over the property. These pits are located on the Site Plan of Figure 2. The stratigraphy of the test pits are compiled in Appendix E. Two grain size analyses were completed, one to characterize the clay and the other for the sand. Based on upper soil stratigraphy, a total of four Terrain Units were delineated. Two percolation tests were completed, with a bias towards fine grained soils (Appendix E).

4.1 Terrain Suitability

Four Terrain Units were identified on the property, namely a Till Terrain Unit, a Clay Terrain Unit, a Sand-Over-Clay Terrain Unit and a Sand Terrain Unit. Their spatial distribution are provided in Figure 2. Their vertical distributions are provided in the Profile of Figure 3.

4.1.1 Terrain Units

The Till Terrain Unit covers about one third of the property's surface area, and consists of low elongated topographic ridges. Thickness of this unit is estimated to average 11 metres, based on the test well stratigraphy. The till is made of a silty clay matrix with cobbles and boulders. The water table was below 1.8 m in depth in all test pits completed in the till (May 1999). A percolation test was completed on the upper crust of this terrain unit, and yielded a perc rate equal to 7.5 minutes per cm (Perc test No 2; equivalent to K=10-3 cm/sec).

The Marine Clay Terrain Unit covers about one third of the property's surface area, and is located on the topographic flats on the western and central portions of the study area. This unit has a thickness that varies between 2.1 to 2.7 m, based on the stratigraphy of the test wells. A grain size analysis of the upper crust of this material was completed (Appendix E; soil No 2), and was described as clayey silt with minor sand. The water table was ranging between 0.91 and 1.68 m in depth with an average of 1.45 m (May 1999). It is characterized by a low permeability, with a percolation rate of 20 minutes per cm (equivalent to K= 10-5 cm/sec).

The two remaining terrain units are the Sand-Over-Clay Terrain Unit and Sand Terrain Unit. They cover the eastern third of the study property. The Sand Terrain Unit has a thickness in excess of 1.8 m. The thickness of the sand, for the Sand-Over-Clay Terrain Unit, ranges between 0.75 and 0.90 m. A grain size analysis of the sand was completed on a soil samples taken from TP13, and was described as a silty fine sand with some medium sand (Appendix E; Soil No 1). The water table of the Sand Unit is below 1.8 m. The water table of the Sand Over Clay Unit was recorded at 1.52 m (May 1999). The assumed permeability of the sand is high, ranging between 2 to 10 min/cm (equivalent to K=10-3 to 10-2 cm/sec).

4.2 Three Step Assessment Process

The three step assessment process of the MOE Guidelines was reviewed for the Jordel Acres Proposed Subdivision. Step One refers to Lot Size consideration. The development is proposing a series of residential, industrial and commercial lots ranging from 0.81 Ha, 1.0 Ha and 1.5 Ha respectively (Municipal By-Law). The 55 Ha property is to be subdivided into a total of 41 lots, hence an average of 1.34 Ha per lot with no one lot less than 0.8 Ha in surface area. The Ministry believes that one hectare lots will be sufficiently large to reduce the nitrate impact from septic system to an acceptable concentrations in groundwater below the adjacent properties.

The Step Two of the assessment process refers to system isolation considerations. The "main-septic-system-receiving-hydrogeological-unit" is the upper clay or till. The thickness of these fine grained low permeability units are ranging between 7 and 11 metres based on the test well stratigraphy. The upper sand is disregarded for the isolation argument, since it is assumed to be underlain by clay or till. As a mean to measure the overall effectiveness of the isolation between the septic system loading area to the bedrock aquifer, the nitrate concentration of the existing neighbouring wells were reviewed. The Gillis' well had less than 0.1 mg/L NO3, while the Smith's well had 0.14 mg/L NO3. Both results are indicative of no septic system impact onto the bedrock aquifer.

4.3 Septic System Design

Class 4 Sewage System with absorption trenches was assumed for the design requirements. Based on the Ontario Building Code, septic effluent was estimated at 1600 Lpd. When compared with design water demand requirement, we arrived at the following: 450 Lpd/person requirement * 4 persons per home = 1800 Lpd/dwelling. Because the available aquifer is capable of much more yield, we have assumed 3000 Lpd/dwelling. Using the 6 L/m2 daily loading rate of the Building Code, the leaching bed should have 500 m2 in surface area. The sewage envelop is to be estimated with a design of 3Lpm2, (telecon Mezmure Haile Meskale, RVCA), equivalent to 1,000 square metres, including the primary bed and the spare area. It is recommended to dedicate an area of 1,250 m2 per new lot, for the sewage disposal system, and this area should take care of most mantle requirements (15 m in the direction of flow). This area requirement is equivalent to 15 percent of the smallest proposed (residential) lot size of 0.81 Ha. The leaching bed over the Clay Terrain Unit could be constructed over adequate imported soils, to offset the low hydraulic conductivity (K) of the native soils.

Hence, the bedrock aquifer is well isolated from the main septic system receiving hydrogeological unit, and proposed lots are large. Residential, commercial or industrial proponents with design sewage flow rates exceeding 3.0 m3/day should complete a specific predictive assessment of the waste water system.

Any loading in excess of 3,000 litres per day should have its septic system design review for actual sizing requirements. Any system with design flow rate in excess of 10 m3/day will require an engineered septic system design, and a groundwater impact assessment as per MOE Guideline B-7(the Reasonable Use Guideline).

5.0 ENVIRONMENTAL SITE ASSESSMENT

An Environmental Site Assessment (ESA) Phase One was completed for the study property. The ESA Report is included in Appendix F of this document.

The potential environmental concerns for the property may include:
1 underground storage tank (UST), with suspected contaminant soils
1 above ground storage tank
evidence of oil spills in the garage floor
minor asbestos containing materials in some floor or ceiling tiles, and
minor PCB containing ballasts in fluorescent light fixtures

Recommendations include the removal of the UST and the completion of a Phase Two ESA near the two diesel tanks and in the garage floor

6.0 CONCLUSIONS

Three test wells and three pumping tests demonstrated that the Oxford bedrock aquifer below the property can supply a good quality groundwater at a rate in excess of the requirements for the intended use. Yields of in excess of 16 Lpm are representative of the yields which are likely to be obtained from wells, in the long term. Water quality is expected to be elevated in water Hardness and at times Iron. This report has shown that a water softener as a Point-Of-Entry treatment unit can treat these aesthetic parameters very effectively. Low sodium diet purchasers should be informed of the sodium concentrations of 30 to 70 mg/L. Low sodium diet individuals may wish to include a separate tap which by-passes the softener, in order to supply unsoftened drinking water. New wells will likely require about 10 hours of development before generating turbidity level below 1.0 NTU. Well certification will be required for each new well, to ensure that the wells are built as per Regulation 903 of the Ontario Water Resources Act, and that proper well grouting is completed. This well certification will demand an on-site inspection during the well construction. Old drilled and dug wells on the property should be abandoned as a condition of Draft Approval. Pumps should be of submersible type with pitless adaptor connection, and adequate crowning at the well head to promote runoff away from the well.

The four terrain units identified on the property have acceptable suitability for the construction of individual septic system. Minimum lot sizes, called for by the Municipal By-Law, are ranging between 0.8, 1.0 and 1.5 Ha for residential, industrial and commercial landuses respectively, and are perceived acceptable for the attenuation of leaching bed effluent. An area of 1,250 m2 should be reserved on each new lot for the leaching bed, its spare area and its mantle. The area of the proposed leaching bed including spare area, should be identified on each lot and fenced off to avoid any compaction during construction, particular over the Clay Terrain Unit. Excavation should avoid the creation of smearing, particularly in the clay soils. This will impede the loss of hydraulic conductivity of these low hydraulic conductivity soils. In the Till Terrain Unit, any large cobbles and boulders should be removed from the trench area. Each lot septic system should be located downslope to its well in order to maximize the separation distance to this contaminant point source. Septic system should be as per Ontario Building Code Specifications.

Trusting that this report is satisfactory.

Yours Truly

Sauriol Environmental Inc.

Jacques Sauriol M. Sc.
President

TABLE 1: TEST WELL CHARACTERISTICS			
	TW1	TW2	TW3
Ground elevation (masl)	89	88.8	94
Static Level (mbtc)	1.85	1.82	7.2
Potentiometric Elevation (approx. masl)	87.15	86.98	86.8
Overburden Thickness (m)	7.3	7.3	11
Depth to Water Bearing Zones (mbgs)	15; 32	26	20
Well Depth (mbgs)	37	32	24
Estimated Well Yield (Lpm)	160	180	180

masl = meters above sea level
mbgs = metres below ground surface
mbtc = metres below top of casing
Lpm = litres per minute

Table 2: Transmissivities TW1	
Method	**transmissivity (m2/day)**
Theis	280
Jacob	280
Papadopulos	277
Hantush	286

Table 3: Field Turbidity Readings			
Pumping test	Turbidity readings (NTU)		
Time (min)	TW1	TW2	TW3
0			
2			
4			
6			
8			
10			
20			
25	3.55		
30			
40			
50			
60	1.95	4.62	8.00
120		2.30	
180	1.80	1.00	5.70
240	1.60	0.95	3.30
300	1.20	0.71	1.92
360	0.94	0.68	1.10
480			0.93

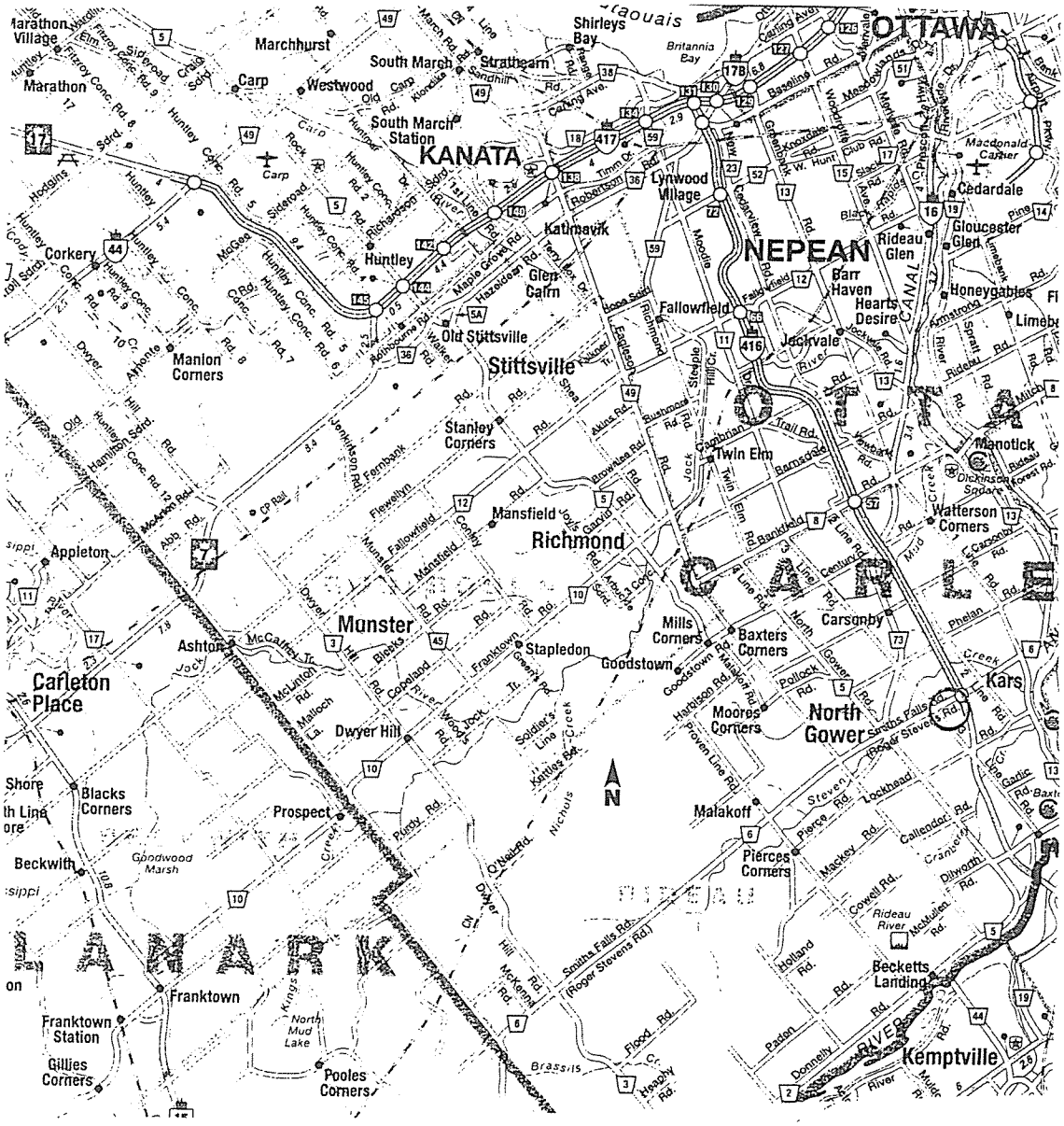


Figure 1: Location Plan

SAURIOL ENVIRONMENTAL Inc.
CONTAMINANT HYDROGEOLOGY
ENVIRONMENTAL STUDIES
WATER SUPPLY HYDROGEOLOGY

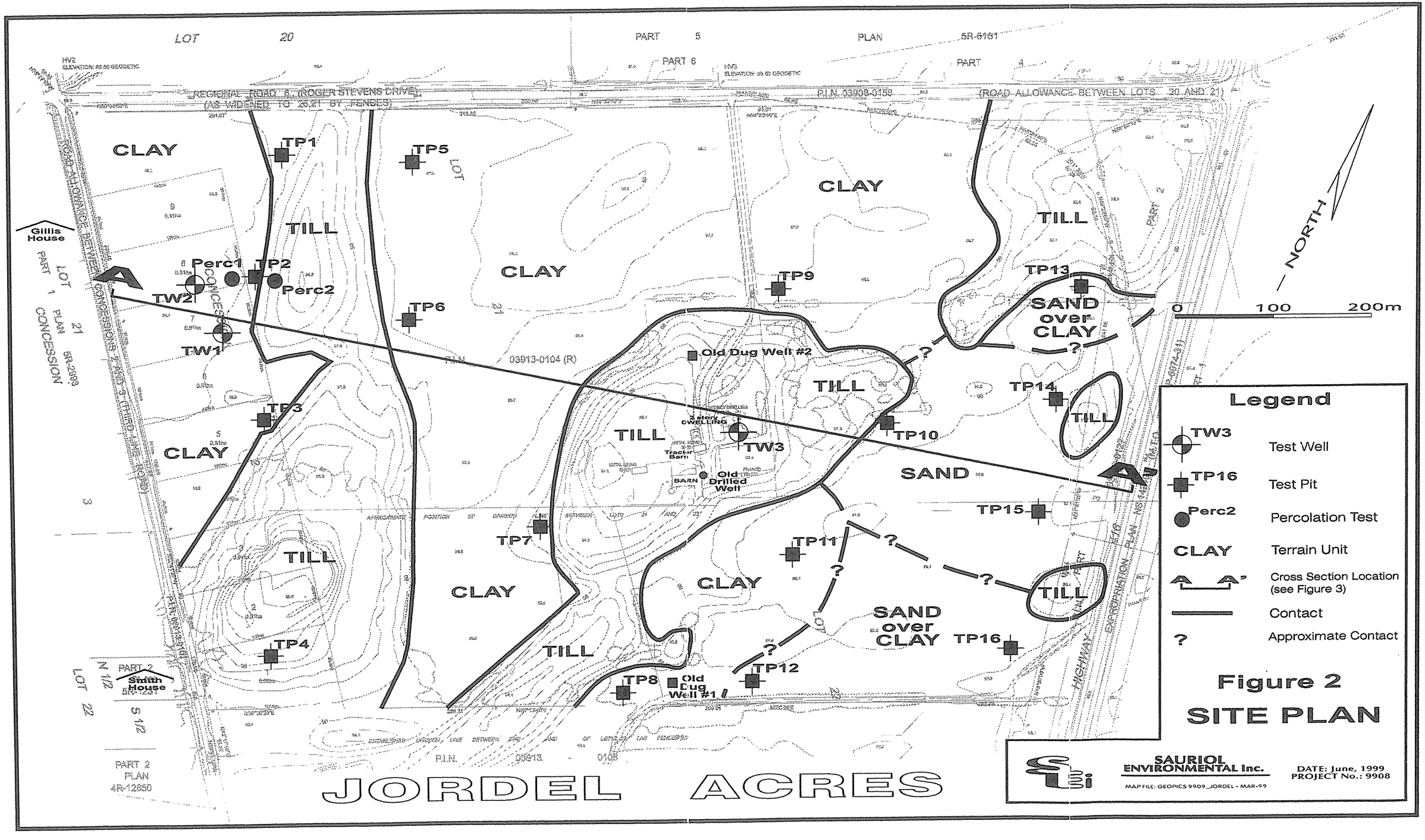


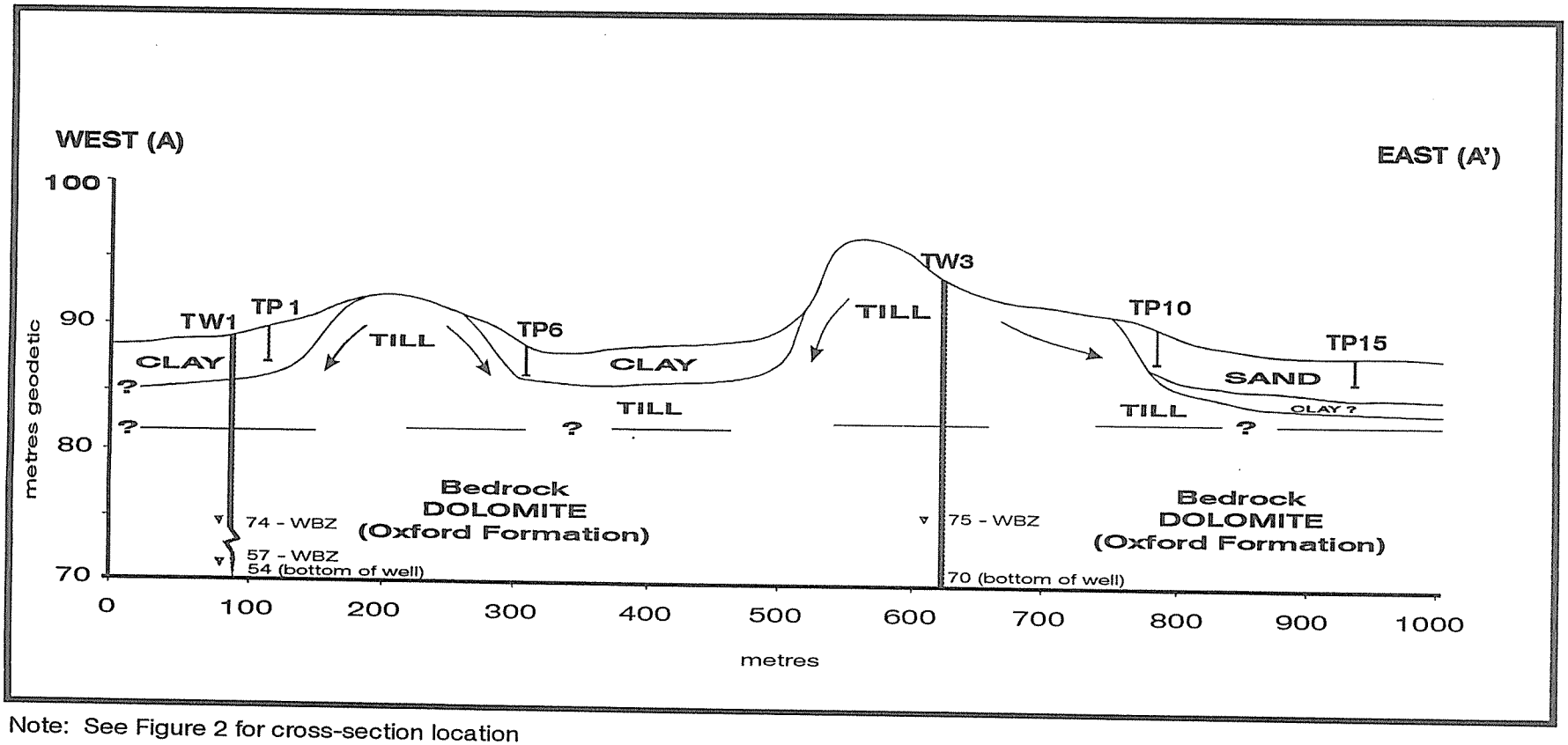
Figure 2
SITE PLAN

JORDEL ACRES

SAURIOL ENVIRONMENTAL Inc.

MAP FILE: GEOPICS 9909_JORDEL - MAR-99

DATE: June, 1999
PROJECT No.: 9908



Note: See Figure 2 for cross-section location

→ Direction of shallow groundwater flow

Hydrogeologic Cross Section

Jordel Acres

Figure 3

SAURIOL ENVIRONMENTAL Inc.

MAP FILE: GEOPICS 9909_JORDEL - JUN-99

DATE: JUNE, 1999
PROJECT No.: 9908

Figure 4: Distance Drawdown

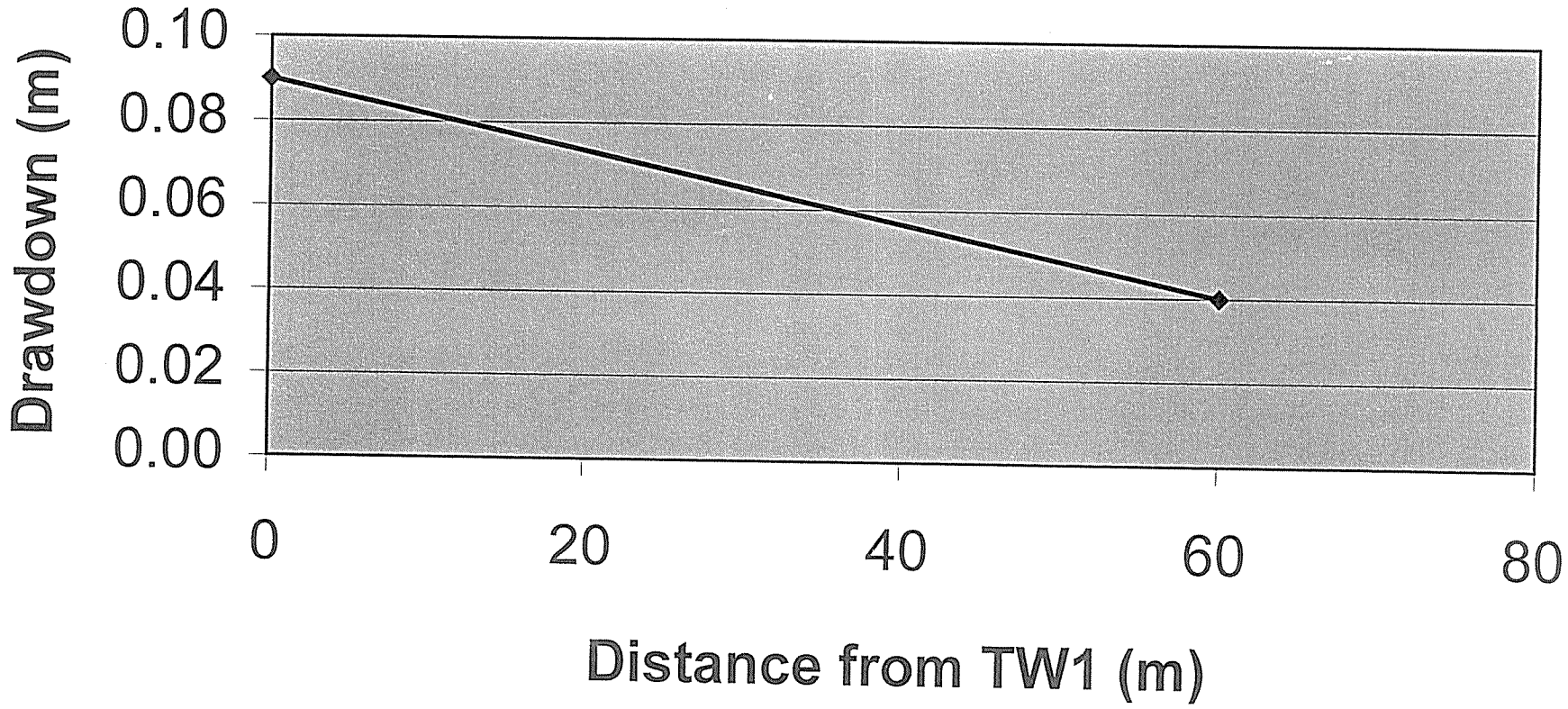
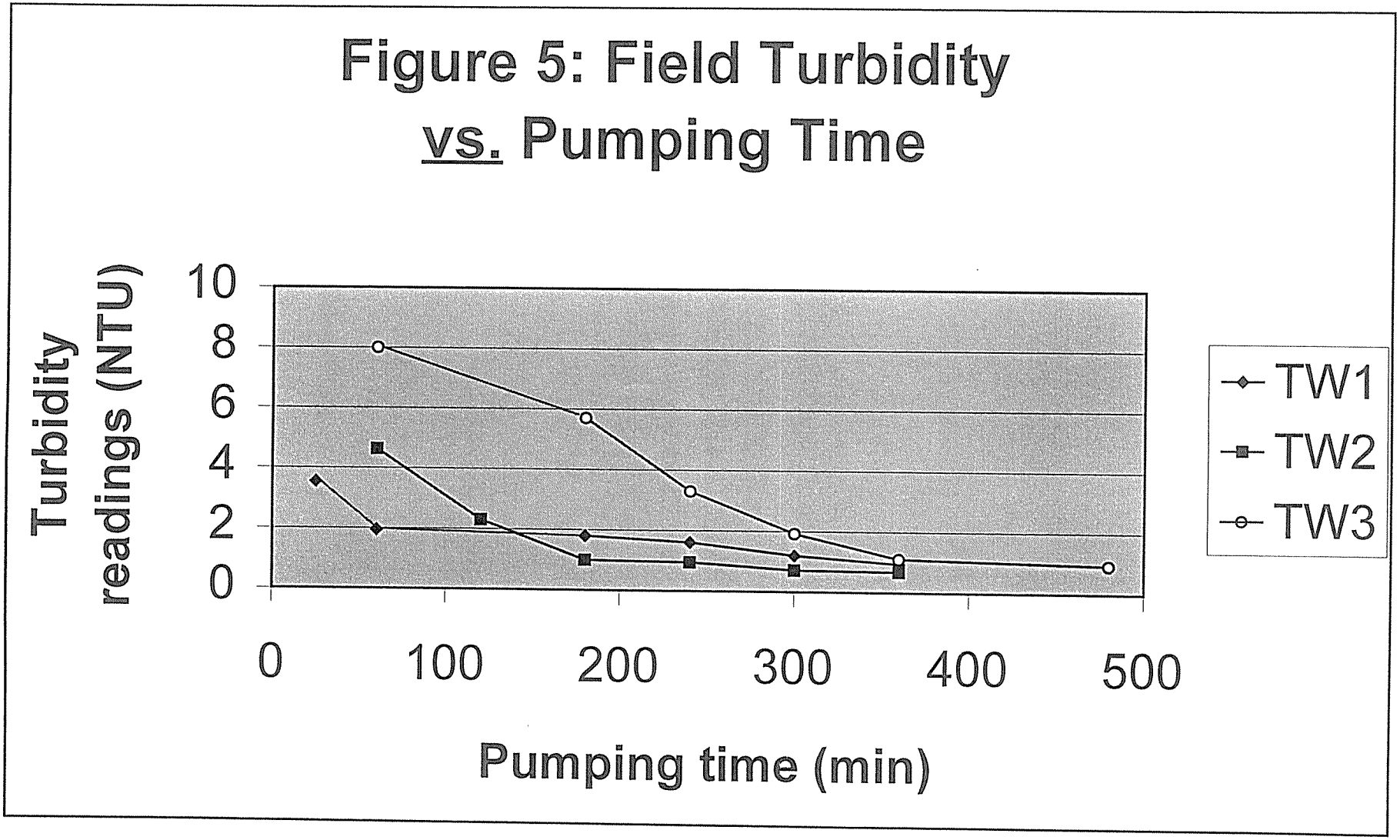


Figure 5: Field Turbidity vs. Pumping Time



APPENDIX A

WELL CERTIFICATION
&
WELL SPECIFICATIONS

WELL CERTIFICATION STATEMENT

Property:
Jordel Acres Proposed Subdivision
Lot 21 Con 3 (North Gower) Rideau Township
3 test wells constructed for the purpose of completing a Hydrogeological and Terrain Analysis Report

Certification:
We hereby agree that the three test wells constructed on the above captioned property, have been completed in accordance to MOE Regulation 903, and in particular the well casings have been properly pressure grouted.

Jacques Sauriol M. Sc.
Sauriol Environmental Inc

Dated: 28 Jan 1999

J. David McManus, P. Eng.
CME

Dated: June 2/99

Specifications

Drilling of Well
Testing of Well
Jordel Acres Proposed Subdivision
Lot 21 Con 2 Rideau Township

At a location indicated on the Plan of Subdivision, construct a well in the bedrock aquifer. The owner will provide the required physical access to the drill site, including temporary gravel road and culvert as required. The owner will also field locate any buried utilities.

1.0 Drilling

Drill open hole 200mm in diameter to approximately 11m in depth for a minimum of 0.3m into the rock surface, using drilling mud.
Drop 150mm casing with centralizer and drive shoe.
Pressure grout the annulus space of the casing with high early cement grout mixture installed by grout pump from the bottom of the casing upward through annulus, until full cement circulation is encountered at the surface .
Let cement cure overnight.
Drill open hole 150mm diameter to first water bearing zone, in the rock, typically 30m in depth from the ground surface. (The target yield is about 3 to 5 gpm)
Complete a 5 hour well development with water discharge to the nearby ditch at a constant rate of 3 gpm. Record water level and turbidity hourly

2.0 Pumping test

One well will be pump-tested
Set-up submersible pump with trimmie pipe for water level indicator probe, and generator. Chlorinate well and ensure well bore water mixing. Let sit overnight.
Record static water level of the wells
From a fully recovered well (original Static Level), complete a constant discharge pumping test for a duration of 6 hours at a constant rate of 3 gpm. The contractor is to record the time-drawdown at least an hour interval.
Do a minimum of 4 hours recovery test or until a 95 % recovery is achieved.
Record drawdown and recovery time information with a water level indicator to be provided by the contractor.
Sample well water near the beginning and near the end of the 6 hour test.
Submit two water samples per well for analytical work (parameters = subdivision listing of parameters)
All the above work to comply with Ontario Regulations. Submit water well records and hydraulic test notes

Additional notes on grouting:

Grouting inspections were carried out on the three new wells to ensure cement circulation was completed in the annulus to ground surface. The Driller mixed 5 bags of high early cement per well and trimmied the cement down through the inside of the casing. Cement was observed displacing the drilling mud, and coming and staying at surface at all three well heads.

Proposed Clause for Well Certification,

to be verified with the RMOC for final wording

Lot owners will be required to provide certification by a Professional Engineer that the well construction is in accordance with the recommendation of the approved Hydrogeological and Terrain Analysis Report. This certification shall be submitted to the Part VIII Director under the Environmental Protection Act, prior to the issuance of a Use Permit for sewage disposal system associated with each lot created in the Plan of Subdivision.

APPENDIX B

WATER WELL RECORDS

Ministry of Environment and Energy
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

7 w (

County or District	Township/Borough/City/Town/Village	Con	block	tract	survey, etc.	Lot
Ottawa Carleton	Rideau		2			21
Owner's surname / First name	Address	Date completed	day	month	year	
JORdel ACRES	north Gower		18	05	99

#1

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth – feet From	Depth – feet To
Brown	Clay		Dense	0	9
Grey	Till	Boulders	"	9	16
Grey	Gravel	Sand Boulders	Loose	16	24
Grey	limestone		Hard	24	30
Grey	limestone	Shale	Layered	30	122

WATER RECORD

Water found at – feet	Kind of water		
50	☒ Fresh ☐ Salty	☐ Sulphur ☐ Minerals ☐ Gas	
105	☒ Fresh ☐ Salty	☐ Sulphur ☐ Minerals ☐ Gas	
	☐ Fresh ☒ Salty	☐ Sulphur ☐ Minerals ☐ Gas	
	☐ Fresh ☐ Salty	☐ Sulphur ☐ Minerals ☐ Gas	
	☐ Fresh ☐ Salty	☐ Sulphur ☐ Minerals ☐ Gas	

CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth – feet From	Depth – feet To
8 7/7	☐ Steel ☐ Galvanized ☐ Concrete ☒ Open hole ☐ Plastic		0	70
6 1/4"	☒ Steel ☐ Galvanized ☐ Concrete ☐ Open hole ☐ Plastic	1.88	42	30
6"	☐ Steel ☐ Galvanized ☐ Concrete ☒ Open hole ☐ Plastic		30	122

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type	Depth at top of screen feet	

PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at – feet From	To	Material and type (Cement grout, bentonite, ...)
0	30	Cement grout

PUMPING TEST

Pumping test method: ☐ Pump ☒ Bailer
Pumping rate: 35 GPM
Duration of pumping: 2 Hours 0 Mins

Static level	Water level end of pumping	Water levels during ☐ Pumping ☒ Recovery: 15 minutes	30 minutes	45 minutes	60 minutes
7 feet	122 feet	7 feet	7 feet	7 feet	7 feet

If flowing give rate: ____ GPM
Pump intake set at: 122 feet
Water at end of test: ☐ Clear ☒ Cloudy
Recommended pump type: ☐ Shallow ☒ Deep
Recommended pump setting: 100 feet
Recommended pump rate: 15 GPM

FINAL STATUS OF WELL

☒ Water supply ☐ Observation well ☒ Test hole ☐ Recharge well
☐ Abandoned, insufficient supply ☐ Abandoned, poor quality ☐ Abandoned (Other) ☐ Dewatering
☐ Unfinished ☐ Replacement well

WATER USE

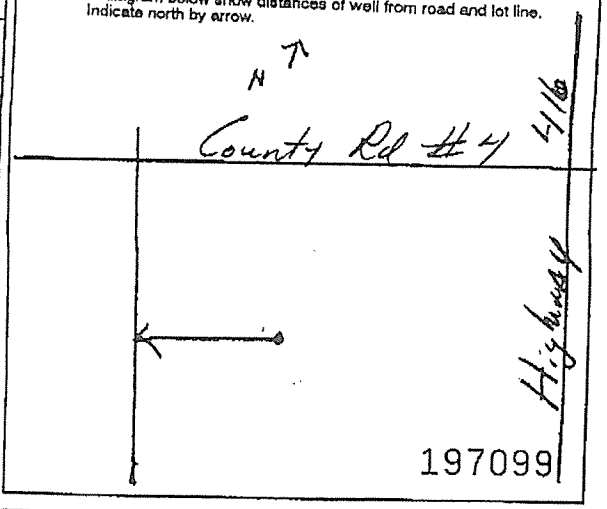
☒ Domestic ☐ Stock ☐ Irrigation ☐ Industrial
☐ Commercial ☐ Municipal ☐ Public supply ☐ Cooling & air conditioning
☐ Not used ☐ Other

METHOD OF CONSTRUCTION

☐ Cable tool ☐ Rotary (conventional) ☐ Rotary (reverse) ☒ Rotary (air)
☐ Air percussion ☐ Boring ☐ Diamond ☐ Jetting
☐ Driving ☐ Digging ☐ Other

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Name of Well Contractor: Gilles Bourgeois Well Drill — Well Contractor's Licence No.: 1414
Address: St-ALBERT Ont
Name of Well Technician: JACQUES RAYMOND — Well Technician's Licence No.: 02164
Signature of Technician/Contractor — Submission date: day mo yr

MINISTRY USE ONLY

0506 (07/94) mont Form 9

1 - CONTRACTOR'S COPY

Ministry of Environment and Energy
Ontario

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

TW 2

County or District: Ottawa Carleton
Township/Borough/City/Town/Village: Rideau
Con block tract survey, etc.: 2
Lot: 21
Owner's surname: TORDel
First name: Acres
Address: North Down
Date completed: 19 05 99 (day month year)

#2

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - From	Depth - To
Brown	Clay		Loose	0	7
Grey	Till	Boulders	"	7	18
Grey	Gravel	Sand Boulders	Loose	18	24
Grey	Limestone		Hard	24	39
Grey	"	Shale	layered	39	104

WATER RECORD

Water found at - feet	Kind of water		
85	Fresh / Salty	Sulphur / Minerals / Gas	
	Fresh / Salty	Sulphur / Minerals / Gas	
	Fresh / Salty	Sulphur / Minerals / Gas	
	Fresh / Salty	Sulphur / Minerals / Gas	
	Fresh / Salty	Sulphur / Minerals / Gas	

CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - From	Depth - To
8 3/4"	Steel / Galvanized / Concrete / Open hole / Plastic		0	31
6 1/4"	Steel / Galvanized / Concrete / Open hole / Plastic	1.88	+2	31
6"	Steel / Galvanized / Concrete / Open hole / Plastic		31	104

SCREEN

Sizes of opening (Slot No.) | Diameter inches | Length feet
Material and type | Depth at top of screen feet

PLUGGING & SEALING RECORD

Annular space / Abandonment

Depth set at - From	Depth set at - To	Material and type (Cement grout, bentonite, etc.)
0	31	Cement grout

PUMPING TEST

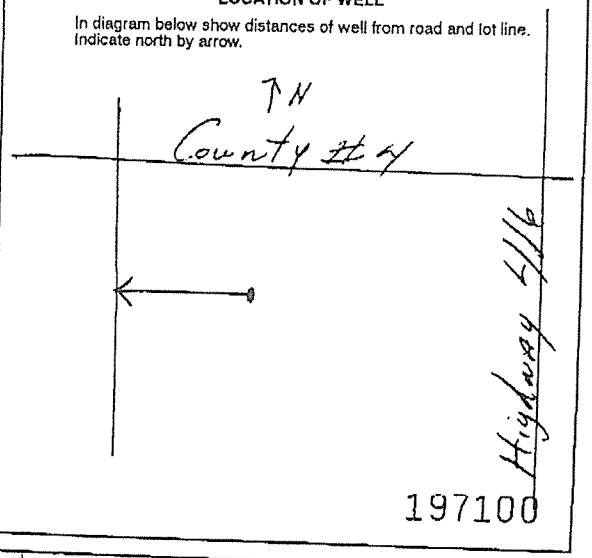
Pumping test method: Pump / Air / Bailer
Pumping rate: 40 GPM
Duration of pumping: 1 Hours 0 Mins

Static level	Water level end of pumping	Water levels during Pumping / Recovery: 15 minutes	30 minutes	45 minutes	60 minutes
6 feet	104 feet	6 feet	6 feet	6 feet	6 feet

If flowing give rate: GPM
Pump intake set at: 104 feet
Water at end of test: Clear / Cloudy
Recommended pump type: Shallow / Deep
Recommended pump setting: 80 feet
Recommended pump rate: 15 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



FINAL STATUS OF WELL

Water supply / Observation well / Test hole / Recharge well
Abandoned, insufficient supply / Abandoned, poor quality / Abandoned (Other) / Dewatering
Unfinished / Replacement well

WATER USE

Domestic / Stock / Irrigation / Industrial
Commercial / Municipal / Public supply / Cooling & air conditioning
Not used / Other

METHOD OF CONSTRUCTION

Cable tool / Rotary (conventional) / Rotary (reverse) / Rotary (air)
Air percussion / Boring / Diamond / Jetting
Driving / Digging / Other

Name of Well Contractor: Gille's Bourgeois Well Drill
Well Contractor's Licence No.: 1414
Address: St-Albert Ont
Name of Well Technician: Jacques Raymond
Well Technician's Licence No.: 0264
Signature of Technician/Contractor:
Submission date: 19 05 99 (day mo yr)

MINISTRY USE ONLY

1 - CONTRACTOR'S COPY

0508 (07/94) Front Form 9

Ontario Ministry of the Environment

The Ontario Water Resources Act

WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

TW3

County or District	Township/Borough/City/Town/Village	Con	block	tract	survey, etc.	Lot
Ottawa Carleton	Rideau		2			21
Owner's surname / First Name	Address	Date completed	day	month	year	
Lord del ACRES	North Gower		19	05	99	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Brown	Till	Boulders	Loose	0	8
Grey	"	"	"	8	36
Grey	limestone	Shale	Layered	36	58
Grey	limestone		Fined	58	79

WATER RECORD

Water found at - feet	Kind of water		
65	☒ Fresh ☐ Salty	☐ Sulphur ☐ Minerals ☐ Gas	
	☐ Fresh ☐ Salty	☐ Sulphur ☐ Minerals ☐ Gas	
	☐ Fresh ☐ Salty	☐ Sulphur ☐ Minerals ☐ Gas	
	☐ Fresh ☐ Salty	☐ Sulphur ☐ Minerals ☐ Gas	
	☐ Fresh ☐ Salty	☐ Sulphur ☐ Minerals ☐ Gas	

CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
8 3/4"	☒ Steel ☐ Galvanized ☐ Concrete ☐ Open hole ☐ Plastic		0	40
6 1/4"	☒ Steel ☐ Galvanized ☐ Concrete ☐ Open hole ☐ Plastic	.188	+2	40
6"	☐ Steel ☐ Galvanized ☐ Concrete ☐ Open hole ☐ Plastic		40	79

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type	Depth at top of screen feet	

PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	40	Cement grout

PUMPING TEST

Pumping test method: ☐ Pump ☒ Air ☐ Bailer

Pumping rate: 40 GPM — Duration of pumping: 1 Hours 0 Mins

Water levels during: ☐ Pumping ☒ Recovery

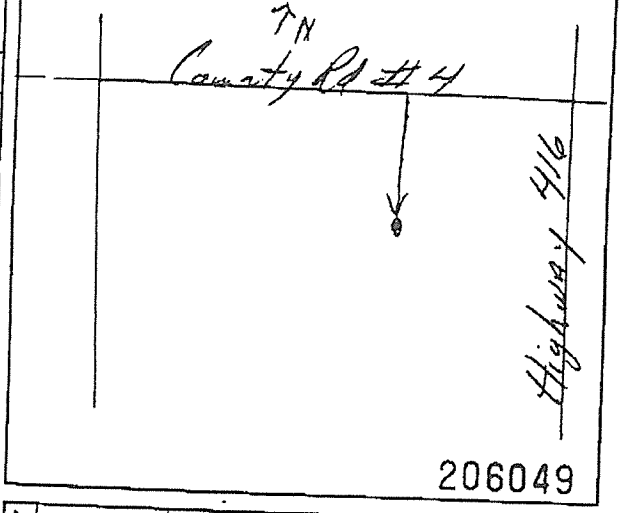
Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
24 feet	79 feet	24 feet	24 feet	24 feet	24 feet

If flowing give rate: GPM — Pump intake set at: 79 feet — Water at end of test: ☐ Clear ☒ Cloudy

Recommended pump type: ☐ Shallow ☒ Deep — Recommended pump setting: 70 feet — Recommended pump rate: 15 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



206049

FINAL STATUS OF WELL

☒ Water supply ☐ Observation well ☐ Test hole ☐ Recharge well
☐ Abandoned, insufficient supply ☐ Abandoned, poor quality ☐ Abandoned (Other) ☐ Dewatering
☐ Unfinished ☐ Replacement well

WATER USE

☒ Domestic ☐ Stock ☐ Irrigation ☐ Industrial
☐ Commercial ☐ Municipal ☐ Public supply ☐ Cooling & air conditioning
☐ Not use ☐ Other

METHOD OF CONSTRUCTION

☐ Cable tool ☐ Rotary (conventional) ☐ Rotary (reverse) ☒ Rotary (air)
☐ Air percussion ☐ Boring ☐ Diamond ☐ Jetting
☐ Driving ☐ Digging ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
Gille Bourgeois Well Drill	1414
Address: St-ALBERT Ont	
Name of Well Technician	Well Technician's Licence No.
Jacques Raymond	0264
Signature of Technician/Contractor	Submission date: day 19, mo 05, yr 99

1 CONTRACTOR'S COPY

MINISTRY USE ONLY

0506 (11/98) Front Form 9

CONCESSION ETC		LOT	WELL NO	EASTING NORTHING	ELEV FEET	DATE	DRILLER	DIA INS	KIND OF WATER	WATER FOUND FEET	STAT LVL FEET	PUMP LVL FEET	TEST RATE GPM	TEST TIME HR/MN	WATER USE	OWNER/LOG/SCREEN DEPTHS IN FEET TO WHICH FORMATIONS EXTEND
			6811	5000955					FR	90						
CON	2	15	15- 6812	444140 5000260	310	06/55	1802	2	FR	104	25	28	10	2/00	DO	TPSL 0002 CLAY MSND STNS 0051 GREY LMSN 0090 HALEY F
CON	2	15	15- 11072	444230 5000650	300	12/70	3644	5	FR	120	16	80	8	1/00	DO	CLAY MSND 0004 BLDR GRVL 0031 GREY LMSN 0104 BROWN GORDON
CON	2	15	15- 19038	444299 5000399	310	05/84	3644	6	FR	80	20	80	0	1/00	DO	GREY CLAY BLDR 0029 GREY LMSN 0120 SEABROOKE F
CON	2	15	15- 10499	444300 5000530	300	11/69	3644	5	FR FR	90 50	8	16	10	1/00	ST	GREY CLAY MPAN STNS 0047 GREY LMSN 0094 BROWN G
CON	2	15	15- 14054	444360 5000440	305	07/75	3644	6	FR	53	8	25	10	1/00	DO	BRWN CLAY BLDR 0012 GREY MPAN STNS 0019 GREY LMSN 0050 MEAGEN
CON	2	15	15- 13315	444408 5000971	315	03/73	3644	5	FR	49	4	15	20	1/00	DO	GREY CLAY GRVL 0028 GREY LMSN 0055 BROWN GORDON
CON	2	15	15- 6813	444425 5000500	310	01/58	1301	4	FR	80	20	25	8	1/00	DO	GREY CLAY STNS 0027 GREY LMSN 0049 BROWNLEE H
CON	2	15	15- 16287	444450 5000500	300	11/77	1558	6	FR	85	30	50	15	1/00	DO	CLAY BLDR 0050 LMSN 0099 G H PERKINS CONSTR
CON	2	16	15- 19120	444299 5000199	320	08/84	3644	6	FR	100	20	80	10	1/00	DO	BRWN SAND GRVL BLDR 0008 GREY MPAN BLDR PCKD 0048 GREY LMSN 0090 MOORE B
CON	2	16	15- 10773	444630 5000400	320	12/57	3566	5	FR	160	34	65	8	1/00	ST DO	GREY CLAY STNS 0022 GREY MPAN STNS 0058 GREY LMSN 0105 SIM R
CON	2	17	15- 6814	445020 4999815	290	12/57	1301	2	FR	33	10	12	6	1/00	DO	PRDG 0038 MPAN BLDR 0074 LMSN 0160 WILSON E
CON	2	18	15- 6815	446460 5000310	290	01/62	1301	5	FR	39	7	7	30	1/00	DO	CLAY 0033 LMSN 0045 MOORE J
CON	2	18	15- 15782	446550 5000250	280	12/76	1558	6	FR	44	5	20	50	1/00	DO	CLAY BLDR 0034 GREY LMSN 0039 DUHAMEL J P
CON	2	19	15- 13470	445255 4999165		07/73	1558	6	FR	148	20	30	10	1/00	ST DO	BRWN CLAY 0008 GREY BLDR 0016 GREY MPAN BLDR 0038 GREY LMSN FCRD 0048 WALLACE G
CON	2	19	15- 14213	445370 4999537	295	06/74	3644	5	FR	44	6	20	20	1/00	DO	BRWN SAND CLAY BLDR 0006 GREY MPAN BLDR 0069 GREY LMSN 0151 KLATT DAVE
CON	2	19	15- 6816	446900 4999970	290	12/55	3002	4	FR	90	15	15	8	1/00	DO	GREY CLAY 0012 GREY MPAN 0030 GREY GRVL CLAY 0037 GREY LMSN 0044 KLATT B
CON	2	20	15- 14689	445192 4998971	300	05/75	1558	6	FR	70	15	40	10	1/00	DO	GRVL BLDR 0027 GREY LMSN 0097 WRIGHT PETER
CON	2	20	15- 6817	446000 4998945	295	08/61	2308	4	FR	48	18	30	16	1/00	DO	BRWN SAND 0002 GREY CLAY BLDR 0020 GREY MPAN BLDR 0058 GREY LMSN 0073 BRASSARD W
CON	2	20	15- 15529	446650 4999400	300	07/76	1558	6	FR	66	10	20	20	1/00	DO	MPAN 0030 MSND 0048 GREY LMSN 0050 MYLAND BERT
CON	2	20	15- 6818	446900 4999980	290	01/62	2308	4	FR	72	10	25	12	1/00	ST DO	BRWN CLAY BLDR 0024 GREY CLAY BLDR GRVL 0055 BLCK LMSN 0073 CLINGIN R
CON	2	20	15- 14690	446984 4999827	295	05/75	1558	6	FR	62	FLW	3	50	1/00	DO	MPAN 0020 MSND 0067 LMSN 0075 MYLAND NEIL
CON	2	21	15- 6819	446070 4998485	300	04/61	2308	4	FR	79	22	24	15	1/00	ST	GREY CLAY 0015 BLUE CLAY 0030 GREY MPAN BLDR SAND 0052 GREY LMSN 0065 DILLON D
CON	2	23	15-	446199	300	06/80	1558	6	FR	170	20	150	10	1/00		MPAN 0041 LMSN 0081 WHITMAN D

- CONTINUED -

APPENDIX C

HYDRAULIC TESTS

JORDEL ACRES TW#1
6 HOUR PUMPING TEST
DATE: 26 MAY 1999
DRILLER: BOURGEOIS WELL DRILLING

TIME	DURATION MINUTES	DURATION DAYS	YNAMIC LEVEL METRES	DRAWDOWN METRES	FLOW RATE OF WELL 1 M3/DAY	FLOW RATE OF WELL 1 LPM	Observation well TW2 DYNAMIC LEVEL METRES	Observation well TW2 DRAWDOWN METRES
11:30	0	0	1.85	0.00	23.04	16	1.85	0.00
	2	0.0014	1.91	0.06				
	4	0.0028	1.91	0.06				
	6	0.0042	1.91	0.06				
	8	0.0056	1.92	0.07				
	10	0.0069	1.92	0.07			1.87	0.02
	15	0.0104	1.92	0.07				
	20	0.0139	1.92	0.07				
	25	0.0174	1.93	0.08				
	60	0.0417	1.94	0.09			1.89	0.04
	120	0.0833	1.94	0.09				
	180	0.1250	1.94	0.09			1.89	0.04
	240	0.1667	1.94	0.09			1.89	0.04
	300	0.2083	1.94	0.09			1.89	0.04
	360	0.2500	1.94	0.09			1.89	0.04

Separation distance between TW1 and TW2 = 60 metres

JORDEL ACRES TW#1
RECOVERY TEST
DATE: 26 MAY 1999
DRILLER: BOURGEOIS WELL DRILLING

TIME	DURATION MINUTES	DURATION DAYS	DYNAMIC LEVEL METRES	DRAWDOWN METRES	RESIDUAL DRAWDOWN METRES	FLOW RATE OF WELL 1	
						M3/DAY	LPM
11:30	0	0	1.85	0		23.04	16
17:30	360	0.2500	1.94	0.09			
17:30	0	0	1.94		0.09		
	1	0.0007	1.88		0.03		
	2	0.0014	1.87		0.02		
	5	0.0035	1.87		0.02		
	10	0.0069	1.86		0.01		
	30	0.0208	1.85		0.00		

JORDEL ACRES TW#2
6 HOUR PUMPING TEST
DATE: 27 MAY 1999
DRILLER: BOURGEOIS WELL DRILLING

TIME	URATIO	DURATION	DYNAMIC LEVEL	DRAWDOWN	FLOW RATE OF WELL 2		Observation well TW1	
	MINUTES	DAYS	METRES	METRES	M3/DAY	LPM	DYNAMIC LEVEL METRES	DRAWDOWN METRES
11:30	0	0	1.82	0.00	23.04	16	1.82	0.00
	2	0.0014	1.94	0.12				
	4	0.0028	1.94	0.12				
	6	0.0042	1.95	0.13				
	8	0.0056	1.95	0.13				
	10	0.0069	1.95	0.13			1.84	0.02
	20	0.0139	1.96	0.14			1.87	0.05
	30	0.0208	1.97	0.15				
	60	0.0417	1.97	0.15			1.87	0.05
	120	0.0833	1.98	0.16				
	180	0.1250	1.98	0.16			1.88	0.06
	240	0.1667	1.98	0.16				
	300	0.2083	1.98	0.16				
	360	0.2500	1.98	0.16			1.88	0.06

Separation distance between TW1 and TW2 = 60 metres

JORDEL ACRES TW#2
RECOVERY TEST
DATE: 27 MAY 1999
DRILLER: BOURGEOIS WELL DRILLING

TIME	DURATION MINUTES	DURATION DAYS	DYNAMIC LEVEL METRES	DRAWDOWN METRES	RESIDUAL DRAWDOWN METRES	FLOW RATE OF WELL 2	
						M3/DAY	LPM
11:30	0	0	1.82	0		23.04	16
17:30	360	0.2500	1.98	0.16			
17:30	0	0	1.98		0.16		
	1	0.0007	1.85		0.03		
	2	0.0014	1.85		0.03		
	5	0.0035	1.84		0.02		
	10	0.0069	1.83		0.01		
	15	0.0104	1.83		0.01		
	20	0.0139	1.83		0.01		
	25	0.0174	1.83		0.01		
	30	0.0208	1.82		0.00		

JORDEL ACRES TW#3
6 HOUR PUMPING TEST
DATE: 25 MAY 1999
DRILLER: BOURGEOIS WELL DRILLING

TIME	DURATION MINUTES	DURATION DAYS	DYNAMIC LEVEL METRES	DRAWDOWN METRES	FLOW RATE OF WELL 3	
					M3/DAY	LPM
7:30	0	0	7.20	0.00	21.60	15
	2	0.0014	7.20	0.00		
	4	0.0028	7.20	0.00		
	6	0.0042	7.21	0.01		
	8	0.0056	7.21	0.01		
	10	0.0069	7.21	0.01		
	20	0.0139	7.21	0.01		
	30	0.0208	7.21	0.01		
	40	0.0278	7.21	0.01		
	50	0.0347	7.21	0.01		
	60	0.0417	7.21	0.01		
	120	0.0833	7.21	0.01		
	180	0.1250	7.21	0.01		
	240	0.1667	7.22	0.02		
	300	0.2083	7.22	0.02		
	360	0.2500	7.22	0.02		
	480	0.3333	7.22	0.02		

JORDEL ACRES TW#3
RECOVERY TEST
DATE: 25 MAY 1999
DRILLER: BOURGEOIS WELL DRILLING

TIME	DURATION MINUTES	DURATION DAYS	DYNAMIC LEVEL METRES	DRAWDOWN METRES	RESIDUAL DRAWDOWN METRES	FLOW RATE OF WELL 3	
						M3/DAY	LPM
7:30	0	0	7.2	0		21.60	15
15:30	480	0.3333	7.22	0.02			
15:30	0	0	7.22		0.02		
	1	0.0007	7.20		0.00		

APPENDIX D

WATER QUALITY

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Sauriol Environmental

Attn: Mr. Jacques Sauriol

Report Number: 9904192
Date: Jun 15,1999
Date Submitted: May 27,1999
Date Collected: May 26,1999
Project: 9908

Matrix: WATER

PARAMETER	UNITS	MDL	sample	sample	sample	sample	sample
			TW1 1hr	TW1 6hr			
Fe	mg/L	0.01	0.19	0.22			
Mn	mg/L	0.01	ND	ND			
Hardness	mg/L CaCO3	1	252	252			
Alkalinity	mg/L CaCO3	2	250	246			
pH			7.64	7.61			
Conductivity	umhos/cm	3	789	770			
F	mg/L	0.10	0.58	0.58			
Na	mg/L	1	65	71			
N-NO3	mg/L	0.10	ND	0.15			
N-NO2	mg/L	0.10		ND			
N-NH3	mg/L	0.02		0.08			
SO4	mg/L	3	42	42			
Cl	mg/L	1	88	93			
Phenols	mg/L	0.001		ND			
Turbidity	NTU	0.1		2.3			
Colour	Pt/Co units	2		ND			
Ca	mg/L	1	48	48			
Mg	mg/L	1	32	32			
Tannin & Lignin	mg/L	0.1		ND			
Total Kjeldahl Nitrogen	mg/L	0.05		0.12			
K	mg/L	1	7	7			
DOC	mg/L	0.4		1.0			
TDS	mg/L	2		452			
H2S	mg/L	0.01		ND			
Ion Balance			0.96	0.99			

MDL=Method Detection Limit ND=Not Detected

Comment:

Approval:

146 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel: 1-888-271-8378 (613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Sauriol Environmental

Attn: Mr. Jacques Sauriol

Report Number: 9904192
Date: Jun 15,1999
Date Submitted: May 27,1999
Date Collected: May 26,1999
Project: 9908

Matrix: WATER

PARAMETER	UNITS	MDL	sample	sample	sample	sample	sample
			TW1 6hr				
Total Coliforms	cts/100mls		0				
Faecal Coliforms	cts/100mls		0				
Faecal Streptococci	cts/100mls		0				
E. Coli	cts/100mls		0				
Standard Plate Count (48hrs)	cts/1ml		12				

MDL=Method Detection Limit ND=Not Detected

Comment:

Approval:

146 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel: 1-888-271-8378 (613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client:

Sauriol Environmental

Attn: Mr. Jacques Sauriol

Report Number: 9904224
Date: Jun 14,1999
Date Submitted: May 28,1999
Date Collected: May 28,1999
Project: 9908

Matrix: WATER

PARAMETER	UNITS	MDL	sample	sample	sample	sample	sample
			TW2 6hrs	TW2 1hr	Gillis	Smith	
Fe	mg/L	0.01	0.10	0.54	ND	1.77	
Mn	mg/L	0.01	ND	ND	ND	ND	
Hardness	mg/L CaCO3	1	249	265	ND	361	
Alkalinity	mg/L CaCO3	2	245	254	284	309	
pH			7.62	7.58	7.67	7.53	
Conductivity	umhos/cm	3	790	781	714	707	
F	mg/L	0.10	0.59	0.55	0.34	0.27	
Na	mg/L	1	73	66	187	16	
N-NO3	mg/L	0.10	ND	ND	ND	0.14	
N-NO2	mg/L	0.10	ND	ND	ND	ND	
N-NH3	mg/L	0.02	0.07				
SO4	mg/L	3	42	41	38	36	
Cl	mg/L	1	99	86	42	35	
Phenols	mg/L	0.001	ND				
Turbidity	NTU	0.1	1.2				
Colour	Pt/Co units	2	ND				
Ca	mg/L	1	47	50	ND	72	
Mg	mg/L	1	32	34	ND	44	
Tannin & Lignin	mg/L	0.1	ND				
Total Kjeldahl Nitrogen	mg/L	0.05	0.15				
K	mg/L	1	7	7	ND	4	
DOC	mg/L	0.4	0.8				
TDS	mg/L	2	464				
H2S	mg/L	0.01	ND				
Ion Balance			0.97	1.00	1.06	1.02	

MDL=Method Detection Limit ND=Not Detected

Comment:

Approval: _____

146 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel: 1-888-271-8378 (613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client:

Sauriol Environmental

Attn: Mr. Jacques Sauriol

Report Number: 9904224
Date: Jun 14,1999
Date Submitted: May 28,1999
Date Collected: May 28,1999
Project: 9908

Matrix: WATER

PARAMETER	UNITS	MDL	sample	sample	sample	sample	sample
			TW2 6hrs				
Total Coliforms	cts/100mls		2				
Faecal Coliforms	cts/100mls		0				
Faecal Streptococci	cts/100mls		0				
E. Coli	cts/100mls		0				
Standard Plate Count (48hrs)	cts/1ml		0				

MDL=Method Detection Limit ND=Not Detected

Comment:

Approval: _____

146 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel: 1-888-271-8378 (613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Sauriol Environmental

Attn: Mr. Jacques Sauriol

Report Number: 9904093
Date: Jun 9,1999
Date Submitted: May 26,1999
Date Collected: May 25,1999
Project: 9908

Matrix: WATER

PARAMETER	UNITS	MDL	sample	sample	sample	sample	sample
			TW3 1Hr	TW3 8Hr			
Fe	mg/L	0.01	0.28	0.04			
Mn	mg/L	0.01	ND	ND			
Hardness	mg/L CaCO3	1	285	304			
Alkalinity	mg/L CaCO3	2	276	290			
pH			7.71	7.68			
Conductivity	umhos/cm	3	774	679			
F	mg/L	0.10	0.49	0.33			
Na	mg/L	1	57	32			
N-NO3	mg/L	0.10	1.56	1.13			
N-NO2	mg/L	0.10		0.17			
N-NH3	mg/L	0.02		ND			
SO4	mg/L	3	46	33			
Cl	mg/L	1	72	41			
Phenols	mg/L	0.001		ND			
Turbidity	NTU	0.1		1.7			
Colour	Pt/Co units	2		ND			
Ca	mg/L	1	58	64			
Mg	mg/L	1	34	35			
Tannin & Lignin	mg/L	0.1		ND			
Total Kjeldahl Nitrogen	mg/L	0.05		0.13			
K	mg/L	1	ND	ND			
DOC	mg/L	0.4		1.7			
TDS	mg/L	2		408			
H2S	mg/L	0.01		ND			
Ion Balance			0.96	0.98			

MDL=Method Detection Limit ND=Not Detected

Comment:

Approval: _____

146 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel: 1-888-271-8378 (613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Sauriol Environmental

Attn: Mr. Jacques Sauriol

Report Number: 9904093
Date: Jun 9,1999
Date Submitted: May 26,1999
Date Collected: May 25,1999
Project: 9908

Matrix: WATER

PARAMETER	UNITS	MDL	sample	sample	sample	sample	sample
			TW3 8Hr				
Total Coliforms	cts/100mls		0				
Faecal Coliforms	cts/100mls		0				
Faecal Streptococci	cts/100mls		0				
E. Coli	cts/100mls		0				
Standard Plate Count (48hrs)	cts/1ml		8				

MDL=Method Detection Limit ND=Not Detected

Comment:

Approval: _____

146 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel: 1-888-271-8378 (613)727-5692 Fax:(613)727-5222

CHAIN OF CUSTODY RECORD

ACCUTEST LABORATORIES LTD.
146 Colonnade Rd., Unit 8
Nepean, ON K2E 7Y1 Phone: (613) 727-5692 Fax: (613) 727-5222

LAB USE ONLY
Report Number: _____

Company Name: Saurial Environmental	Address:	☑ Fax Results to: _____
Report Attention: Jacques	City/Prov: Vanier Postal Code:	☐ E-mail Results to: _____
Phone: 749-6066	Project # 9908 * Quotation #	☐ Copy of Results to:

Invoice to:
(if different from above)

_____

_____

SAMPLE ANALYSIS REQUIRED

⇦ Indicate: F=Filtered or P=Preserved

Sample ID	Date Collected (mm/dd/yy)	Time Collected	Sample Matrix	C=Comp. G=Grab	Number of Containers	Service Required ** R=Rush S=Standard	General Chemistry	Subd package	Sieve Analysis	Laboratory Identification	CRITERIA REQUIRED * (i.e. MOE Table A, CCME, PWQO, ODWO, Québec) / Sample Description/Remarks
TW3 1hr	May 25/99	8:30 am	W	G	1	S	✓				
TW3 8hr	May 25/99	3:30 pm	W	G	7	S		✓			
Soil #1	May 22/99	4:00 pm	S	G	1	S			✓		
Soil #2	May 22/99	4:00 pm	S	G	1	S			✓		

Sampled By: Rob Findlay	Date/Time: May 26/99	Shipped Via: Personal car	Date/Time: May 26/99
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By: Rob Findlay	Date/Time: May 26	Received By Lab: Scott Clark	Date/Time: May 26/99 9:45 am

Comments

* Indicates a required field. If not complete, analysis will proceed only on verification of missing information. ** There may be a surcharge applied to "Rush" service. Please check with lab.

Copies: White – Sampler, Yellow – Laboratory, Pink – With Report

CHAIN OF CUSTODY RECORD

ACCUTEST LABORATORIES LTD.
146 Colonnade Rd., Unit 8
Nepean, ON K2E 7Y1 Phone: (613) 727-5692 Fax: (613) 727-5222

LAB USE ONLY
Report Number: _____

Company Name: Squirol Environmental	Address:	☑ Fax Results to: _____
Report Attention: Jacques	City/Prov: Vanier Postal Code:	☐ E-mail Results to: _____
Phone: 749-6066	Project # 9908 * Quotation #	☐ Copy of Results to:

Invoice to:
(if different from above)

_____

_____

SAMPLE ANALYSIS REQUIRED

⇦ Indicate: F=Filtered or P=Preserved

Sample ID	Date Collected (mm/dd/yy)	Time Collected	Sample Matrix	C=Comp. G=Grab	Number of Containers	Service Required ** R=Rush S=Standard	General Chemistry	Subdivision Page	Laboratory Identification	CRITERIA REQUIRED * (i.e. MOE Table A, CCME, PWQO, ODWO, Québec) / Sample Description/Remarks
TW 1 1hr	May 26/99	12:30 pm	W	G	1	S	✓			
TW 1 6hr	May 26/99	5:30 pm	W	G	7	S		✓		

Sampled By: Rob Findlay	Date/Time: May 27/99	Shipped Via: personal car	Date/Time: May 27/99	Comments
Relinquished By:	Date/Time:	Received By:	Date/Time: May 27/99	
Relinquished By: Rob Findlay	Date/Time: May 27/99	Received By Lab:	Date/Time:	

* Indicates a required field. If not complete, analysis will proceed only on verification of missing information. ** There may be a surcharge applied to "Rush" service. Please check with lab.

Copies: White – Sampler, Yellow – Laboratory, Pink – With Report

CHAIN OF CUSTODY RECORD

ACCUTEST LABORATORIES LTD.
146 Colonnade Rd., Unit 8
Nepean, ON K2E 7Y1 Phone: (613) 727-5692 Fax: (613) 727-5222

LAB USE ONLY
Report Number: _____

Company Name: Squirl Environmental	Address:	☑ Fax Results to: _____
Report Attention: Jacques	City/Prov: Vanier Postal Code:	☐ E-mail Results to: _____
Phone: 749-6066	Project # 9908 * Quotation #	☐ Copy of Results to:

Invoice to:
(if different from above)

_____

_____

SAMPLE ANALYSIS REQUIRED

⇦ Indicate: F=Filtered or P=Preserved

Sample ID	Date Collected (mm/dd/yy)	Time Collected	Sample Matrix	C=Comp. G=Grab	Number of Containers	Service Required ** R=Rush S=Standard	General Chemistry	Sub'd phge									Laboratory Identification	CRITERIA REQUIRED * (i.e. MOE Table A, CCME, PWQO, ODWO, Québec) / Sample Description/Remarks
Tw 2 1hr	May 27/99	12:30pm	W	G	1	S	✓											
Tw 2 6hr	" "	5:30pm	W	G	7	S		✓										
Gillis	" "	2:00pm	W	G	1	S	✓											
Smith	" "	2:00pm	W	G	1	S	✓											

Sampled By: Rob Findlay	Date/Time: May 27/99	Shipped Via: Personal car	Date/Time: May 27/99
Relinquished By:	Date/Time:	Received By:	Date/Time: May 28/99
Relinquished By: Rob Findlay	Date/Time: May 28/99	Received By Lab:	Date/Time:

Comments

* Indicates a required field. If not complete, analysis will proceed only on verification of missing information. ** There may be a surcharge applied to "Rush" service. Please check with lab.

Copies: White – Sampler, Yellow – Laboratory, Pink – With Report

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates

Attn: Mr. Brian Stratton

Report Number: A7-1684
Date: Apr. 1, 1997
Date Submitted: Mar. 27, 1997
Date Collected: Mar. 26, 1997
Project: 971-2830

Matrix: WATER

PARAMETER	UNITS	MDL	sample SA 1	sample	sample	sample	sample
Fe	mg/L	0.01	0.17				
Mn	mg/L	0.01	ND				
Hardness	mg/L CaCO3	1	222				
Alkalinity	mg/L CaCO3	2	221				
pH			7.83				
Conductivity	umhos/cm	3	856				
F	mg/L	0.10	0.78				
Na	mg/L	1	95				
N-NO3	mg/L	0.10	ND				
N-NO2	mg/L	0.10	ND				
N-NH3	mg/L	0.02	0.18				
SO4	mg/L	3	52				
Cl	mg/L	1	114				
Phenols	mg/L	0.002	ND				
Turbidity	NTU	0.1	2.4				
Colour	Pt/Co units	2	ND				
Ca	mg/L	1	41				
Mg	mg/L	1	29				
Tannin & Lignin	mg/L	0.1	ND				
Total Kjeldahl Nitrogen	mg/L	0.05	0.23				
K	mg/L	1	8				
DOC	mg/L	0.2	1.1				
TDS	mg/L	2	508				
H2S	mg/L	0.01	ND				
Ion Balance			1.00				

MDL=Method Detection Limit ND=Not Detected

Comment:

FIELD MEASUREMENTS

Conductivity = 890

Temp = 6°C

Approval:

146 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

CUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates

Attn: Mr. Brian Stratton

Report Number: A7-1684
Date: Apr. 1, 1997
Date Submitted: Mar. 27, 1997
Date Collected: Mar. 26, 1997
Project: 971-2830

Matrix: WATER

PARAMETER	UNITS	MDL	sample	sample	sample	sample	sample
			SA 1				
Total Coliforms	cts/100mls		0				
Faecal Coliforms	cts/100mls		0				
Faecal Streptococci	cts/100mls		0				
E. Coli	cts/100mls		0				
Standard Plate Count (48hrs)	cts/1ml		0				

MDL=Method Detection Limit ND=Not Detected

Comment:

Approval:

148 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel:(613)727-5692 Fax(613)727-5222

APPENDIX E

BACKHOE TEST PITS
& GRAIN SIZE
& PERC TESTS

Jordel Acres Subdivision

Back hoe test pit
May 20 1999

TP1		
0	0.1	topsoil
0.1	1.83	brown silty clayey till with boulders
		dry
TP2		
0	0.1	topsoil
0.1	1.83	brown silty clay
		dry
TP3		
0	0.13	topsoil
0.13	1.83	brown silty clay
		dry
TP4		
0	0.1	topsoil
0.1	1.83	brown silty clayey till with large boulders
		dry
TP5		
0	0.1	topsoil
0.1	0.61	brown silty clay
0.61	1.83	grey silty clay (soil sample No 2)
		water table 0.91m
TP6		
0	0.1	topsoil
0.1	0.61	brown silty clay
0.61	1.83	grey silty clay
		water table 1.68m
TP7		
0	0.1	topsoil
0.1	0.61	brown silty clay
0.61	1.83	grey silty clay
		water table 1.68m
TP8		
0	0.13	topsoil
0.13	1.83	brown silty clay
		water table 1.52
TP9		
0	0.15	topsoil
0.15	1.83	brown silty clay
		dry

TP10

0	0.18	topsoil
0.18	1.83	brown sand and gravel
		dry

TP11

0	0.08	topsoil
0.08	1.83	brown silty clay
		dry

TP12

0	0.20	topsoil
0.20	0.91	brown silty sand
0.91	1.83	grey and brown silty clay
		dry

TP13

0	0.20	sandy topsoil
0.20	0.76	reddish brown silty sand (soil sample No 1)
0.76	1.83	grey silty clay
		water table 1.52

TP14

0	0.15	topsoil
0.15	1.83	brown sand and gravel with boulders
		dry

TP15

0	0.10	topsoil
0.10	0.91	brown silty sand
0.91	1.83	grey silty sand
		dry

TP16

0	0.20	topsoil
0.20	0.71	brown silty sand
0.71	1.83	grey and brown silty clay
		dry

Percolation tests June 2 1999

Perc test No 1 silty clay (near TW2)
total depth 0.43 m
3 hours saturation
perc rate = 30 min / 1.5 cm = 20 min / cm

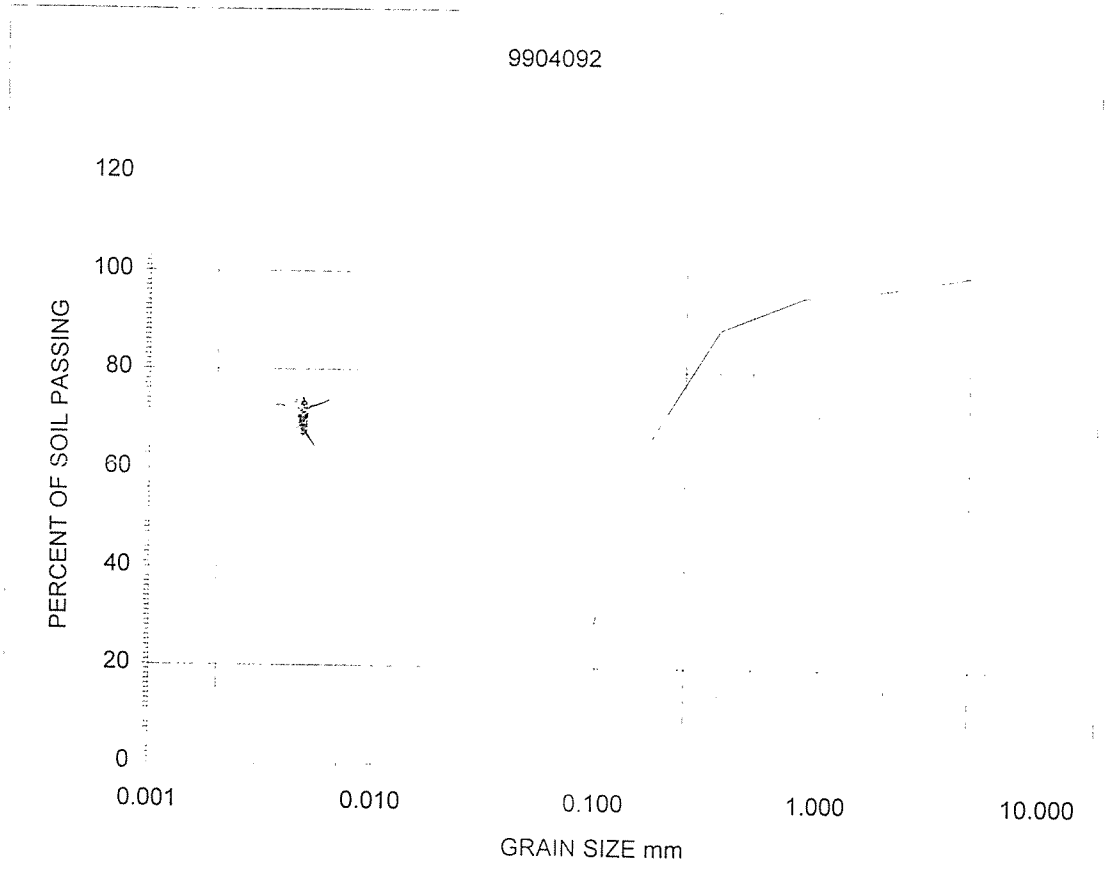
Perc test No 2 till (near TW2)
total depth 0.49 m
2 hours saturation
perc rate = 15 min / 2.0 cm = 7.5 min /cm

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Sauriol Environmental
Attn: Jacques Sauriol

Lab Report No: 9904092
Sample No: RN25222
Date: 01-Jun-99
Project: 9908
Sample: Soil # 1



Particle Type	size mm	% sample
Coarse Gravel	>4.750	0.0
Fine Gravel	>2.000-4.750	3.0
Very Coarse Sand	>1.000-2.000	1.3
Coarse Sand	>0.500-1.000	5.0
Medium Sand	>0.250-0.500	14.9
Fine Sand	>0.100-0.250	47.8
Fines	<0.100	27.9

Comments: SIEVE Analysis Only

Analyst:

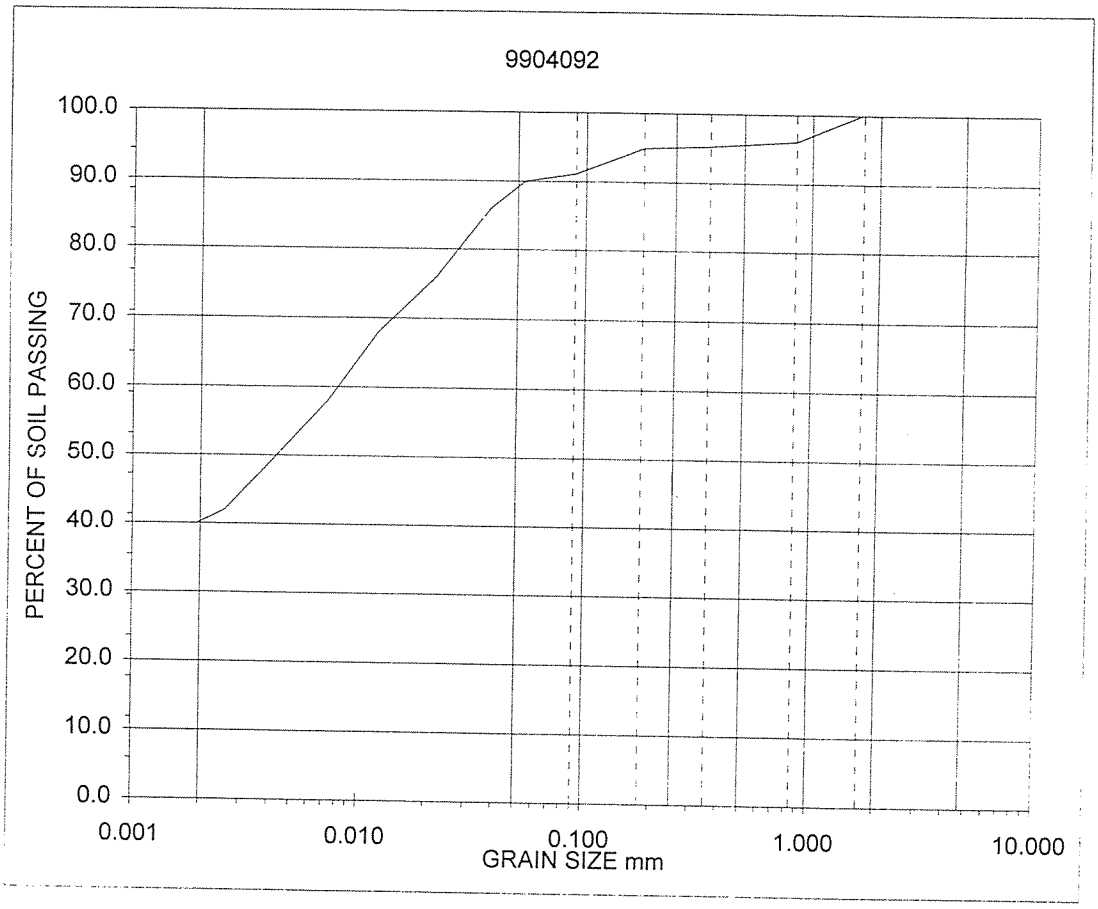
146 Colonnade Road, Unit 8, Nepean, Ontario K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Sauriol Environmental
Attn: Jaques Sauriol

Lab Report No: 9904092
Sample No: RN25223
Date: 07-Jun-99
Project: 9908
Sample: soil 2



Particle Type	size mm	% sample
Coarse Gravel	>4.750	0.0
Fine Gravel	>2.000-4.750	-0.1
Very Coarse Sand	>1.000-2.000	3.3
Coarse Sand	>0.500-1.000	1.3
Medium Sand	>0.250-0.500	0.5
Fine Sand	>0.100-0.250	3.5
Very Fine Sand	>0.050-0.100	2.5
Silt	>0.002-0.050	49.0
Clay	<=0.002	40.0

Comments:

Analyst: D Wilson

146 Colonnade Road, Unit 8, Nepean, Ontario K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

Environmental Site Assessment

ESA 1.0 Introduction

We are providing you with an Environmental Site Assessment (ESA) report for the property owned by Mr. Garry Jordan, located on lot 21 Concession 2 in Rideau Township. This environmental opinion was requested by Mr. Richard Lalande of Pri-Tec Construction, to act as supporting documents for the application of a Plan of Subdivision.

ESA 1.1 Purpose of the Study

The purpose of the Phase One ESA is to provide a report that highlights areas of potential concerns regarding environmental liabilities of the property.

ESA 1.2 Methodology

The property was visited with the owner Mr. Garry Jordan on the week of June 7 1999. The source of information described in the present document was provided from conversations with Mr. Jordan, our observations during this site visit and pertinent information from archives, including historical air photography. Local geological maps were also reviewed. An Environmental Screening Questionnaire is attached in Appendix. No boreholes for the purpose of detailed site characterization (i.e. Phase Two) were conducted during this survey.

The site was checked for Polychlorinated Biphenyls (PCBs) and for Urea Formaldehyde Foam Insulation (UFFI). We looked for stained soils and evidence of storage tanks, and waste management on site.

The Court House Archives provided the registry of previous owners of the property. No insurance plan or fire records were available. The former coal gasification plants and landfill surveys (Interra) report were out of bound for the study area.

ESA 1.3 Site Description

The property has ca. 55 Ha in surface area, and is located on Roger Stevens Road, off New Highway 416, near North Gower.

ESA 2.0 Site History and Setting

A review of the archives indicates historical ownership dating back to 1809. The property has been owned by the Dillon family since 1890. The present owners possess the property since 1984. Copies of the listing of previous owners is provided in Appendix.

ESA 3.0 Site Conditions
ESA 3.1 Physical Setting of the Property

There are four significant structures on the property, all mainly located in the center of the land.

The house is a two storey dwelling, and is likely a century old. The building appears to be concrete block foundation with brick walls, with an attic and shingle roof. A basement is present below the main building, with no sump. The house is heated by electric base boards. There was no evidence of previous heating system (i.e. heating oil or coal). Its water is supplied by a drilled well located in the barn. Its waste water is handled by a septic system likely located to the north of the house. Urea Formaldehyde Foam Insulation (UFFI) which was largely used during the Canadian Home Insulation Program in the 1970's, was not used in this building (personal communication Mr. Jordan). Ozone depleting substances are likely contained in a refrigerator and in an air conditioning system. Because of the age of the building, the occurrence of minor quantities of lead base paints is suspected.

The barn a is wood structure with cracked / fissured concrete floor. Manure spread on the main floor, with manure piles outside the barn on the east side were noted. The second floor is a hay loft. A well of ca. 1961 construction is located in the barn and supplies the house. There may be approximately a dozen fluorescent light fixtures. The relative age of the fixtures suggests a possible concern with the ballast containing PCB oils. No individual ballasts were inspected during this visit. Because of the age of the building, the occurrence of minor quantities of asbestos in ceiling and floor tiles is suspected in the back room.

The tractor shed has a dirt floor with pails of fuel, hydraulic fluids and oils.

The garage has crushed stone floors, and hosts a variety of fuels, solvents, paints and oils in minor quantities. There were evidences of spills under a tarp on the garage floor. An older underground storage tank (UST) is located on the East side of the Garage. The newer above ground storage tank (AST) has 250 gal capacity, and holds diesel. Next to the above ground tank, are two drums of hydraulic fluids, with minor spills near the drums. There was no evidence of herbicide or pesticide storage on the property. Spraying of the fields are currently contracted out. The historical storage of these chemicals are unknown.

In addition to the old drilled well, there are two old dug wells on the property. Presently the property is serviced by aerial services of Hydro and Bell. Storm water is managed by road side ditches and a tributary of Roger Stevens Creek.

The surface topography is approximately at 90 m geodetic. Surficial Geology consists of a relatively thick glacial till on the hills, overlain by marine clay in flats, and sand over clay on the eastern part of the property. The bedrock does not outcrop and consists of dolomite of the Oxford Formation. The till hills are naturally well drained and the clay flat have enhanced drainage by drain tiles. There was no evidence of recent fill imported on the property, even along the recent Highway 416 construction, on the East of the property.

Cash Crop Fields likely have a history of herbicide and pesticide spreading activities.

ESA 3.2 Previous Landuses of the Study Property

Based on the airphoto coverage, the property's previous landuses were identical to the present one. Agricultural activities have been the dominant landuse of this property.

ESA 3.3 Landuses of Nearby Properties

The property is bounded as follows:
North: Roger Stevens road
East: Highway 416
South: Agricultural Fields / wood lots
West: Agricultural Fields and a few private dwellings

ESA 4.0 Environmental Situation of the Study Property

It appears that for the last 200 years, the main landuse of the property has been agricultural. Concerned environmental products handled on the property include hydraulic and engine oils, diesel fuel, pesticides and herbicides. Evidences of spills of engine waste oil and of hydraulic oil were noted in the garage. The competence of the two tanks is questioned. Other minor concerned products on the property may include the presence of the original electric light fixture ballasts containing PCBs for their thermal protection.

ESA 4.1 Opinion

A preliminary review of the environmental situation was completed on the Jordel Acres Proposed Subdivision property, located on Lot 21 Concession 2 Rideau Township. This review noted evidences of spills from concerned products on the property (e. g. waste engine oil and or hydraulic oil). The absence of concrete floor could facilitate the migration of petroleum hydrocarbon contaminants in the subsurface. It is the opinion of the assessor that based on the evidences examined, the property shows some concerns for environmental contamination. With regards to older fixture ballasts, the anticipated numbers (i. e. likely less than 10 old units) would be non-regulated (re: PCBs), and would only require normal acceptable disposal (Andy Lewis MOE). It is recommended that these old ballast fixtures be progressively replaced with new PCB free units. It is understood that the owners which to remove the 2 storage tanks from the property. Soils and groundwater quality control of the excavations should be completed to confirm the cleanness of the subsoil environment.

If a greater level of confidence is required about the status of the perceived risk of subsurface contamination about the 2 storage tanks and the Garage, additional site specific characterization (ESA Phase Two) should be completed at these locations. This could include a drilling program near the two tanks and in the Garage, as well as the sampling of the nearby old drilled well. Analyses should include BTEX and TPH.

ENVIRONMENTAL SCREENING QUESTIONNAIRE,

LIST OF PREVIOUS OWNERS,
&
AIR PHOTOGRAPHS

Summary of Air Photography

A28051 42 ; 1994
A31480 45 ; 1987 (colour)
A24878 194; 1977
A20327 44; 1968

National Air Photo Library

SAURIOL ENVIRONMENTAL INC.

ENVIRONMENTAL SCREENING QUESTIONNAIRE

ESA 5.0 Limitations:

During this study, no control by boreholes, and soil and groundwater samplings was completed. The bulk of the information was obtained from conversations with the present owner, complemented by few historical documents. The site inspection was completed during the week of June 7 1999. Conditions in the future may change with time. No guaranty is provided on future site conditions nor on the quality of soil and groundwater since these were not tested. This study has for objective to reduce the risk, and not necessarily to eliminate the risk, of environmental concerns regarding the potential presence of contaminants which could have a detrimental impact on the property.

Sauriol Environmental Inc. (SEI) warrants that this Phase One Environmental Site Assessment was performed in general compliance with current acceptable practices for environmental site investigations. The report is intended for client use only. Any third party use or reliance are sole responsibility of such third parties. SEI accepts no responsibility for damages suffered by any third party as a results of decision made based on this report. No other warranties are implied or expressed.

Trusting that this letter of opinion is satisfactory.

Yours Truly

Sauriol Environmental Inc.

Jacques Sauriol M. Sc.
President

ENVIRONMENTAL SCREENING QUESTIONNAIRE

Project No. 9908 Location: Nor Ch Sewer

Inspector: RF Date Completed: Week Jan 7 1999

1.0 RECORDS REVIEW / INTERVIEWS

		Completed	Significant Findings
1.1	Aerial Photographs	☑	
1.2	Fire Insurance Plans	☐	n/a
1.3	City Directories	☐	
1.4	Interviews	☑	
1.5	Ottawa Archives	☑	
1.6	Property Zoning	☐	
1.7	Ottawa Env. Management	☐	
1.8	Topographic Maps	☑	
1.9	Geologic Maps	☑	
1.10	Landfill Site Inventory	☐	
1.11	Coal Gasification Study	☑	
1.12	Other (specify)_____	☐	

ENVIRONMENTAL SCREENING QUESTIONNAIRE

1.0 SITE DESCRIPTION & FINDINGS

2.1 Legal Description Lot 21 Conc 2 Ridge

2.2 Current Address Roger Stevens Drive

2.3 Roll # _____

2.4 Areal Extent 55. Ha

2.5 Zoning _____

2.6 Current Site Use
Agriculture ☒ Residential ☐ Commercial ☐ Industrial ☐ Other ☐
Describe: _____

2.7 Domestic Well (3) Yes ☒ No ☐ Location HG study

2.8 Pits Yes ☐ No ☒ Location _____

2.9 Lagoon Yes ☐ No ☒ Location _____

2.10 Wastewater Yes ☑ No ☐ Location 1 septic system

2.11 Topography
2.11.1 Site: rolling
2.11.2 Overall: _____

2.12 Drainage Patterns
2.12.1 Surficial: tributaries of Roger Stevens Creek
2.12.2 Catchbasins/Manholes: _____
2.12.3 Ditches: _____
2.12.4 Streams/Creeks: _____
2.12.5 Rivers/Lakes: _____
2.12.6 Other(specify): _____

2.13 Surface Cover	Approximate Area	Condition
2.13.1 Buildings:	_____	_____
2.13.2 Asphalt/Concrete:	Nil	_____
2.13.3 Gravel:	access Rd / laneway	_____
2.13.4 Vegetation:	trees / corn	_____

2.14 Surface Water	Approximate Area	Condition
	_____	_____

2.15 Geology
2.15.1 Surficial Geology till + clay
2.15.2 Bedrock Ordovician no outcrop

2.16 Staining none except near tanks + septic + water shed

Approx.area	Approx.depth	Poss.Staining Material	Location	Poss. Source
_____				

2.17 Stressed Vegetation none

Approx.area	Location	Possible Cause
_____		

2.18 Fill

2.18.1 Visual evidence of fill observed on site? Yes ☐ No ☑
If Yes, describe:_____

2.18.2 Does fill contain any deleterious material? Yes ☐ No ☐
If Yes, describe:_____

2.18.3 Does fill possess any unusual type of odour? Yes ☐ No ☐
If Yes, describe:_____

2.19 Buildings

2.19.1 Are buildings present on the site? Yes ☑ No ☐
If Yes, complete the following:

Size:_____ Estimated Age: 100 yrs ±

Use/Occupancy residence Condition good

2.19.2 Construction

Building No. house
# of Storeys 2
Underground Parking no.
Basement yes
Crawl Space no
Roof Construction shingle
Ex. Wall Construction brick
Foundation cement block

+ garage + barn + tractor shed

2.19.3 Heating/Cooling System/Fuel Source
Heating: electrical
Cooling: none A/C

2.19.4 Have any changes to the heating system occurred? Yes ☑ No ☐ likely
If Yes, list past heating systems: unknown
suspect oil or coal.

2.19.5 Describe utilities present on site: gravel Bell Hydro

2.20 Are there potential special attention items present (i.e. asbestos, PCSs, ureaformaldehyde foam insulation, ozone depleting substances, radon or electromagnetic radiation?) Yes ☐ No ☐
If Yes, complete the following::

likely presence of floor + ceiling tiles

Asbestos
Type of Material _____ Approx. Quantity _____ may contain asbestos fibre, because of age of buildings
Condition _____ Location _____

If asbestos is suspected has an asbestos survey and management plan been completed?
Yes ☐ No ☑

PCSs

No Transformers: Type:____ Number:_____ Serial No._____
PCBs present Yes ☐ No ☐
Lamp Ballast Approx. Amount: 10 - 20 Number inspected: 0
Number of ballasts the presence of PCBs is suspected: 10 - 20
No Condensers Type:_____Number:_____Serial No._____
PCBs present Yes ☐ No ☐

Ureaformaldehyde Foam Insulation (UFFI)
Is evidence of foam insulation present? Yes ☐ No ☒
Description:_____

Ozone Depleting Substances (ODS)

Description	Yes	No
A/C Units	✓	
Water Coolers		
Refrigerators	✓	
Chillers		
Freezers		
Other		

Radon

Is the bedrock comprises of black shale or granite? Yes ☐ No ☑

If Yes, complete the following:

Basement Ventilation:_____

Occupants of Basement:_____

Complaints by Occupants:_____

Electromagnetic Radiation (EMR) Yes ☐ No ☑

Describe:_____

2.21 Storage Tanks (2)

2.21.1 Is evidence of above ground storage tanks (ASTs) observed on site?

Yes ☑ No ☐

If Yes, complete the following:

	Size	Tank Material	Contents	Date of Installation	Protection	Spill Containment
1	UST	?	?	1920-30?	?	no
1	AST		diesel	1970?	?	no

2.22 Waste management waste

2.22.1 Are significant quantities of debris/solid waste on site? Yes ☐ No ☑

If Yes, describe:_____

2.22.2 Are any signs of liquid wastes present on site? Yes ☐ No ☑

If Yes, describe:_____

2.22.3 Is any registerable waste present on site? Yes ☐ No ☑

If Yes, describe:_____

2.22.4 Has a waste audit been carried out on the site? Yes ☐ No ☐ Unknown ☑

2.23 Material? Chemical Handling

2.23.1 Are chemicals or hazardous materials stored on site? Yes ☐ No ☑

If Yes, describe:

Amount_____ suspecting previous

Environmental Significance_____ herbicides + pesticides

3.0 ADJACENT PROPERTIES

3.1 Land Uses

3.1.1. Northwest:

Agriculture ☑ Residential ☐ Commercial ☐ Industrial ☐ Other ☐

Describe:_____

ASTs Yes ☐ No ☑ USTs Yes ☐ No ☐ Solid/Liquid Wastes Yes ☐ No ☑

Environmental Concerns: no

Any basement within 60 m of the site? Yes ☐ No ☑

3.1.2 Southeast:

Agriculture ☑ Residential ☐ Commercial ☐ Industrial ☐ Other ☐

Describe:_____

some wood lot

ASTs Yes ☐ No ☑ USTs Yes ☐ No ☑ Solid/Liquid Wastes Yes ☐ No ☑
Environmental Concerns: ne
Any basement within 60 m of the site? Yes ☐ No ☑

3.1.3 East:

Agriculture ☑ Residential ☐ Commercial ☐ Industrial ☐ Other ☐
Describe: + Hwy Highway
ASTs Yes ☐ No ☑ USTs Yes ☐ No ☑ Solid/Liquid Wastes Yes ☐ No ☑
Environmental Concerns: no
Any basement within 60 m of the site? Yes ☐ No ☑

3.1.4 West:

Agriculture ☑ Residential ☑ Commercial ☐ Industrial ☐ Other ☐
Describe:
ASTs Yes ☐ No ☑ USTs Yes ☐ No ☑ Solid/Liquid Wastes Yes ☐ No ☑
Environmental Concerns: no
Any basement within 60 m of the site? Yes ☑ No ☐

4.0 OTHER POTENTIAL SIGNIFICANT FEATURES

4.1 Are wetland habitats or other environmentally significant features present on or within 120m of the site? Yes ☐ No ☑

4.2 Are there any other environmental concerns? Yes ☐ No ☑
If Yes, describe:

5.0 SUMMARY OF ENVIRONMENTAL CONCERNS:

1 UST with suspected contaminated soils
1 AST
1 oil stains in garage + another shed
minor Asbestos material expected in tiles
minor PCB ballast in fluorescent fixtures
ODS in AC

6.0 RECOMMENDATIONS:

Phase II to be carried UST + AST + Garage + Barn

APPENDIX

LIST OF PREVIOUS OWNERS

Township of North Gower Lot. No. 21. Concession 2.

No or. Instrument	Instrument	Its Date	Date of Registry	GRANTOR	GRANTEE	Quantity of Land	Consideration	REMARKS
	Patent	18Apl.1809		Crown	Nancy McIlmoyle			
RO 89	Will	16May 1839	26Jan.1842	Nancy McIlmoyle	John B. Wilson	All, 200 A.		X
RO 5261	B & S.	2Mar.1848	19July1851	Alexander Wylie etux	John Callaghan	All.		X
RO 5262	B & S.	2Mar.1848	19July1851	Alexander Wylie etux	Jeremiah O'Connor	N. ½		
RO 7119	B & S.	16Oct.1852	7Mar.1854	John Callaghan etux	William Hodgins	S. ½		X
RO 7120	B & S.	2Apl.1853	7Mar.1854	William Hodgins etux	John Phelan	N. ½		
RO 10263	Will	29Mar.1856	5Nov.1856	James McGuire	Cormack McGuire	N. ½		
RO 24914	B & S.	11Aug.1860	16Mar.1865	Jeremiah O'Connors	Daniel O'Connors	E. ½ of S. ½		
RO 24915	B & S.	3Mar.1865	16Mar.1865	John Phelan etux	Daniel O'Connors	E. ½ of E. ½		
RO 24916	M.	3Mar.1865	16Mar.1865	Daniel O'Connor	John Phelan	E. ½	$600.	
G. No.15	B & S.	14Oct.1868	20Oct.1868	John Phelan etux	Cormick McGuire	E. ½ of E. ½, 50 A.		
~~16~~	~~D. M.~~	~~29Oct.1868~~	~~28Oct.1868~~	~~John Phelan~~	~~Daniel O'Connor~~	~~E. ½, See No. 24916.~~		
~~1149~~	~~M.~~	~~28Mar.1870~~	~~12Apl.1870~~	~~Daniel O'Connor etux~~	~~Thomas Ballentyne~~	~~E. ½, $500.~~		
G. 1165 O	B & S.	12Feb.1874	7June1878	Jeremiah O'COnnor etux	Matthew O'Connor	E. ½ of S. ½, 50 A.		X
G. 1445	Q. C.	12Feb.1874	13Nov.1880	Jeremiah O'Connor etux	Daniel O'Connor	E. ½ of S. ½.		
~~1446~~	~~M.~~	~~11Nov.1880~~	~~13Nov.1880~~	~~Daniel O'Connor etux~~	~~George B. Eume~~	~~E. ½, $1200.~~		
~~1506~~	~~D. M.~~	~~18Nov.1880~~	~~2May 1860~~	~~Thos. Ballantyne~~	~~Dan'l. O'Connor~~	~~See No. 1149.~~		
~~1517~~	~~D. M.~~	~~2May 1881~~	~~27May 1881~~	~~Geo. B. Eume~~	~~Dan'l. O'Connor~~	~~See No. 1446~~		
~~1518~~	~~M.~~	~~5May 1881~~	~~27May 1881~~	~~Thomas Beaman etux~~	~~Dan'l. O'Connor~~	~~E. ½, $5000.~~		
G. 2065	Deed	2May 1881	28Dec.1885	D. O'Connor etux	Thos. Beaman	E. ½.		
~~2130~~	~~D. M.~~	~~10June1886~~	~~16June 1886~~	~~D. O'Connor~~	~~Thos. Beaman~~	~~See No. 1518.~~		
G. 2137	M.	12June1886	22June1886	Thos. Beaman etux	Russell Andrews	E. ½,	$3200.	
G. 2519	Certificate of Foreclosure	10Jan.1890	13Jan.1890	Chancery Division	Russell Andrews	E. ½.		
~~3110~~	~~Mortg.~~	~~14Dec.1894~~	~~15Dec.1894~~	~~Cormick McGuire & w.~~	~~E. D. Craig~~	~~50 A. E. ½ of E. ½, $800. Rec'd. in full.~~		
~~3208~~	~~A. of M.~~	~~2Dec.1895~~	~~7Dec.1895~~	~~Mary Scott~~	~~James Craig~~	~~reciting No. 3110.~~		
"	"	"	"	Albert Craig	" "	"	"	
"	"	"	"	Jonathan Craig	" "	"	"	
"	"	"	"	James B. Craig	" "	"	"	
"	"	"	"	Robt. A. Craig	" "	"	"	
"	"	"	"	Sarah J. Craig	" "	"	"	
~~3689~~	~~D. M.~~	~~11Sep.1899~~	~~13Sep.1899~~	~~Jas. Craig~~	~~Cormick McGuire~~	~~Discha. Mortg. No. 3110.~~		
G. 3690 O	B & S.	11Sep.1899	13Sep.1899	Cormick McGuire & w.	Cyrus O'Neill	50 A.	$3250.	F. ½ of E. ½ lot 21.
~~3691~~	~~Mortg.~~	~~11Sep.1899~~	~~13Sep.1899~~	~~Cyrus O'Neill~~	~~Cormick McGuire~~	~~50 A.~~	~~$2750.~~	~~E. ½ of E. ½ lot 21.~~
3825	B & S.	18Apl.1890	28Sep.1900	Russell Andrews & w.	John Dillon	100 A.	$4000.	R. or W. ½, A. C. L.
4092	Will	4Oct.1902	7Jan.1903	John Dillon	Richard H. Dillon	R. or W. ½ lot 21.		
"	"	"	"	" "	Samuel C. Dillon	" "		
"	"	"	"	" "	Margaret Dillon	Subject See Instrument.		
"	"	"	"	" "	Sarah A. Douglas	" "		
"	"	"	"	" "	Ellen J. Hyland	" "		
"	"	"	"	" "	Hester C. Boyd	" "		
"	"	"	"	" "	Mary E. Dillon	" "		
"	"	"	"	" "	Susan S. Dillon	" "		
"	"	"	"	" "	Alice I. Dillon	" "		
"	"	"	"	" "	Margaret E. Dillon	" "		

Continued on Page 104 Book No. 45

FORWARD TO NEXT PAGE

CONTINUED FROM PRECEDING PAGE

~~Continued from page 10~~

TOWNSHIP OF NORTH GOWER, Lot No. 21 Concession 7

No. of Instrument	Instrument	Date of Register	GRANTOR	GRANTEE	Quantity of Land.	Consideration or Amount of Mortgage.	REMARKS.
~~4978~~	~~Will~~	~~1894~~	~~20 Aug 1904~~	~~Arthur O'Connor~~	~~Luke Kennedy~~	~~50 a~~	~~$500~~
N.G. 4745	~~Deed~~	~~25 Mch 1905~~	~~3 Mch 1906~~	~~Thos~~	~~Thos M. Hyland~~	~~60 a~~	~~$3400~~
~~4946~~	~~Deed~~	~~25 Mch 1905~~	~~26 Mch 1906~~	~~Timothy O'Neil~~	~~Timothy O'Neil~~	~~50 a~~	~~$1400~~
~~5241~~	~~Deed~~	~~Mch 1906~~	~~Timothy O'Neil~~	~~Thos M. Hyland~~	~~Discharge of Mtge~~		
~~5935~~	~~Agreement~~	~~19 May 1914~~	~~Cornick McGuire~~	~~Gavin Pollock~~	~~Reciting Mtge No 3691~~		
N.G. 5400	~~Deed~~	~~Jun 1914~~	~~Sep 1914~~	Matthew O'Connor & w	Daniel O'Connor	$1490 25/27	Not rec'd in full
						50 a	Nat. of N 1/2 of N 1/2 of Lot 20 W 1/2 of N 1/2 Lot 21.
~~5492~~	~~Deed~~	~~30 Jan 1915~~	~~1 Feb 1915~~	~~Wilson B. Pratt~~	~~Thomas Hyland~~	~~Discharge Mtge No 3691~~	
				Admr. Estate of Gavin Pollock			
N.G. 5579	~~Deed~~	~~1 Feb 1915~~	25 Nov 1915	Thomas M. Hyland & w	John A. Hyland	50 a	Nat. lower 1/2 of W 1/2 of N 1/2 Lot 21.
~~5612~~	~~Deed~~	~~30 Apr 1916~~	~~Luke Kennedy~~	~~Daniel O'Connor~~	~~Discharge Mtge No 4282~~		
N.G. 5613	~~Deed~~	~~30 Apr 1916~~	Daniel O'Connor & w	John A. Hyland	50 a	$3500	W 1/2 of S 1/2
~~5614~~	~~Mtge~~	~~30 Apr 1916~~	John A. Hyland	Luke Kennedy	50 a	$2500	W 1/2 of S 1/2
~~5615~~	~~Mtge~~	~~30 Apr 1916~~	John A. Hyland	Robert Ewenger	50 a	$1000	W 1/2 Not rec'd in full.
~~5500~~	~~Deed~~	~~Read Gross~~		~~John A. Hyland~~			
N.G. 6105	~~Grant~~	~~18 Nov 1920~~	~~24 Dec 1920~~	William Dillon	Richard H. Dillon	Rear of W 1/2 of Lot 21	
				John A. Dillon			A.O.L.
				Exors. Estate of John Dillon			See Instrument
				& Charles L. Dillon			
~~6141~~	~~Deed~~	~~2 Mch 1921~~	~~11 Mch 1921~~	~~Luke Kennedy~~	~~John A. Hyland~~	~~Discharge Mtge No 5614~~	
N.G. 6814	~~Grant~~	~~27 Feb 1929~~	~~7 Mch 1929~~	John A. Hyland	Thos. B. Hyland	F. or E 1/2 of Lot 21	100 a
~~7847~~	~~Mtge~~	~~Mtge~~	~~2 May 1941~~	~~Thos B. Hyland~~ & wife	~~David G. Boyd~~	~~For E 1/2 Lot 21~~	~~200~~
						Not recorded in full	
N.G. 9227	~~Grant~~	~~Mtge~~	~~13 June 1952~~	~~Thomas~~ Hyland (Thomas called Edward B)	Mendall V. Hyland	East 1/2 Lot 21 as in No 6814	$800
						Subject to Encumbrances	
						See Grant	
N.G. 9228	~~Grant~~	~~Mtge~~	~~8 Oct 1952~~	~~Catherine V. Hyland~~	Canadian Farm	~~East 1/2 Lot 21~~	
				Mendall V. Hyland	Loan Board	100 acres	A.O.L.	$500
				Marjorie Hyland			Subject to Encumbrances
~~9319~~	~~Deed~~	~~Mtge~~	~~Mtge~~	~~David G. Boyd~~	~~Thomas B. Hyland~~	~~Do re 7847~~	
N.G. 10271	~~Agreement~~	~~9 Nov 1958~~	13 May 1959	Gosfield Twp. of North Gower	Planning By Law	All	A.O.L.
							See Grant
GR 13921	~~Grant~~	~~15 May 1957~~	29 May 1964	Richard H. Dillon	Richard H. Dillon	Part of W 1/2 Lot 21 as in 6105	See Grant
GR 13722	~~Grant~~	~~7 Mch 1961~~	29 May 1964	Town of Ontario	Richard H. Dillon	Part of N 1/2 Lot 21 as in No 6105	See Grant

~~Forward to Page 451 Book C~~

FORWARD TO NEXT PAGE

(CONTINUED FROM PRECEDING PAGE)

~~Continued from Page 104 Book B.~~

EXPLANATIONS:
A.O.L.—Among other Lands.
N.R.F.—Not Registered in Full.
S.I.—Other Instrument.
Subj.—Subject.

Township of North Gower, Lot No. 21 Concession 2

Number of Instrument	Instrument	Its Date	Date of Registry	Grantor	Grantee	Quantity of Land	Consideration	Remarks
N.G. 11264	Grant	14 Nov 1961	15 Nov 1961	Executors Will of Richard H. Dillon.	Richard H. D. Dillon.		$1.00	W½ Lot 21 rear or W½ Lot 22. See Inst.
~~N.G. 11446~~	~~Grant~~	~~30 July 1965~~	~~4 Aug 1965~~	~~Wendell T. Hyland~~	~~Farm Credit~~		~~$12,700.00~~	~~Pt Lot 21~~ See Inst.
~~N.G. 11460~~	~~Mtge~~	~~30 July 1965~~	~~4 Aug 1965~~	~~Farm Credit Corp~~	~~Bertram T. Hyland & Marjorie Hyland~~		~~$1.00~~	~~Releasing E½ Lot 21 from Mtge #9298~~ See Inst.
N.G. 13989	Designation of Plan	29 Jan 1969	31 Jan 1969	Dept of Highways	P-6074		Re Lot 21, G.R. Plan attached	See Inst
See Next Page		#CT 142157	filed this 6th Day of Oct. A.D. 1971		Re: Hyland & Brophy		Re: Road Widening.	
~~T 13988~~	~~D.M.~~	~~4 July 1975~~	~~24 July 1975~~	~~Farm Credit Corporation~~	~~Wendell T. Hyland & wife~~		~~Memo 12546~~	
~~T 21635~~	D.M.	18 June 1976	21 Dec. 1976	Farm Credit Corporation	Bertram T. Hyland Wendell T. Hyland Marjorie Hyland			~~Discharging # 9298.~~

FORWARD TO NEXT PAGE

MINISTRY OF CONSUMER AND COMMERCIAL RELATIONS

Ontario

LAND REGISTRY OFFICE #04

ABSTRACT INDEX (ABBREVIATED) FOR PROPERTY IDENTIFIER

03913-0104 (R)

PREPARED FOR: SERVICE 1
ON1999/06/07 AT 10:12

PROPERTY DESCRIPTION: PT LTS 21 & 22, CON 2 , AS IN NS242490 ; RIDEAU/NORTH GOWER

PROPERTY REMARKS: THIS PARCEL WAS CREATED BASED ON INFORMATION CONTAINED IN DOCUMENT(S) NS242490, WHICH IS (ARE) RECORDED FOR PIN IDENTIFICATION ONLY.

ESTATE/QUALIFIER: RECENTLY PARCELIZED FROM BOOK NG6

BLOCK IMPLEMENTATION DATE: 1997/06/30

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERTIFY CHKD	DELW	FUTURE OFFICE USE
** PRINTOUT INCLUDES ALL DOCUMENT TYPES (DELETED INSTRUMENTS NOT INCLUDED) **								
** THIS ABSTRACT INCLUDES ALL INSTRUMENTS AND DOCUMENTS FROM: 1997/06/30 **								
** FOR THE PREVIOUS ABSTRACT SEE ABSTRACT BOOK **								
NS242490	1984/06/04	TRANSFER	$ 225,000		JORDAN, GARRY H. JORDAN, NICOLE LISE	C		
N765571	1999/02/01	CHARGE	$ 133,500	JORDAN, GARRY H. JORDAN, NICOLE LISE	SCOTIA MORTGAGE CORPORATION	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..

P. No 24-3

LOT 21 CONCESSION 2.

CONTINUED FROM PRECEDING PAGE

SECTION NUMBER	INSTRUMENT	DATE OF INSTRUMENT	REGISTRATION DATE	GRANTOR	GRANTEE	CONSIDERATION ETC	LAND AND REMARKS
See deposit SR-5500 (Jan. re inst #			22. 1981.) 9227.	being a reference plan., being pt lot	21. re pts 1-3		
CROFILMED MAR 1 1 1981							
23658	Q.C.		YEAR MONTH DAY 81 07 10	Patricia M. Hyland	Wendell T. Hyland	$1.00	E1/2 of lot 21. See tax affidavit See 8
23725	Grant		81 07 10	Wendell T. Hyland	The Regional Municipality of Ottawa-Carleton	$1.00	Pt. lot 21 desig as pt. 2 on 5R- See tax affidavit See Inst.
24023	Grant		YEAR MONTH DAY 81 07 15	Wendell T. Hyland	Jotina Developments Ltd.,	$104,157.00	Pt. of lot 21, being pt. 3 on 5R-55 Consent of planning board. See inst.
24024	Mortgage		81 07 15	Jotina Developments Ltd.,	Wendell T. Hyland	$54,000.00	Pt. of lot 21, being pt. 3 on 5R-550
Released by # N624548	Asst Dep Land Reg	Qc 26/06/84	DAY MONTH YEAR	Joseph Palmerio			See inst.
26130	R-Plan		13 11 81				Part - Re: Parts 1,2,3 & 4 Re: Inst No 9227, NS 123725 & NS 124023 - OL.
26151	R-Plan		27 11 81				Part. Re: part 10. O.L. Re: inst. no. 142157.
42459	Cert. of Approval		05 02 82	MTC			Pt. OL re: pts 2,3+4 on 5R-6130.
42495	Expropriation Plan		05 02 82		MTC		Pt. re: pts 1 and 2+3 re: inst. # 9227 and NS 124023 and 11264. OL
33990	By-Law 31		24 03 83	The Regional Municipality of Ottawa-Carleton			A by-law to assume for public use & establish as common & public highway certain lands to become pt. of the Regional Rd. System, being pt. & OL, being pt. 2 on 5R-5500
93619	Grant		06 06 83	Jotina Developments Ltd.	PALMERIO, Joseph PALMERIO, Tecia JT	$1.00	Pt., being pt. 3 on 5R-5500 Save & except pt. 1 on expropriated plan NS 142495, See Tax Affidavit.
4762	Grant		04 04 84	Estate of DILLON, Richard H.D.	DILLON, Barbara H.	$1.00	W1/2 of O.L. see tax affidavit
	Deposit		10 04 84	See Deposit NS 235247			Pt. O.L as in 4092
612	Grant		13 04 84	Estate of DILLON, Richard H.D.	DILLON, Barbara H.	$1.00	W1/2 of O.L see tax affidavit

FORWARD TO NEXT PAGE

10378A 77-1675

REGISTRATION NUMBER	INSTRUMENT	DATE OF INSTRUMENT	REGISTRATION DATE (DAY MONTH YEAR)	GRANTOR	GRANTEE	CONSIDERATION ETC	LAND AND REMARKS
12490	Grant		04 06 84	DILLON, Barbara H.	JORDAN, Garry H. JORDAN, Nicole L	$225,000.00	Rear or W 1/2. O.L. Save and except pts.
~~2491~~	~~Mort~~		~~04 06 84~~	~~JORDAN, Garry H. JORDAN, Nicole L.~~	~~Scotia Mortgage Corp.~~	~~$63,000.00~~	~~Pt 16 in NS 242490.~~ Assignment of N629013 Assn Gen Rent Reg QW92-08-12
4516	Grant		18 06 84	PALMERIO, Joseph PALMERIO, Tecla	DALY, John S. DALY, Nellie E. JT	$100,000.00	Pt., being pt. 3 on 5R-5530 Save & except pt. desc'd.
3	Order In Council		02 11 88	H.M. The Queen (Ontario)			Pt. OL.
345	Order In Council		30 08 89	H.M. The Queen Ontario			Revokes all the 1969 Highway 416 designation.
~~Charge~~			~~92 08 14~~	~~JORDAN, Garry H. JORDAN, Nicole Lise~~	~~Royal Bank Of Canada~~ ~~DISCHARGED BY # N735610 ADET DEP LAND REG 96 01 25~~	~~$160,000.00~~	~~Rear or W half. Save and except pts desc'd. OL.~~
5367	Charge		95 12 08	JORDAN, Garry H. JORDAN, Nicole Lise	Bank of Montreal	# 200,000.00	Rear or W 1/2. Save and except pt. desc'd. OL

NOTICE

The land in this abstract index is implemented as of

JUN 30 1997

under part II of the L.R.R.A., 1984. All registrations subsequent to that date are recorded in the abstract index set out in Subsection 21 (5) of the Registry Act.

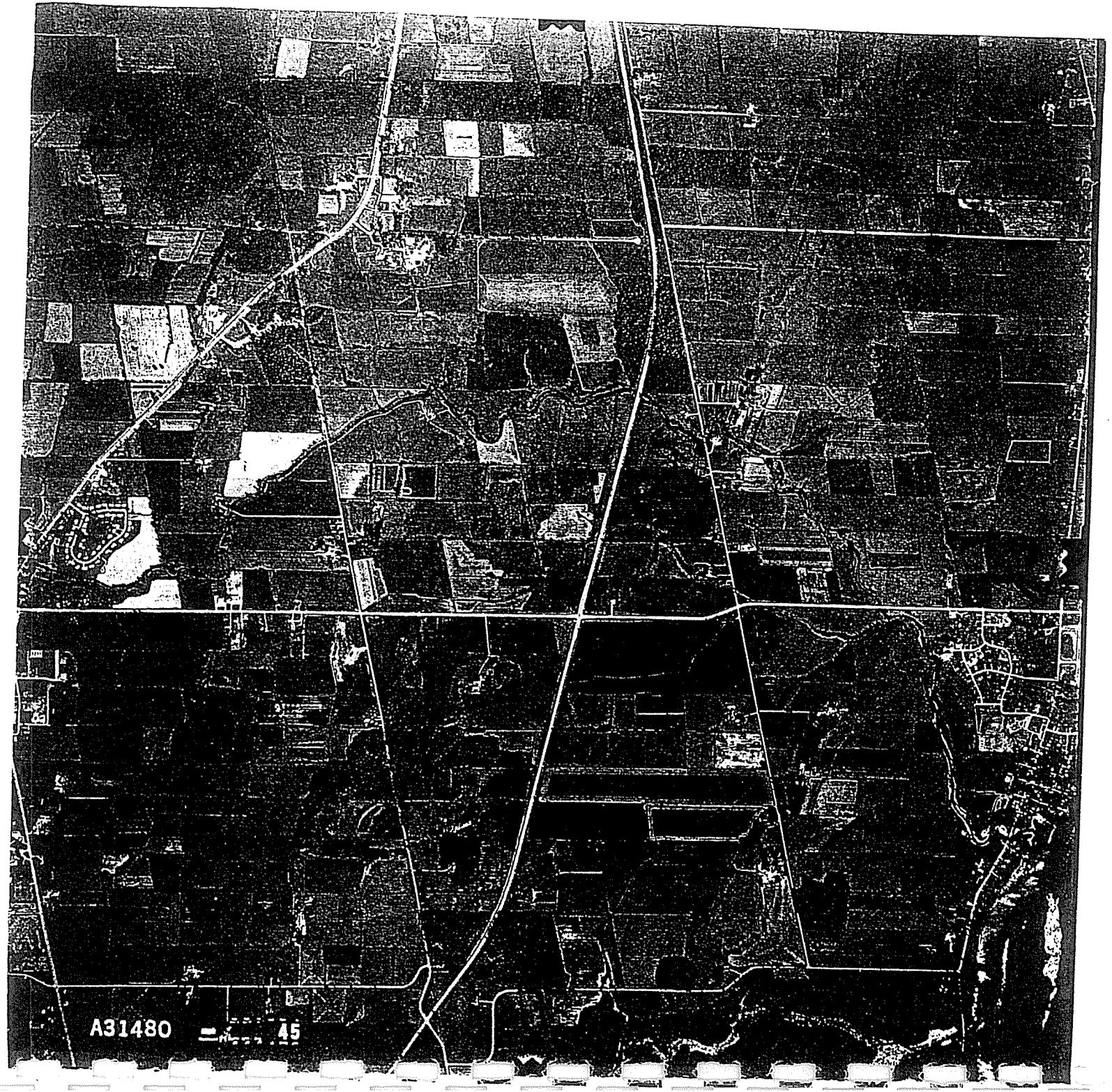
APPENDIX F

ENVIRONMENTAL SITE ASSESSMENT


A28051 - 42
1:50000
04-05-94

© SA MAJESTE LA REINE DU CHEF DU CANA. .INISTERE DE L'ENERGIE, DES MINES ET DES RESSOURCES.

© HER MAJESTY THE QUEEN IN RIGHT OF CANADA DEPARTMENT OF ENERGY, MINES AND RESOURCES 1


A31480
45